TABLES FOR STATISTICIANS AND BIOMETRICIANS

EDITED BY
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GALTON PROFESSOR, UNIVERSITY OF LONDON

PART II

FIRST EDITION

ISSUED BY THE BIOMETRIC LABORATORY,
UNIVERSITY COLLEGE, LONDON
AND PRINTED AT THE
CAMBRIDGE UNIVERSITY PRESS

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DEPARTMENT OF APPLIED STATISTICS

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TABLES FOR STATISTICIANS AND BIOMETRICIANS

PART II

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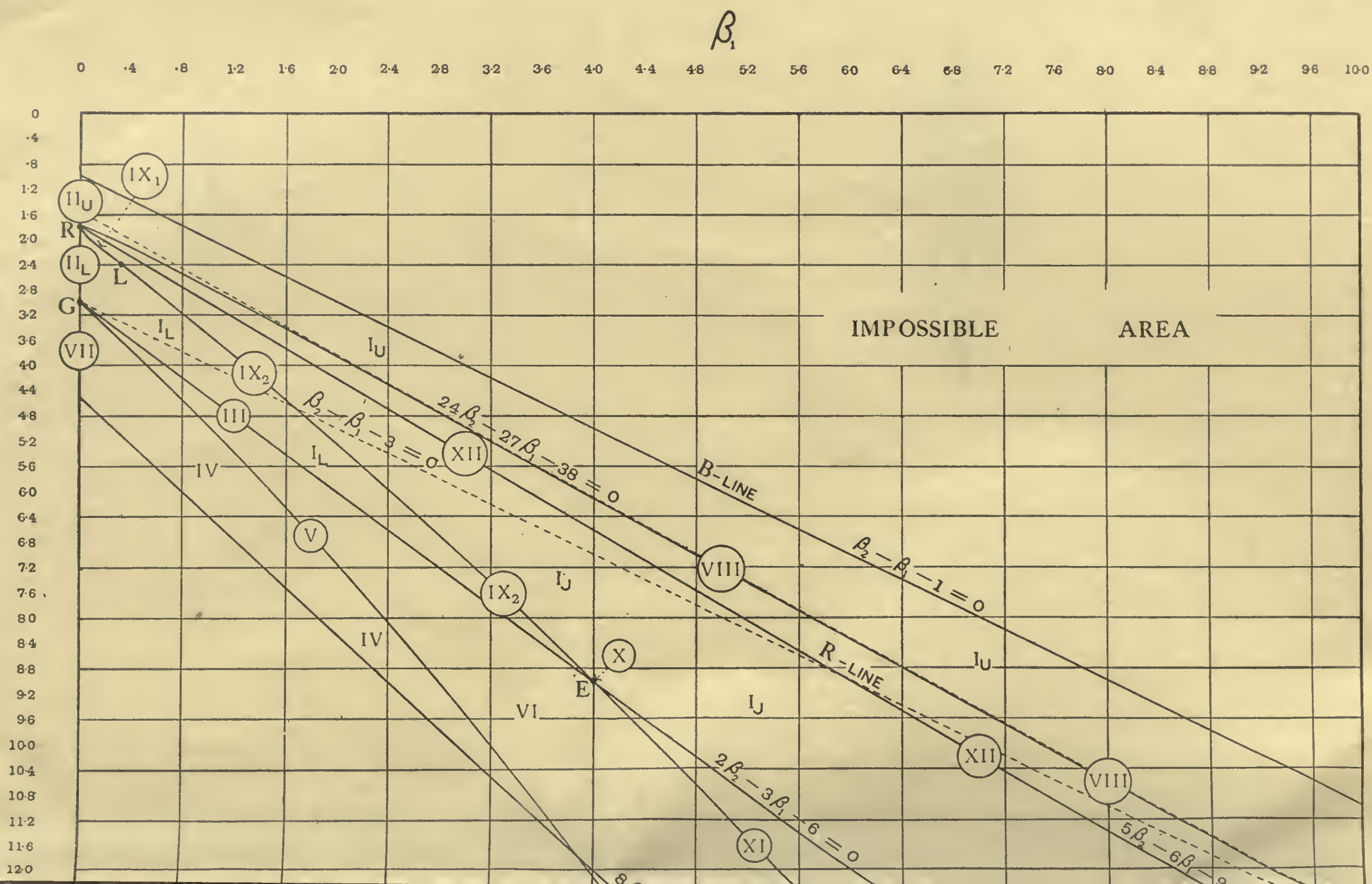
TYPES OF SKEW FREQUENCY FOR VALUES OF β_1 AND β_2



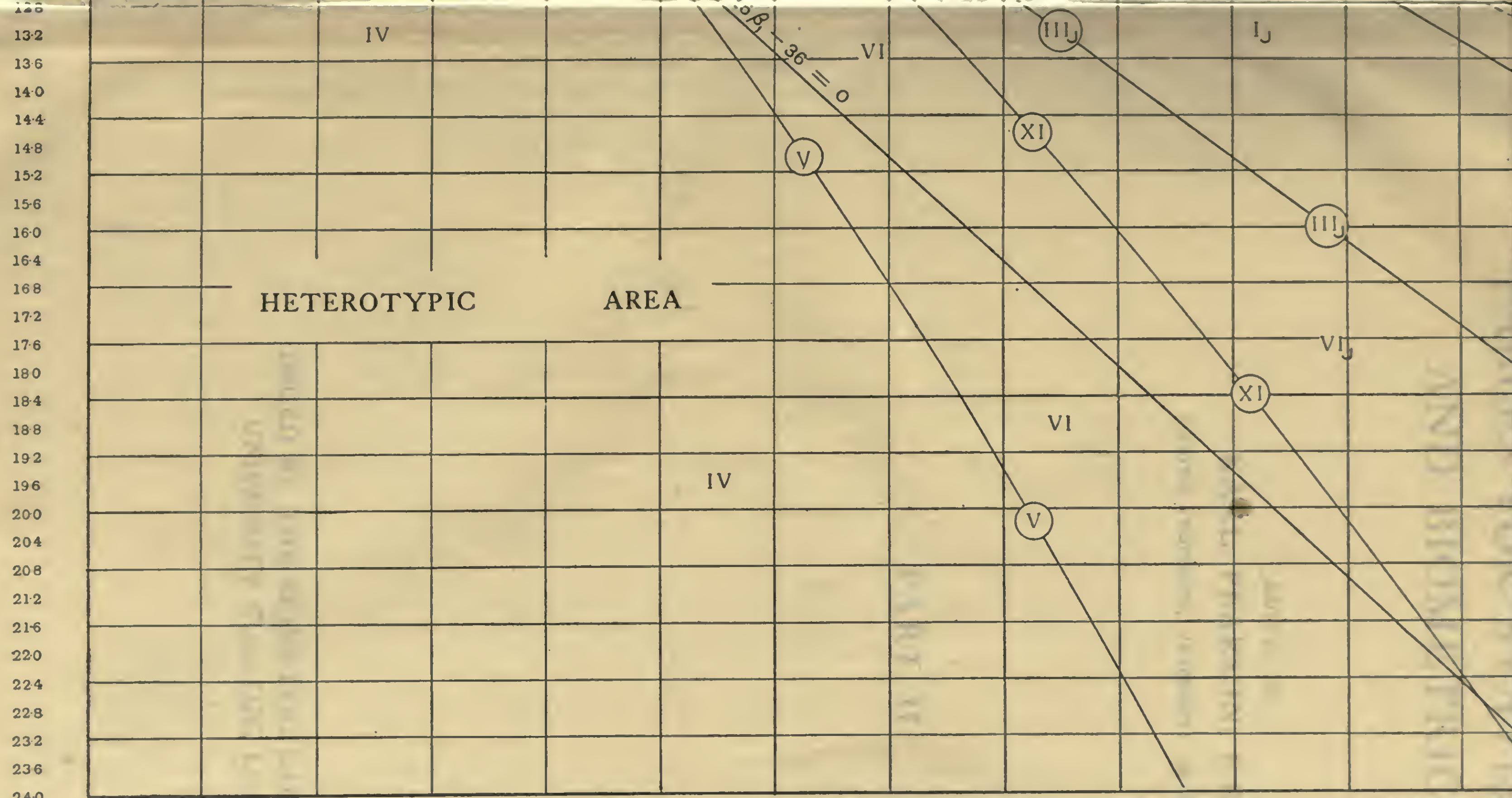


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Chart to determine the appropriate Frequency Curve of Pearson Type, when β_1 and β_2 have been computed.

TYPES OF SKEW FREQUENCY FOR VALUES OF β_1 AND β_2

TABLES FOR STATISTICIANS AND BIOMETRICIANS

EDITED BY

KARL PEARSON, F.R.S.

GALTON PROFESSOR, UNIVERSITY OF LONDON

PART II

ISSUED BY THE BIOMETRIC LABORATORY
UNIVERSITY COLLEGE, LONDON

As long as everyone is occupied in the search after truth, it matters little if all arrive at different conclusions.

JOSEPH PRIESTLEY.

Where there is much desire to learn, there of necessity will be much arguing, much writing, many opinions; for opinion in good men is but knowledge in the making.

JOHN MILTON.

PRINTED IN GREAT BRITAIN

PREFACE

I REGRET that the second part of these *Tables for Statisticians and Biometricians* has been so long in making its appearance. Several factors have combined to cause delay: first and most important has been an under-estimate on my part of the time and ease with which certain tables could be computed, tables that I felt were desirable; and in the second place it was not financially possible to publish them without the aid provided by their being issued first in *Biometrika*. The majority of the present tables are printed from stereos moulded from type originally set up for that Journal. If subscribers to *Biometrika* raise perhaps not unreasonable objection to the early reprint of some of these tables, they may be reminded that others have been in use for many years, and that this use would have been impossible, had they been withheld till they could appear with a completed collection. The first series was published seventeen years ago, and the rule has been to publish each table as soon as it was computed. This second series contains the major portion of the computing work carried out by staff and post-graduates in the Biometric Laboratory during the past seventeen years. I say 'the major portion' because there are two important exceptions, which are closely associated with these *Tables for Statisticians and Biometricians*, but the great extent of which prevented their inclusion in any book like the present. I refer to the *Tables of the Incomplete* Γ-*Function* and to the *Tables of the Incomplete* B-*Function*. The former has been published as a separate volume of the same format as the present by H.M. Stationery Office and the latter is just completed and ready for printing*. In addition there are of course the tables issued in the *Tracts for Computers* series, but these largely appeal to mathematicians as well as to statisticians, and to have reproduced certain of these tables here would have much overweighted an already ample volume.

One further remark may be made; there has been a considerable demand for those parts of *Biometrika* in which these tables were originally published, and it has not been possible to meet fully this demand, as doing so would have rendered it impossible, without much reprinting, to provide complete sets of that Journal to many libraries desiring them. The present issue will enable the Biometric Laboratory to supply students and others with the tables they need without impairing the small remaining stock of sets of *Biometrika*. It will also be a relief to those librarians, who find that the volumes of that Journal containing tables are

* The series ought to include *Tables of the Incomplete G-Function*, i.e. the Probability-Integral of the Type IV curve, but the age of the present Editor is likely to preclude his superintending any task, which even exceeds in the magnitude of its calculations that of the Incomplete B-Function.

apt to get soiled and otherwise damaged, to know that they can refer their readers to a handy and easily replaceable collection of the tables themselves.

Apart from these secondary considerations, the aim of this book is precisely that of Part I. It is not intended as a text-book of modern statistical theory. The reproduction of theory is reduced to a minimum, the formulae involved being only given where they are needful in order to follow the description of the use of the tables. The book is intended primarily for the student or research worker who has been through complete courses of lectures on the theory of statistics. The former needs a guide in his practical laboratory work, and the latter some aid in choosing and applying methods to the reduction of his own data.

The teacher of statistics will find it not without advantage to set his students problems similar to the illustrations in the two Parts of the *Tables for Statisticians and Biometricians,* and let them by aid of this book find their solutions in the hours devoted to practical work. The Editor is aware by the letters that have reached him concerning difficulties or errors found in Part I, that a good many workers are training themselves by independent reworking of the illustrations given in that part. The present part will provide a wider, if stiffer, field of statistical exercises*.

The adjective 'stiffer' is used advisedly. The majority of the methods in Part II are somewhat harder of application than those discussed in Part I. This is a natural result of the development of statistical theory. The easier problems call first for solution; the harder follow in their train. It is accordingly all the more important to repeat the words of the Preface to the first edition of Part I.

"The *Introduction* gives a brief description of each individual table; it is by no means intended to replace actual instruction in the use of the tables such as is given in a statistical laboratory, nor does it profess to provide an account of the innumerable uses to which they may be put, or to warn the reader of the many difficulties which may arise from inept handling of them. Additional aid may be found in the text which usually accompanies the original publication of the tables."

Much of recent work in statistical theory deals with the problem of "small samples," and involves some interesting and brilliant mathematics. This work is undoubtedly of importance from the standpoint of practical statistics. If we must have small samples, and they are undoubtedly necessary in certain experimental work, then by all means let us deduce by accurate theory as much as we can from them. But the student should recognise that from sparse data really little can be learnt, although that is no excuse for not learning it. The danger is that he may

* It is proposed to issue shortly a volume of collected statistical problems for laboratory use, which may be of service to both instructor and student as indicating the type of questions where the *Tables* are of service.

imagine that a sample of 10 to 15 with a fine mathematical theory will in some manner be equivalent to a sample of several hundreds with a simple statement of the standard errors of its constants. The student should also try to grasp what is the nature of the assumptions, which have been made as to the character of the unknown parent-population from which the small sample is extracted, before he places great confidence in what the most effective mathematical theory can deduce from sparse material. Experimental work of a very useful kind has been started to discover how far the present mathematical theory of small samples can be extended to other than a single type of parent-population; but it is too early yet to be dogmatic as to the limits within which the application of such theory is valid. In particular I hold that the so-called "z" test as usually applied to small samples, especially when it is used to measure the probability or improbability of identity in the constants of small correlated samples, really requires further consideration. I doubt whether the user is always clear as to what hypotheses he is really testing. In this respect I would further make a remark which applies not only to so-called "presumptive values," but also to the variance or other constants of the distribution of samples from an *unknown* parent-population. Let $c_1, c_2, \ldots c_p$ be the known constants in the individual sample to be tested, $C_1, C_2, \ldots C_p$ those of the parent-population, and F_{c_s} be the other variance, or any other constant which helps to describe the distribution of any c_s in repeated samples, then mathematically we often reach a formula

$$F_{c_s} = \frac{f_1}{n} + \frac{f_2}{n^2} + \frac{f_3}{n^3} + \ldots,$$

where any f is a function of the C's, and the series may be finite, or infinite and converging. If we *know* the C population as in experimental work in the laboratory no doubt useful ideas can be drawn from such formulae, but if the parent-population be unknown, as it so frequently is, then all we can do is to use in some form or another the c's of the single sample we have obtained, in order to measure F_{c_s}. But any c_g will differ from the corresponding C_g by terms of the order $1/\sqrt{n}$. Hence it is not legitimate to retain terms of the order $1/n^2$, etc., when we are neglecting terms of the order $1/\sqrt{n}$. In other words, our formula is not more legitimate when we are dealing with an unknown parent-population than if we had merely taken $F_{c_s} = f_1/n$, the value to which it tends as the size of the sample becomes large. I am fully aware that this is a crude and rather vague way of stating the difficulty. It can, however, be illustrated by a very simple example. The astronomers, using only too frequently very small samples, take as the standard error of the standard-deviation ("square root mean square error" of their terminology),

$$\frac{\Sigma}{\sqrt{2(n-1)}},$$

where Σ should be the standard deviation in the parent-population, which is *assumed* by them to be normally distributed. But not knowing Σ, they replace it by the value σ computed from the sample, i.e. they use for standard error

$$\frac{\sigma}{\sqrt{2n}}\left(1-\frac{1}{n}\right)^{-\frac{1}{2}}=\frac{\sigma}{\sqrt{2n}}\left(1+\frac{1}{2n}+\frac{3}{8n^2}+\dots\right).$$

Now since σ is liable to differ from Σ by a quantity of the order $1/\sqrt{n}$, it is difficult to see what justification there is for retaining terms like $\frac{1}{2n}$ and its successors. Thus the $n-1$ in the original formula may be replaced by n, although an astronomer (and many physicists) in reducing ten observations would certainly use $n-1=9$, as if there were some logical reason for their doing so. Further illustrations of the same method of finding F_{c_s} by giving f_1, f_2, f_3, etc. their single sample values and still retaining terms in $1/n^2$, $1/n^3$, etc., can be found in the use of the formula of Spearman and Holzinger for the standard error of a tetrad of correlation coefficients, or in the use of that of Wishart for the standard error of a tetrad of product moments, when terms in the higher powers of $1/n$ are retained and the sample values of the coefficients inserted in these formulae.

At the present time, when modern physics is becoming so largely a branch of mathematical statistics—although it may perhaps be doubted whether many modern physicists have yet crossed the limits of classical probability—it may not be without interest to insist that statistical conclusions, whether drawn from organic or inorganic data, whether biometrical or physical, are based on the same fundamental conception, namely that the experience of the past may be legitimately projected into the future. The only reason for separating vital from physical experience is that in the case of the inorganic it is easier to reproduce within narrower limits of difference past conditions with regard to the "universe under discussion." Our belief in the stability of statistical ratios, our belief that past experience is a guide to future happenings, is as valid for biometric as for physiometric experience. We can never assert that the sequences we recognise in our perceptions *must* be repeated; there can be no logical proof that a law of causation exists. But thought, and with thought conduct, would be impossible if there were physically or biologically no such thing as the stability of statistical ratios. Our knowledge of "things," their differentiation into classes, depends solely on past statistical experience of their attributes—their actions and reactions; and this is true of both organic and inorganic "things." Hence it comes about that as science passes more and more from the descriptive to the metric stage, the mathematical theory of statistics with its category of correlation (far wider than that of causation) tends to become more and more a study essential to all students of science. If these *Tables for Statisticians and Biometricians*, in any however limited a degree, tend in the future to lighten the labour of men of science the energy spent on the computing and illustrating of the tables will not have been wasted.

In the revision of the *Introduction* to Part I, I had the able and unselfish help of my then colleagues H. E. Soper and Ethel M. Elderton. The former, sadly for our science, has passed to the place where either no problems exist, or their solutions are clear as day. Who can venture to say which? For the proofs of the present *Introduction* I have had most generous aid from my friends and colleagues Ethel M. Elderton, Egon S. Pearson, E. C. Fieller and Brenda N. Stoessiger. I am the more deeply indebted to them as they have spent much time in checking the numerical illustrations, in many of which they have corrected faults in my arithmetic, which would, if left undiscovered, certainly have detracted greatly from the value of this book. I owe to them also many suggestions for making more lucid my presentation of methods for conducting the calculations, and often for apt changes in the language I had used. The diagrams are mainly due to my former colleague Miss Ida M^c Learn (now Mrs F. Larmor), to whom I am greatly indebted also for the preparation of the table of powers, lithographed for this work.

Lastly I have to thank the Council of the Royal Society for permission to reproduce my chart of the β_1, β_2 distribution, which indicates the areas and contours to which the various types of frequency curves are appropriate, and further the Council of the Cambridge Philosophical Society for leave to republish Glaisher's table of Inverse Factorials.

KARL PEARSON.

THE OLD SCHOOL HOUSE,
COLDHARBOUR
July 20, 1931

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CONTENTS

TABLES*

* The Roman figures to the pages refer to the Introduction, where the Table is discussed, the Arabic to the Table itself.

INTRODUCTION

(1) *Transition from Frequencies to Ordinates and Ordinates to Frequencies.* (*Biometrika*, Vol. XVII. pp. 311—313, and Lecture Notes.)

Actually great accuracy in these transitions is not possible, unless we have graduated the data by a curve or surface of known mathematical form. Still useful approximations can often be obtained by applying fairly simple graduation formulae.

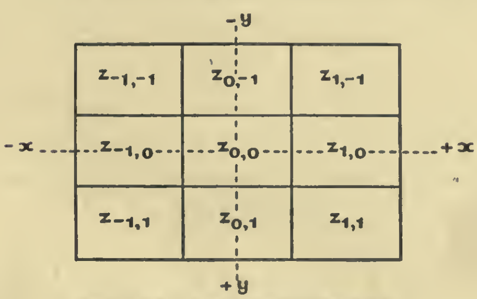
(i) *Cell Frequencies from Ordinates in the case of a Bivariate Frequency Surface.*

The Lagrangian interpolation formula which corresponds to the midpanel central difference formula up to and including second order differences takes the following form*:

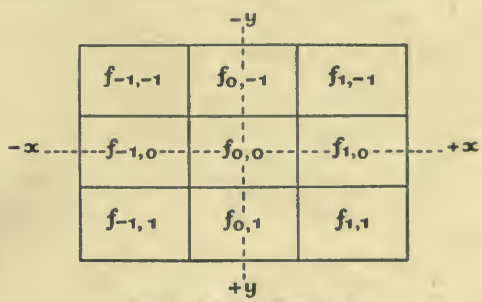
$$\begin{aligned} z = (1-x^2)(1-y^2)\,z_{0,0} &- \tfrac{1}{2}y(1-y)(1-x^2)\,z_{0,-1} + \tfrac{1}{2}y(1+y)(1-x^2)\,z_{0,1} \\ &- \tfrac{1}{2}x(1-x)(1-y^2)\,z_{-1,0} + \tfrac{1}{2}x(1+x)(1-y^2)\,z_{1,0} \\ &+ \tfrac{1}{4}xy(1+x)(1+y)\,z_{1,1} + \tfrac{1}{4}xy(1-x)(1-y)\,z_{-1,-1} \\ &- \tfrac{1}{4}xy(1+x)(1-y)\,z_{1,-1} - \tfrac{1}{4}xy(1-x)(1+y)\,z_{-1,1} \qquad \text{......(1).} \end{aligned}$$

Here the units of the x and y variates are both supposed to be unity; if they are not, but are h and k respectively, the modifications required are indicated below.

This surface passes through the tops of all nine ordinates of the cell scheme:



CENTRAL CELL ORDINATES.



CELL FREQUENCIES.

Corresponding to the cell ordinates z, we have the nine cell frequencies f. If we note the following integrals:

$$\int_{-\frac{1}{2}}^{+\frac{1}{2}}(1-x^2)\,dx = \int_{-\frac{1}{2}}^{+\frac{1}{2}}(1-y^2)\,dy = \tfrac{11}{12}; \qquad \int_{-\frac{1}{2}}^{+\frac{1}{2}}x(1-x)\,dx = \int_{-\frac{1}{2}}^{+\frac{1}{2}}y(1-y)\,dy = -\tfrac{1}{12};$$

$$\int_{-\frac{1}{2}}^{+\frac{1}{2}}x(1+x)\,dx = \int_{-\frac{1}{2}}^{+\frac{1}{2}}y(1+y)\,dy = \tfrac{1}{12}; \qquad \int_{+\frac{1}{2}}^{+\frac{3}{2}}(1-x^2)\,dx = \int_{+\frac{1}{2}}^{+\frac{3}{2}}(1-y^2)\,dy = -\tfrac{1}{12};$$

$$\int_{+\frac{1}{2}}^{+\frac{3}{2}}x(1-x)\,dx = \int_{+\frac{1}{2}}^{+\frac{3}{2}}y(1-y)\,dy = -\tfrac{1}{12}; \qquad \int_{+\frac{1}{2}}^{+\frac{3}{2}}x(1+x)\,dx = \int_{+\frac{1}{2}}^{+\frac{3}{2}}y(1+y)\,dy = \tfrac{25}{12};$$

* K. Pearson, *Tracts for Computers*, No. III. pp. 26—28. Cambridge University Press.

we can readily integrate for the volume of every cell content, and find at once:

$$f_{0,0}=\tfrac{1}{576}\{484z_{0,0}+22(z_{0,1}+z_{0,-1}+z_{1,0}+z_{-1,0})+z_{1,1}+z_{1,-1}+z_{-1,1}+z_{-1,-1}\} \quad \ldots\ldots(\alpha),$$

$$f_{1,1}=\tfrac{1}{576}\{4z_{0,0}-50z_{0,1}-2z_{0,-1}-50z_{1,0}-2z_{-1,0}+625z_{1,1}+25z_{1,-1}+25z_{-1,1}+z_{-1,-1}\} \quad \ldots\ldots(\beta),$$

$$f_{1,-1}=\tfrac{1}{576}\{4z_{0,0}-2z_{0,1}-50z_{0,-1}-50z_{1,0}-2z_{-1,0}+25z_{1,1}+625z_{1,-1}+z_{-1,1}+25z_{-1,-1}\} \quad \ldots\ldots(\gamma),$$

$$f_{-1,1}=\tfrac{1}{576}\{4z_{0,0}-50z_{0,1}-2z_{0,-1}-2z_{1,0}-50z_{-1,0}+25z_{1,1}+z_{1,-1}+625z_{-1,1}+25z_{-1,-1}\} \quad \ldots\ldots(\delta),$$

$$f_{-1,-1}=\tfrac{1}{576}\{4z_{0,0}-2z_{0,1}-50z_{0,-1}-2z_{1,0}-50z_{-1,0}+z_{1,1}+25z_{1,-1}+25z_{-1,1}+625z_{-1,-1}\} \quad \ldots\ldots(\epsilon),$$

$$f_{0,1}=\tfrac{1}{576}\{-44z_{0,0}+550z_{0,1}+22z_{0,-1}-2z_{1,0}-2z_{-1,0}+25z_{1,1}+z_{1,-1}+25z_{-1,1}+z_{-1,-1}\} \quad \ldots\ldots(\zeta),$$

$$f_{0,-1}=\tfrac{1}{576}\{-44z_{0,0}+22z_{0,1}+550z_{0,-1}-2z_{1,0}-2z_{-1,0}+z_{1,1}+25z_{1,-1}+z_{-1,1}+25z_{-1,-1}\} \quad \ldots\ldots(\eta),$$

$$f_{1,0}=\tfrac{1}{576}\{-44z_{0,0}-2z_{0,1}-2z_{0,-1}+550z_{1,0}+22z_{-1,0}+25z_{1,1}+25z_{1,-1}+z_{-1,1}+z_{-1,-1}\} \quad \ldots\ldots(\theta),$$

$$f_{-1,0}=\tfrac{1}{576}\{-44z_{0,0}-2z_{0,1}-2z_{0,-1}+22z_{1,0}+550z_{-1,0}+z_{1,1}+z_{1,-1}+25z_{-1,1}+25z_{-1,-1}\} \quad \ldots\ldots(\iota).$$

The first of these results, i.e. that for $f_{0,0}$, gives the frequency in the central cell of a group of nine ordinates, 3×3, in the scheme above. The other expressions may be useful, where it is impossible to use a central cell, for example, towards the boundary in crateroid surfaces.

If the units of x and y are h and k, or the cell base a rectangle $h \times k$, then the right-hand sides of equations (α) to (ι) must be multiplied by hk.

The following equations give the ordinates in terms of the nine cell frequencies:

$$z_{0,0}=\tfrac{1}{576}\{676f_{0,0}-26(f_{0,1}+f_{0,-1}+f_{1,0}+f_{-1,0})+f_{1,1}+f_{1,-1}+f_{-1,1}+f_{-1,-1}\} \quad \ldots\ldots(\alpha'),$$

$$z_{1,1}=\tfrac{1}{576}\{4f_{0,0}+276f_{1,1}+254f_{-1,-1}-23(f_{1,-1}+f_{-1,1})+46(f_{0,1}+f_{1,0})-2(f_{0,-1}+f_{-1,0})\} \quad \ldots\ldots(\beta'),$$

$$z_{1,-1}=\tfrac{1}{576}\{4f_{0,0}+276f_{1,-1}+254f_{-1,1}-23(f_{1,1}+f_{-1,-1})+46(f_{1,0}+f_{0,-1})-2(f_{-1,0}+f_{0,1})\} \quad \ldots\ldots(\gamma'),$$

$$z_{-1,1}=\tfrac{1}{576}\{4f_{0,0}+276f_{-1,1}+254f_{1,-1}-23(f_{-1,-1}+f_{1,1})+46(f_{-1,0}+f_{0,1})-2(f_{0,-1}+f_{1,0})\} \quad \ldots\ldots(\delta'),$$

$$z_{-1,-1}=\tfrac{1}{576}\{4f_{0,0}+276f_{-1,-1}+254f_{1,1}-23(f_{1,-1}+f_{-1,1})+46(f_{0,-1}+f_{-1,0})-2(f_{1,0}+f_{0,1})\} \quad \ldots\ldots(\epsilon'),$$

$$z_{0,1}=\tfrac{1}{576}\{52f_{0,0}+598f_{0,1}-26f_{0,-1}-2(f_{1,0}+f_{-1,0})+f_{1,1}+f_{-1,1}-23(f_{-1,-1}+f_{1,-1})\} \quad \ldots\ldots(\zeta'),$$

$$z_{1,0}=\tfrac{1}{576}\{52f_{0,0}+598f_{1,0}-26f_{-1,0}-2(f_{0,1}+f_{0,-1})+f_{1,1}+f_{1,-1}-23(f_{-1,-1}+f_{-1,1})\} \quad \ldots\ldots(\eta'),$$

$$z_{0,-1}=\tfrac{1}{576}\{52f_{0,0}+598f_{0,-1}-26f_{0,1}-2(f_{1,0}+f_{-1,0})+f_{1,-1}+f_{-1,-1}-23(f_{-1,1}+f_{1,1})\} \quad \ldots\ldots(\theta'),$$

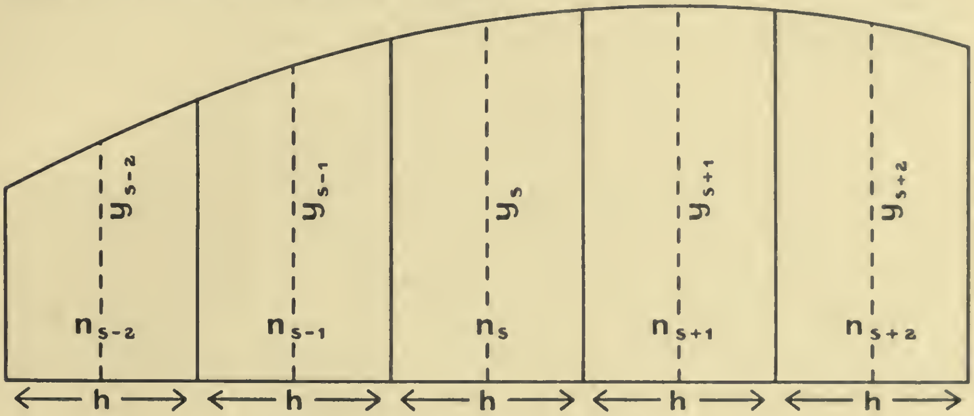
$$z_{-1,0}=\tfrac{1}{576}\{52f_{0,0}+598f_{-1,0}-26f_{1,0}-2(f_{0,-1}+f_{0,1})+f_{-1,1}+f_{-1,-1}-23(f_{1,-1}+f_{1,1})\} \quad \ldots\ldots(\iota').$$

If the base unit of area be $h \times k$, then the right-hand side of these equations must be divided by hk.

The above are useful, but of course only approximative methods of passing from ordinates to volumes or from volumes to ordinates in the case of frequency surfaces.

(ii) *Univariate Frequency.*

Here we use a biquadratic for five consecutive points, and find the constants by equating the areas on five equal subranges h. Let the areas or frequencies be n_{s-2}, n_{s-1}, n_s, n_{s+1}, n_{s+2} and the mid-ordinates be y_{s-2}, y_{s-1}, y_s, y_{s+1}, y_{s+2}. They are represented in the accompanying diagram.



Ordinates and Areas.

If we take the biquadratic to have its origin at the midpoint of n_s, i.e. at the foot of y_s, then if its equation be:

$$y=a+2bx+3cx^2+4dx^3+5ex^4 \quad \ldots\ldots\ldots\ldots\ldots\ldots(2),$$

we have

$$\left.\begin{aligned} a&=y_s, \quad b=\tfrac{1}{24}\{8(y_{s+1}-y_{s-1})-(y_{s+2}-y_{s-2})\}\\ c&=\tfrac{1}{72}\{16(y_{s+1}+y_{s-1})-(y_{s+2}+y_{s-2})-30\}\,y_s\\ d&=\tfrac{1}{48}\{(y_{s+2}-y_{s-2})-2(y_{s+1}-y_{s-1})\}\\ e&=\tfrac{1}{120}\{(y_{s+2}+y_{s-2})-4(y_{s+1}+y_{s-1})+6y_s\}\end{aligned}\right\} \quad \ldots\ldots\ldots\ldots(3).$$

Then by integrating we have, treating h as unity,

$$n_s=\int_{-\frac{1}{2}}^{+\frac{1}{2}} y\,dx = a+\tfrac{1}{4}c+\tfrac{1}{16}e,$$

or, restoring h,

$$n_s = \frac{h}{5760}\{5178y_s + 308(y_{s+1} + y_{s-1}) - 17(y_{s+2} + y_{s-2})\} \quad \text{.........(4)},$$

and similarly by integrating from $\frac{1}{2}$ to $\frac{3}{2}$ and from $\frac{3}{2}$ to $\frac{5}{2}$, we find:

$$\left.\begin{aligned}
n_{s-1} &= \frac{h}{5760}\{223y_{s-2} + 5348y_{s-1} + 138y_s + 68y_{s+1} - 17y_{s+2}\}\\
n_{s+1} &= \frac{h}{5760}\{-17y_{s-2} + 68y_{s-1} + 138y_s + 5348y_{s+1} + 223y_{s+2}\}\\
n_{s-2} &= \frac{h}{5760}\{6463y_{s-2} - 2092y_{s-1} + 2298y_s - 1132y_{s+1} + 223y_{s+2}\}\\
n_{s+2} &= \frac{h}{5760}\{223y_{s-2} - 1132y_{s-1} + 2298y_s - 2092y_{s+1} + 6463y_{s+2}\}
\end{aligned}\right\} \text{...(5)}.$$

It is often better, especially when the curve has a finite terminal ordinate, to use these values rather than to put extreme y's zero in (4), when we are dealing with terminal frequencies*.

Another origin, i.e. at the start of the five frequencies, is often convenient, for example in finding, not the mid-ordinates, but the bounding ordinates. If we take as our biquadratic $y = a + 2bx + 3cx^2 + 4dx^3 + 5ex^4$ as before, then by integrating from 0 to 1, 1 to 2, etc. we find

$$\left.\begin{aligned}
a &= \tfrac{1}{120}(274n_{s-2} - 326n_{s-1} + 274n_s - 126n_{s+1} + 24n_{s+2})\\
b &= -\tfrac{1}{24}(45n_{s-2} - 109n_{s-1} + 105n_s - 51n_{s+1} + 10n_{s+2})\\
c &= \tfrac{1}{24}(17n_{s-2} - 54n_{s-1} + 64n_s - 34n_{s+1} + 7n_{s+2})\\
d &= -\tfrac{1}{24}(3n_{s-2} - 11n_{s-1} + 15n_s - 9n_{s+1} + 2n_{s+2})\\
e &= \tfrac{1}{120}(n_{s-2} - 4n_{s-1} + 6n_s - 4n_{s+1} + n_{s+2})
\end{aligned}\right\} \text{.........(6)}.$$

From this quartic equation, by putting $x = \frac{1}{2}, \frac{3}{2}$, etc., or from the previous equation, by putting $x = 0, 1, 2$, etc., we obtain, on the other hand, the mid-ordinates in terms of areas, or frequencies, as follows:

$$y_s = \frac{1}{1920h}\{9(n_{s-2} + n_{s+2}) - 116(n_{s-1} + n_{s+1}) + 2134n_s\} \text{...........(7)},$$

$$\left.\begin{aligned}
y_{s-2} &= \frac{1}{1920h}\{1689n_{s-2} + 684n_{s-1} - 746n_s + 364n_{s+1} - 71n_{s+2}\}\\
y_{s-1} &= \frac{1}{1920h}\{-71n_{s-2} + 2044n_{s-1} - 26n_s - 36n_{s+1} + 9n_{s+2}\}\\
y_{s+1} &= \frac{1}{1920h}\{9n_{s-2} - 36n_{s-1} - 26n_s + 2044n_{s+1} - 71n_{s+2}\}\\
y_{s+2} &= \frac{1}{1920h}\{-71n_{s-2} + 364n_{s-1} - 746n_s + 684n_{s+1} + 1689n_{s+2}\}
\end{aligned}\right\} \text{...(8)}.$$

The results in (8) are convenient at the tails, where it is not always desirable to fit the biquadratic to one or more zero frequencies beyond the actual range of frequency.

* See, however, a paper by E. S. Martin in *Biometrika*, Vol. XXIII.

Putting $x=0, 1, 2$, we find for the bounding ordinates of the areas:

$$\left.\begin{aligned}
y_{s-\frac{5}{2}} &= \frac{1}{120h}(274n_{s-2} - 326n_{s-1} + 274n_s - 126n_{s+1} + 24n_{s+2})\\
y_{s-\frac{3}{2}} &= \frac{1}{120h}(24n_{s-2} + 154n_{s-1} - 86n_s + 34n_{s+1} - 6n_{s+2})\\
y_{s-\frac{1}{2}} &= \frac{1}{120h}(-6n_{s-2} + 54n_{s-1} + 94n_s - 26n_{s+1} + 4n_{s+2})\\
y_{s+\frac{1}{2}} &= \frac{1}{120h}(4n_{s-2} - 26n_{s-1} + 94n_s + 54n_{s+1} - 6n_{s+2})\\
y_{s+\frac{3}{2}} &= \frac{1}{120h}(-6n_{s-2} + 34n_{s-1} - 86n_s + 154n_{s+1} + 24n_{s+2})\\
y_{s+\frac{5}{2}} &= \frac{1}{120h}(24n_{s-2} - 126n_{s-1} + 274n_s - 326n_{s+1} + 274n_{s+2})
\end{aligned}\right\}\ldots\ldots(9).$$

In a precisely similar manner and to the like degree of approximation (i.e. vanishing of fifth differences) the differential coefficients of the y's or again their differences can be found in terms of the sub-frequencies.

Formulae (2) or (6) may also be occasionally of service for readjusting the frequency on subranges; for example, to half-subranges, etc. More ample formulae are given in an Appendix to this Introduction.

(2) *On Methods of Interpolation into Tables of Double Argument.*

We will use z for the tabled function, h and k for the arguments. $\theta\,(=1-\phi)$ will represent the proportion of the unit of the argument h, and $\chi\,(=1-\psi)$ will represent the proportion of the unit of the argument k, and $z_{\theta,\chi}$ the value of the function z, at the point of the table defined by θ, χ. The units of the arguments of h and k may be anything whatever, they are only represented as equal in the following diagrams for convenience. Of course θ and χ must be computed having regard to the absolute size of the units.

Fig. 1 represents the general case, when we need to interpolate into the body of a table.

Here, if the central differences are *not* tabled, we find them at once from the formulae, where r refers to the h, s to the k axis:

$$\left.\begin{aligned}
\delta^2 z_{r,s} &= z_{r+1,s} + z_{r-1,s} - 2z_{r,s}\\
\delta'^2 z_{r,s} &= z_{r,s+1} + z_{r,s-1} - 2z_{r,s}
\end{aligned}\right\}\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(\text{i}),$$

$$\left.\begin{aligned}
\delta^4 z_{r,s} &= \delta^2 z_{r+1,s} + \delta^2 z_{r-1,s} - 2\delta^2 z_{r,s}\\
\delta'^4 z_{r,s} &= \delta^2 z_{r,s+1} + \delta'^2 z_{r,s-1} - 2\delta' z_{r,s}
\end{aligned}\right\}\ldots\ldots\ldots\ldots\ldots\ldots\ldots(\text{ii}),$$

where δ^2 refers to differences with regard to h, and δ'^2 with regard to k.

For most practical statistical purposes, it is adequate to use central difference formulae which proceed only to δ^2 and δ'^2, i.e. formulae correct up to and including third differences*. Very often it is not needful to proceed even to δ^2 and δ'^2, and

* For fuller treatment see *Tracts for Computers*, No. III. Cambridge University Press.

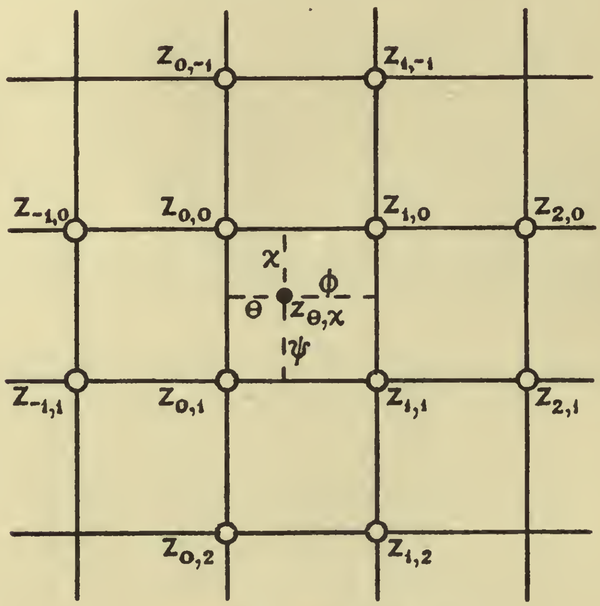
we are content with the terms in the z's alone. The chief formulae required for the body of a table, i.e. when we are not interpolating on its boundaries, are

(α) $z_{\theta,\chi} = \phi\psi z_{0,0} + \phi\chi z_{0,1} + \theta\psi z_{1,0} + \theta\chi z_{1,1}$.

We term this the *Hyperbolic Interpolating Formula.*

$$(\beta) \quad z_{\theta,\chi} = \phi\psi z_{0,0} + \phi\chi z_{0,1} + \theta\psi z_{1,0} + \theta\chi z_{1,1}$$
$$- \tfrac{1}{6}\theta\phi\{(1+\phi)(\psi\delta^2 z_{0,0} + \chi\delta^2 z_{0,1}) + (1+\theta)(\psi\delta^2 z_{1,0} + \chi\delta^2 z_{1,1})\}$$
$$- \tfrac{1}{6}\chi\psi\{(1+\psi)(\phi\delta'^2 z_{0,0} + \theta\delta'^2 z_{1,0}) + (1+\chi)(\phi\delta'^2 z_{0,1} + \theta\delta'^2 z_{1,1})\}.$$

This is the *Midpanel Central Difference Formula.*



FORMULAE (α) & (β)
ORDINARY NON-FINIAL PANEL
(NEITHER h NOR k LIMITED)

Fig. 1.

The diagram above indicates what entries in the table of double argument it is needful to extract, and formulae (i) and (ii) provide the requisite δ_s^2 and δ'^2_s. The reader should convince himself by a use of (β), that the additional terms beyond (α) are or are not requisite for the purposes he has in hand.

But the formula (β) cannot be used if with regard to either h or k we require a value on the boundary of our table, for then we cannot determine one or more of the values of δ^2 and δ'^2. To meet these cases we require three additional formulae according as our k falls into the space between the first and second arguments for k recorded in our table, as our h falls between the first and second values of h entered in the table, or as both h and k do this at the same time.

The three corresponding formulae will be spoken of as

(γ) *The Midpanel Central Difference singly Finial Formula for k limited,*

(γ *bis*) *The Midpanel Central Difference singly Finial Formula for h limited,*

and (δ) *The Midpanel Central Difference doubly Finial Formula for h and k both limited.*

(γ *bis*) can of course be found from (γ) by a proper interchange of subscripts, but for the convenience of the user both formulae are given here.

Our diagrams and formulae are suited to the upper and left-hand boundaries of the table, but if the required z lie in a finial compartment at the bottom or right-hand side of the table, it is only needful to write the required z's down in reverse order from bottom upwards, or from right to left as the case demands.

The following Figures 2—4 illustrate the three formulae, and the entries which it is needful to extract from the table.

(γ) *Midpanel Central Difference singly Finial Formula for k limited.*

$$\begin{aligned} z_{\theta,\chi} &= \phi\psi z_{0,0} + \phi\chi z_{0,1} + \theta\psi z_{1,0} + \theta\chi z_{1,1} \\ &\quad - \tfrac{1}{6}\theta\phi\,\{(1+\phi)(\psi\delta^2 z_{0,0} + \chi\delta^2 z_{0,1}) + (1+\theta)(\psi\delta^2 z_{1,0} + \chi\delta^2 z_{1,1})\} \\ &\quad - \tfrac{1}{6}\chi\psi\,\{(4+\psi)(\phi\delta'^2 z_{0,1} + \theta\delta'^2 z_{1,1}) - (1+\psi)(\phi\delta'^2 z_{0,2} + \theta\delta'^2 z_{1,2})\}. \end{aligned}$$

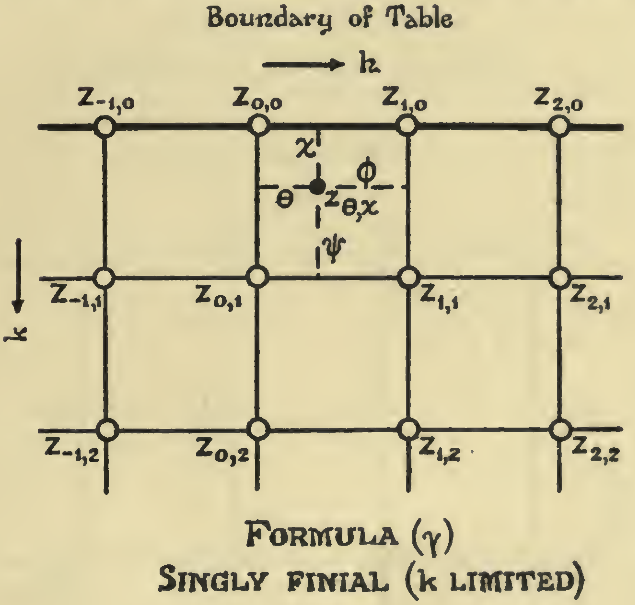
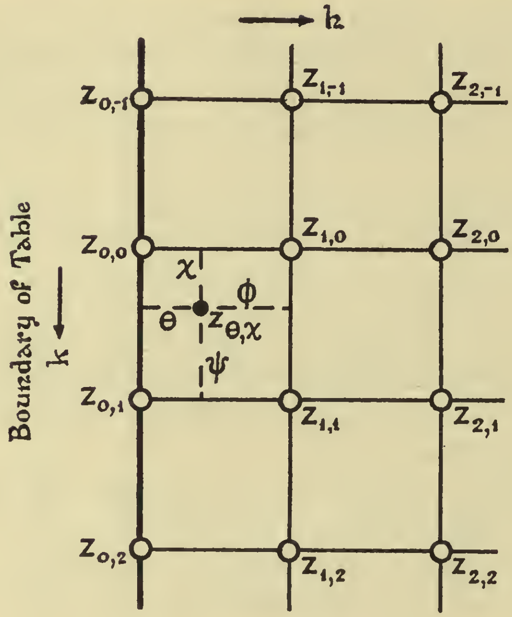


Fig. 2.

(γ *bis*) *Midpanel Central Difference singly Finial Formula for h limited.*

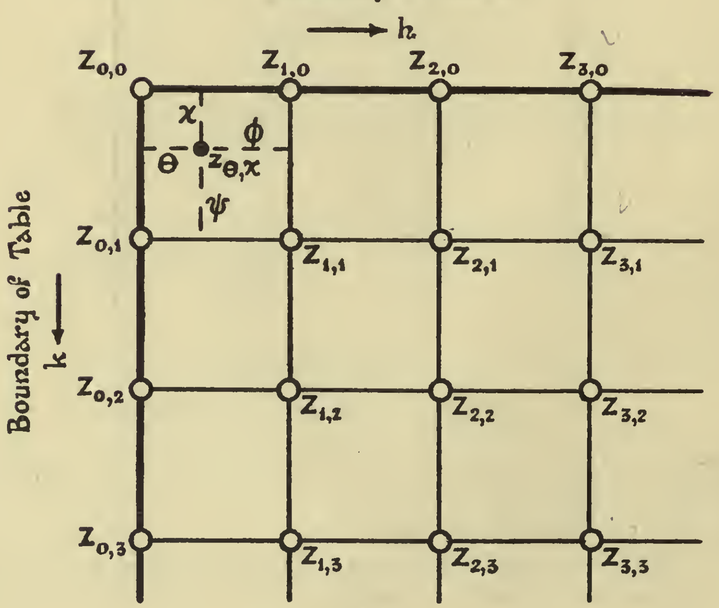
$$\begin{aligned} z_{\theta,\chi} &= \phi\psi z_{0,0} + \phi\chi z_{0,1} + \theta\psi z_{1,0} + \theta\chi z_{1,1} \\ &\quad - \tfrac{1}{6}\theta\phi\,\{(4+\phi)(\psi\delta^2 z_{1,0} + \chi\delta^2 z_{1,1}) - (1+\phi)(\psi\delta^2 z_{2,0} + \chi\delta^2 z_{2,1})\} \\ &\quad - \tfrac{1}{6}\chi\psi\,\{(1+\psi)(\phi\delta'^2 z_{0,0} + \theta\delta'^2 z_{1,0}) + (1+\chi)(\phi\delta'^2 z_{0,1} + \theta\delta'^2 z_{1,1})\}. \end{aligned}$$



FORMULA (γ) *bis*

SINGLY FINIAL (h LIMITED)

Fig. 3.



FORMULA (δ)

DOUBLY FINIAL PANEL (h AND k LIMITED)

Fig. 4.

(δ) *Midpanel Central Difference doubly Finial Formula* (*h and k both limited*).

$$z_{\theta,\chi} = \phi\psi z_{0,0} + \phi\chi z_{0,1} + \theta\psi z_{1,0} + \theta\chi z_{1,1}$$
$$- \tfrac{1}{6}\theta\phi\,\{(4+\phi)(\psi\delta^2 z_{1,0} + \chi\delta^2 z_{1,1}) - (1+\phi)(\psi\delta^2 z_{2,0} + \chi\delta^2 z_{2,1})\}$$
$$- \tfrac{1}{6}\chi\psi\,\{(4+\psi)(\phi\delta'^2 z_{0,1} + \theta\delta'^2 z_{1,1}) - (1+\psi)(\phi\delta'^2 z_{0,2} + \theta\delta'^2 z_{1,2})\}.$$

These formulae will be found amply illustrated later in the present volume, and it seems unnecessary to do more than cite them here.

Table I.

Ordinates of Normal Curve to five figures for each Permille of Frequency. (*Biometrika*, Vol. XIII. pp. 426—428.)

This table is an abbreviated form of that to 10 figures given as Table II in this Part II. It is supplementary to Table I of Part I, which provides the abscissae of the normal curve, while this provides the ordinates to each permille of frequency. These tables to five figures are adequate for many statistical purposes, and are particularly useful for representing frequency distributions on a normal scale, when they are given in broad categories, and for plotting a graph in the case of bivariate tables. The second variate may be given either quantitatively, or as the first by broad categories. There is no assumption or approximation made when we plot variates on a normal scale. It is, however, another question whether a regression curve obtained by such plotting will or will not be a straight line. Of course the real assumption comes in when we treat the array of y's for a broad category of x as itself a normal distribution in y. Assuming *first* that the whole distribution is normal, the array of y's corresponding to a given broad category of x, ranging from x_1 to x_2, will be given by

$$\int_{x_1}^{x_2} \frac{1}{2\pi\sigma_x\sigma_y\sqrt{1-r^2}}\, e^{-\frac{1}{2}\frac{1}{1-r^2}\left(\frac{x^2}{\sigma_x^2} - \frac{2rxy}{\sigma_x\sigma_y} + \frac{y^2}{\sigma_y^2}\right)} dx$$

in the usual notation.

This may be written

$$\int_{x_1}^{x_2} \frac{N}{\sqrt{2\pi}\,\sigma_x}\, e^{-\frac{1}{2}\frac{x^2}{\sigma_x^2}} \times \frac{1}{\sqrt{2\pi}\,\sigma_y\sqrt{1-r^2}}\, e^{-\frac{1}{2}\frac{1}{(1-r^2)\sigma_y^2}\left(y - \frac{\sigma_y}{\sigma_x}rx\right)^2} dx.$$

If we treat x as *constant* in the term $y - \dfrac{\sigma_y}{\sigma_x}rx$ of the second exponential, we can integrate out and there results, if n_x be the total frequency in the category and $\tilde{x}$ the constant value given to x,

$$n_x \times \frac{1}{\sqrt{2\pi}\,\sigma_y\sqrt{1-r^2}}\, e^{-\frac{1}{2}\frac{1}{(1-r^2)\sigma_y^2}\left(y - \frac{\sigma_y}{\sigma_x}r\tilde{x}\right)^2} \quad \text{................(i)},$$

a normal distribution in y, with standard deviation that of the indefinitely small arrays, i.e. $\sigma_y\sqrt{1-r^2}$. We are not compelled to give any value to $\tilde{x}$, although it would be reasonable to take it equal to the mean x of the array, i.e.

$$\sigma_x \frac{z_1 - z_2}{n_x/N}.$$

We simply treat the array of y's as a normal curve, find with a tripartite division the mean of the array of y's in terms of its own standard deviation, and afterwards in terms of the marginal standard deviation. We can later compare the mean thus found with the true mean as deduced by the formula

$$\frac{\tilde{y}_x - \bar{y}}{\sigma_y} = r \cdot \frac{z_1 - z_2}{n_x/N}$$

which would be the y-point at

$$x/\sigma_x = \frac{z_1 - z_2}{n_x/N} \quad \text{(ii)}$$

on a theoretical regression straight line.

Illustration (i). Find the boundaries and means of the following system of broad health categories for yearling babies, on the assumption that health follows a normal frequency distribution*.

Health of Yearling Male Babies.

		Frequency	Permille	Differences
I.	Very satisfactory	54	·038	·038
II.	Satisfactory ...	326	·265	·227
III.	Normal... ...	508	·618	·353
IV.	Indifferent ...	129	·708	·090
V.	Unsatisfactory...	198	·846	·138
VI.	Dead	221	1·000	·154
	Total ...	1436		

The permilles are obtained by a continuous process with the reciprocal of 1436 on the machine. The differences are obtained from the permilles by subtraction, and only differ in one case, that of the Normal Health, which if found directly from the frequency would be ·354, and this is of no importance for our present purposes.

Table I, Part I, and the present table provide at once:

	Abscissa	Ordinate	Difference of Ordinates	Centroid
	$+\infty$	0		
I	....	....	$+$·08265	$+$2·1750
	$+$1·7744	·08265		
II	....	....	$+$·24489	$+$1·0788
	$+$0·6280	·32754		
III	....	....	$+$·05382	$+$ ·1525
	$+$0·3002	·38136		
IV	....	....	$-$·03795	$-$ ·4217
	$-$0·5476	·34341		
V	....	....	$-$·10614	$-$ ·7691
	$-$1·0194	·23727		
VI	....	....	$-$·23727	$-$1·5407
	$-\infty$	0		

The whole work is very simple as there is no interpolation necessary.

* The continuous variate may be looked upon as physiological fitness for environment.

Illustration (ii). We may now illustrate the work of finding the correlation ratio and the correlation coefficient from a table with broad categories both ways. We take as an example the relation between health of a male baby at a year and the health reported on the visit made a day or two after its birth. The data* are as follows:

Health of Male Baby at a Year.

Health at First Visit	1 Satisfactory	2 Normal	3 Indifferent	4 Unsatisfactory	Totals
Very good	25	22	7	5	59
Normal...	154	202	45	60	461
Fair ...	35	57	31	52	175
Totals	214	281	83	117	695

The method we shall employ, that of "Triserial η", is discussed in *Biometrika*, Vol. VII. pp. 248—257.

We suppose that the group of babies with normal health at first visit occupies a strip of length h on the health scale. We further assume all the vertical arrays, including the marginal total, to be approximately normal distributions with standard deviations σ_1, σ_2, σ_3, σ_4 and for the marginal total σ_x. The positions of the means of these arrays and of the marginal total may be determined either from the boundary between "Very Good" and "Normal," or from the boundary of the other end of h, i.e. between "Normal" and "Fair." For the four arrays and the marginal total these will be denoted by $\bar{x}_1$, $\bar{x}_2$, $\bar{x}_3$, $\bar{x}_4$ and $\bar{x}$, and by $\bar{x}_1'$, $\bar{x}_2'$, $\bar{x}_3'$, $\bar{x}_4'$ and $\bar{x}'$ respectively. Then, working for areas only to three decimal places, it is easy to find $\bar{x}_s/\sigma_s$ and $\bar{x}_s'/\sigma_s$ from Table I, Part I of the present work. Thus for the first array: $25/214 = \cdot 1168 = \cdot 117$, say, and accordingly from that table the deviate $\bar{x}_1$ is given by $\bar{x}_1/\sigma_1 = 1\cdot 1901$. Similarly $35/214 = \cdot 1636 = \cdot 164$, say, and $\bar{x}_1'/\sigma_1 = \cdot 9782$. Greater accuracy can be obtained by retaining the fourth figure in $\frac{1}{2}(1-\alpha_1)$ and interpolating into Table I of Part I, but the above approximation will usually be adequate.

Now $(\bar{x}_s + \bar{x}_s')/\sigma_s = h/\sigma_s$; we are thus able to determine σ_s in terms of h. But the marginal total in like manner gives us σ_x in terms of h. We are thus able to obtain σ_s in terms of σ_x and accordingly each $\bar{x}_s$ and $\bar{x}_s'$ in terms of σ_x. We find:

(*a*)	(*b*)	(*c*)	(*d*)	(*e*) $= a \times d$	(*f*) $= b \times d$
$\bar{x}_1/\sigma_1 = 1\cdot 1901$	$\bar{x}_1'/\sigma_1 = \cdot 9782$	$h/\sigma_1 = 2\cdot 1683$	$\sigma_1/\sigma_x = \cdot 9410$	$\bar{x}_1/\sigma_x = 1\cdot 1199$	$\bar{x}_1'/\sigma_x = \cdot 9205$
$\bar{x}_2/\sigma_2 = 1\cdot 4187$	$\bar{x}_2'/\sigma_2 = \cdot 8310$	$h/\sigma_2 = 2\cdot 2497$	$\sigma_2/\sigma_x = \cdot 9070$	$\bar{x}_2/\sigma_x = 1\cdot 2868$	$\bar{x}_2'/\sigma_x = \cdot 7537$
$\bar{x}_3/\sigma_3 = 1\cdot 3787$	$\bar{x}_3'/\sigma_3 = \cdot 3239$	$h/\sigma_3 = 1\cdot 7026$	$\sigma_3/\sigma_x = 1\cdot 1984$	$\bar{x}_3/\sigma_x = 1\cdot 6522$	$\bar{x}_3'/\sigma_x = \cdot 3882$
$\bar{x}_4/\sigma_4 = 1\cdot 7169$	$\bar{x}_4'/\sigma_4 = \cdot 1408$	$h/\sigma_4 = 1\cdot 8577$	$\sigma_4/\sigma_x = 1\cdot 0983$	$\bar{x}_4/\sigma_x = 1\cdot 8857$	$\bar{x}_4'/\sigma_x = \cdot 1546$
$\bar{x}/\sigma_x = 1\cdot 3722$	$\bar{x}'/\sigma_x = \cdot 6682$	$h/\sigma_x = 2\cdot 0404$	—	—	—

* "Data for a Baby Clinic in a Large Manufacturing Town," *Drapers' Company Research Memoirs*, Cambridge University Press, p. 51, Table LXI.

The last two columns give, in terms of σ_x, the means of the four arrays measured from the upper and lower ends of h, the "normal health" range. This σ_x is the standard deviation in health of baby at first visit.

We now draw the reader's attention to a point which is of some importance. The mean of the whole population as judged from the marginal total in health at first visit $= \bar{x}/\sigma_x$, but as obtained from the mean of the array means

$$= S\left(\frac{n_s \bar{x}_s}{N}\right);$$

these are respectively $1{\cdot}3722\sigma_x$ and $1{\cdot}3799\sigma_x$, or there is a small difference $\cdot 0077\sigma_x$ arising from the fact that the arrays are not really normal distributions*.

If we adjust for this difference of mean we have by adding and subtracting ·0077:

Means of Arrays in terms of σ_x, adjusted to their Mean.

	(g) (down from top of "Normal" range)	(h) (up from bottom of "Normal" range)	
Satisfactory ...	1·1276	·9128	These are for use in plotting diagram
Normal ...	1·2945	·7460	
Indifferent ...	1·6599	·3805	
Unsatisfactory	1·8934	·1469	

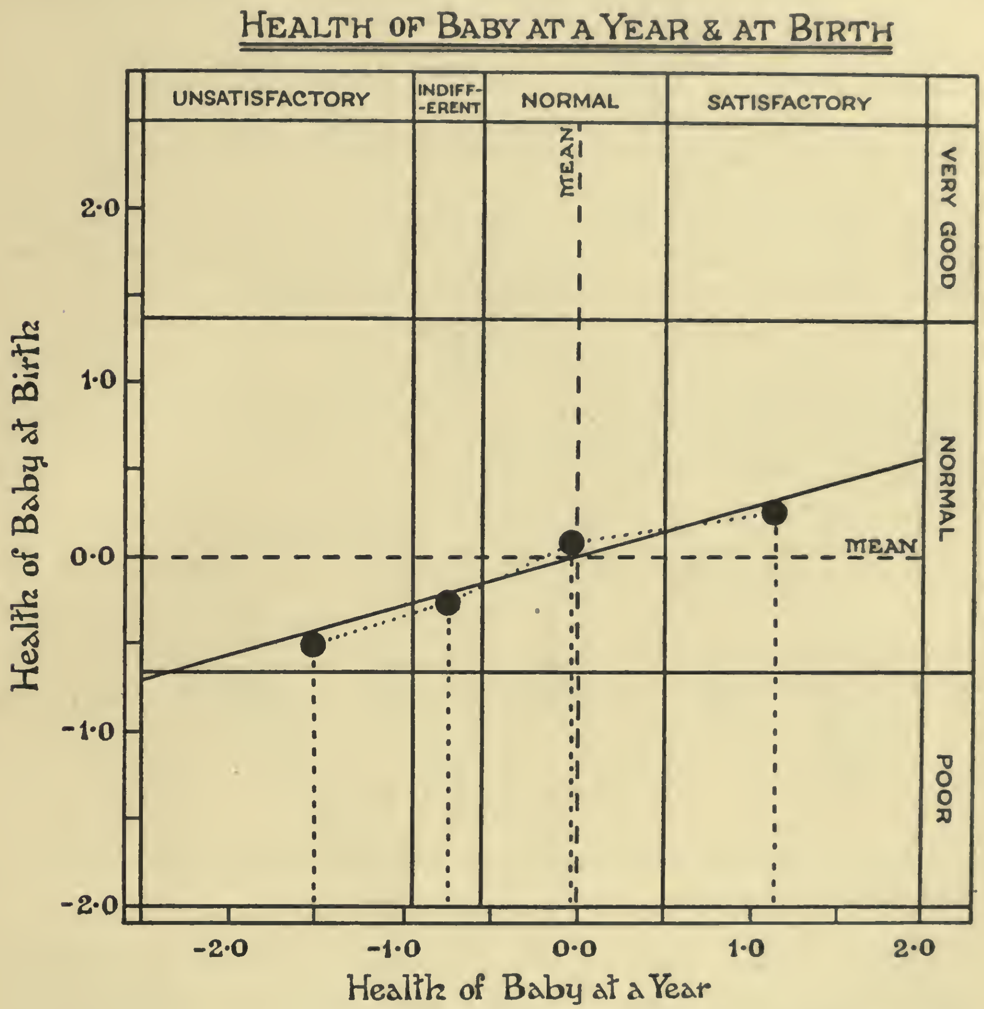
We have now to consider what values are to be given to the y-abscissae of these x-means. The marginal totals for the health of baby at a year (y) are treated as a normal curve and the z's found for the boundary of each partition. We have:

(i) n_s/N	(j) $\frac{1}{2}(1 \pm \alpha_s)$	(k) y/σ_y	(l) z	(m) $z_{s,s+1} - z_{s-1,s}$	(n) $\bar{y}_{s,s+1}/\sigma_y = (m)/(i)$
			$z_{-\infty,1} = 0$		
$n_1/N = {\cdot}308$	$\frac{1}{2}(1-\alpha_1) = {\cdot}308$		$z_{1,2} = {\cdot}35180$	·35180	1·1422
$n_2/N = {\cdot}404$	$\frac{1}{2}(1+\alpha_2) = {\cdot}712$	$y_{1,2}/\sigma_y = {\cdot}5015$	$z_{2,3} = {\cdot}34119$	$-{\cdot}01061$	$-{\cdot}0263$
$n_3/N = {\cdot}119$	$\frac{1}{2}(1+\alpha_3) = {\cdot}831$	$y_{2,3}/\sigma_y = -{\cdot}5592$	$z_{3,4} = {\cdot}25210$	$-{\cdot}08909$	$-{\cdot}7487$
$n_4/N = {\cdot}168$	$\frac{1}{2}(1+\alpha_4) = 1{\cdot}000$	$y_{3,4}/\sigma_y = -{\cdot}9581$	$z_{4,\infty} = 0$	$-{\cdot}25210$	$-1{\cdot}5006$

Column (i) gives the proportional frequency of the four arrays. Column (j), the value of $\frac{1}{2}(1 \pm \alpha_s)$ from which $y_{s,s+1}/\sigma_y$, or the partitional abscissae in terms

* The corresponding quantities measured from the lower end of range h, are $\cdot 6682\sigma_x$ and $\cdot 6606\sigma_x$ giving $-\cdot 0076\sigma_x$ for the difference, agreeing with above as closely as four figures admit.

of σ_y, have been found by Table I of Part I of this book; these form Column (k). Column (l) gives the partitional ordinates as determined from Table I of the present Part II of these tables. Column (m) gives simply the difference of these ordinates, and Column (n) gives in terms of σ_y, the standard deviation of y,



the abscissae of the means of the broad categories of health at a year. They are found by dividing (m) by (i), since

$$\bar{y}_{s,s+1} = \sigma_y \frac{z_{s,s+1} - z_{s-1,s}}{n_s/N}$$

is the abscissa of the mean of the slice of the normal curve between the ordinates at $y_{s,s+1}$ and $y_{s-1,s}$.

We are now in a position to draw our graph, see Diagram (p. xxv), if we determine our divisions between "Very Good" and "Normal" and between "Normal" and "Poor" on the vertical scale. But these are given by $\bar{x}/\sigma_x$ and $\bar{x}'/\sigma_x$ respectively. Usually it will be best to use the adjusted values 1·3799 and − ·6606, but for the actual drawing of the graph, small differences such as ·0077 are of little importance. In order to form the graph we take any two lines, one vertical and the other horizontal, to represent our means; choose any vertical unit to represent σ_x and any horizontal unit to represent σ_y, these may be the same or different to suit convenience. Then all the horizontal partitional lengths are given by (k) in terms of σ_y, and the vertical partitional lengths by $\bar{x}/\sigma_x$ and $\bar{x}'/\sigma_x$*. The abscissae of the array means are provided by (n) and the array means themselves by either (g) or (h), as measured from the upper or lower boundary of h. As to the graph itself, it will make little difference whether we use (e) or (f) with the marginal mean instead of (g) or (h) with their adjusted mean respectively.

We are now in a position to find the regression line, and its slope. We indicate the process below using first (e) and its adjusted mean. We have to remember that all the quantities like $\bar{x}_s/\sigma_x$ in (e) are measured *downwards* from the upper partition of h, the "Normal" range. Hence $\bar{x}_s/\sigma_x - 1{\cdot}3799$ will really be a *positive* quantity, i.e. a quantity measured *upwards*.

(o) (e) − 1·3799 in terms of σ_x	(p) Proportional areas n_s/N†	(q) $\bar{y}_{s,s+1}/\sigma_y$	(r) (o) × (p) × (q)
·2600	·307,914	1·1422	+ ·0914,4184
·0931	·404,317	− ·0263	− ·0009,8998
− ·2723	·119,424	− ·7487	+ ·0243,4709
− ·5058	·168,345	− 1·5006	+ ·1277,7444

$$r' = \text{sum} = \frac{S\{n_s(\bar{x}_s - \bar{x})\,\bar{y}_s\}}{N\sigma_x\sigma_y} = {\cdot}2425{,}7339.$$

Here r' is the uncorrected correlation, and therefore the slope of the best fitting line to the four points is

$$r'\sigma_x/\sigma_y = {\cdot}2426\,\sigma_x/\sigma_y.$$

We can ascertain this as σ_x and σ_y are arbitrary lengths we have chosen, and draw our regression line on the graph. r' is the uncorrected correlation, which has to be adjusted by the class-index correction, i.e. $r = r'/r^2_{y,\,C_y}$; see *Biometrika*, Vol. IX. p. 119.

* Care must be exercised if, as usual, there are more than three vertical broad categories in combining them so as to form three suitable ones only. There must always be contents for each array in the three categories. Should this fail with high correlation in an extreme array, we must select for this array another threefold division giving h' instead of h. Then h' must be reduced to h and ultimately to σ_x, by aid of the x-marginal totals.

† To obtain r' correct to three or four figures, we must take more decimals in (p) than we have in (i).

Now $r^2_{y,\,C_y} = S\left\{\frac{n_s}{N}\left(\frac{\bar{y}_{s,\,s+1}}{\sigma_y}\right)^2\right\}$. We find this as follows:

Array	(s) n_s/N from (p)	(t) $\bar{y}_{s,\,s+1}/\sigma_y$ from (s)*	(u) (t) × (t)	(v) (s) × (u)
1	·307,914	1·142,345	1·304,952	·401,813
2	·404,317	− ·026,442	·000,699	·000,283
3	·119,424	− ·750,226	·562,839	·067,216
4	·168,345	− 1·493,706	2·231,158	·375,604
				$r^2_{y,\,C_y}$ = sum = ·844,916

Thus the class-index correlation $r_{y,\,C_y} = {\cdot}9192$.

Corrected correlation $r = r'/r^2_{y,\,C_y} = {\cdot}2871$.

It is known that $$\eta^2 = S\left\{\frac{n_s}{N}\left(\frac{\bar{x}_s}{\sigma_x}\right)^2\right\} - \left(\frac{\bar{x}}{\sigma_x}\right)^2.$$

Now to determine η^2 we may use (*e*) or (*f*) and we shall get two values, $\eta_1'^2$ and $\eta_2'^2$, which will differ as we have used the unadjusted mean of arrays; or we may use the adjusted means which should give results in fair agreement with each other. In the former case we take the mean of η_1' and η_2' to represent η', the value of the correlation ratio before correction for the broad categories of y.

Array	(p) n_s/N	(w) (e) × (e)	(p) × (w)	(x) (f) × (f)	(p) × (x)
1	·307,914	1·254,176	·386,178	·847,320	·260,902
2	·404,317	1·655,854	·669,490	·568,064	·229,678
3	·119,424	2·729,765	·325,999	·150,699	·017,997
4	·168,345	3·555,864	·598,612	·023,901	·004,024
	$\left(\frac{\bar{x}}{\sigma_x}\right)^2 = 1{\cdot}882,933$		$S'(p)\times(w) = 1{\cdot}980,279$	$\left(\frac{\bar{x}'}{\sigma_x}\right)^2 = {\cdot}446,491$	$S'(p)\times(x) = {\cdot}512,601$
	$\eta_1'^2 = {\cdot}097,346$, $\eta_1' = {\cdot}3120$			$\eta_2'^2 = {\cdot}066,110$, $\eta_2' = {\cdot}2571$	

Mean value of η_1' and $\eta_2' = \eta' = {\cdot}2845$.

This must be corrected for broad categories of the y's and we have (see *Biometrika*, Vol. IX. p. 118)

$$\eta_{x.\,y} = \eta'/r_{y,\,C_y} = {\cdot}2845/{\cdot}9192 = {\cdot}3095.$$

We may now proceed in precisely the same way, using, however, the corrected means $\bar{x}/\sigma_x = 1{\cdot}3799$, and $\bar{x}/\sigma_x = {\cdot}6606$, or, subtracting from the sums of $(p)\times(w)$ and $(p)\times(x)$, 1·904,124 and ·436,392 respectively.

* The z's were determined from (*p*) or (*s*) with greater accuracy than in (*u*) and thus (*t*) is more accurate than (*u*).

We find $\eta' = \cdot 2760$ and $\cdot 2761$ respectively, giving $\eta_{x.y} = \eta'/r_{y, C_y} = \cdot 3003$.

This is in good agreement with the previous value for $\eta_{x.y}$, i.e. ·3095.

Comparing the value ·30 for $\eta_{x.y}$ with the value ·29 for r, we see that correlation ratio and correlation coefficient are in sufficient agreement to allow us to suppose that the regression is linear.

N.B. The student must be especially careful to remember that when r' is found from the product of means of arrays × means of broad categories, the corrective factor is $1/r^2_{y, C_y}$, while the corrective factor for $\eta'_{x.y}$ is $1/r_{y, C_y}$. See *Biometrika*, Vol. XI. pp. 118—119, and Vol. IX. p. 316.

TABLE II.

Abscissae, Ordinates and Ratios $z/\frac{1}{2}(1 \pm \alpha)$, $\frac{1}{2}(1 \pm \alpha)/z$ to ten significant figures of the Normal Curve to each Permille of Frequency. (T. Kondo and E. M. Elderton, *Biometrika*, Vol. XXII. pp. 368—375.)

This table differs from Table III of Part I of this work in that the former table gave only abscissae and ordinates to every percentile of frequency, and its range for α was ·00 to ·80, or of $\frac{1}{2}(1 \pm \alpha)$ from ·00 to ·90, or from 1·00 to ·10 respectively. The present table takes permilles for argument and gives ten instead of seven significant figures.

Further, it provides the ratio of area to bounding ordinate and of bounding ordinate to area, and this for the area to either right or left of ordinate.

The table enables us with very great accuracy, if such be required, to reduce any system of univariate frequency to a "normal scale," i.e. to find the abscissae of the dichotomic lines, and the abscissae of the means of the subrange frequencies.

Thus, if $\bar{x}_{s-1, s}$ be the mean of the subrange frequency $n_{s-1, s}$ lying between x_{s-1} and x_s, we have

$$\bar{x}_{s-1, s} = \frac{z_{s-1} - z_s}{\frac{1}{2}(1 - \alpha_{s-1}) - \frac{1}{2}(1 - \alpha_s)},$$

where the unit of all abscissae is the standard deviation of the total frequency.

It will be seen that the table gives directly the mean error $\frac{z_s}{\frac{1}{2}(1 - \alpha_s)}$ of all errors greater than x_s, and the mean error $\frac{z_s}{\frac{1}{2}(1 + \alpha_s)}$ of all errors less than x_s.

The present table can be used for problems like that of Illustration (ii) of p. xxxii, but with much greater ease and greater accuracy. We have only to read off $\frac{z}{\frac{1}{2}(1 - \alpha)}$ for $\frac{1}{2}(1 - \alpha) = \cdot 75$ and $\frac{z}{\frac{1}{2}(1 + \alpha)}$ for $\frac{1}{2}(1 - \alpha) = \cdot 50$ to obtain at once

$$\bar{x}_1 = 1\cdot 2711{,}0629, \quad \bar{x}_2 = \cdot 3246{,}6283.$$

The values of $\frac{\frac{1}{2}(1 - \alpha_s)}{z_s}$ enable us to obtain approximately the sum of terms of a hypergeometrical, including a binomial, series, and approximately also the tail of any frequency curve by Camp's process*. This is discussed under the section of this Introduction devoted to Table III.

One remaining point may be referred to. On account of the cost the table is published without differences. The reader is recommended to use the central difference formula

$$\begin{aligned} u_{s+\theta} = \phi u_s + \theta u_{s+1} &- \tfrac{1}{6}\theta\phi\,\{(1+\phi)\,\delta^2 u_s + (1+\theta)\,\delta^2 u_{s+1}\} \\ &+ \tfrac{1}{120}\theta\phi\,(1+\theta)(1+\phi)\,\{(2+\phi)\,\delta^4 u_s + (2+\theta)\,\delta^4 u_{s+1}\} \\ &- \tfrac{1}{5040}\theta\phi\,(1+\theta)(1+\phi)(2+\theta)(2+\phi)\,\{(3+\phi)\,\delta^6 u_s + (3+\theta)\,\delta^6 u_{s+1}\}, \end{aligned}$$

where $\phi = 1 - \theta$, and

$$\begin{aligned} \delta^2 u_s &= u_{s+1} + u_{s-1} - 2u_s, \\ \delta^4 u_s &= \delta^2 u_{s+1} + \delta^2 u_{s-1} - 2\delta^2 u_s, \\ \delta^6 u_s &= \delta^4 u_{s+1} + \delta^4 u_{s-1} - 2\delta^4 u_s. \end{aligned}$$

It will generally be unnecessary to use δ^4.

The following general statements may be made.

For	Towards		
	Beginning of Table	Middle of Table	End of Table
x	δ^2 is sufficient	δ^2 is sufficient	δ^4 must be used
z	δ^2 is sufficient	δ^2 is sufficient	It may be needful to use δ^4 if correctness to unity in 10th place be required
$\dfrac{\frac{1}{2}(1+\alpha_x)}{z_x}$	δ^2 is sufficient	It may be needful to use δ^4 if correctness to unity in 10th place be required	δ^6 must be used towards end of table†
$\dfrac{\frac{1}{2}(1-\alpha_x)}{z_x}$	δ^2 is sufficient	δ^2 is sufficient	δ^4 should be used
$\dfrac{z_x}{\frac{1}{2}(1+\alpha_x)}$	δ^2 is sufficient	δ^2 is sufficient	δ^4 should be used
$\dfrac{z_x}{\frac{1}{2}(1-\alpha_x)}$	δ^2 is sufficient	δ^2 is sufficient	δ^4 must be used

* *Biometrika*, Vol. XVI. pp. 163—171; Vol. XVII. pp. 61—67.

† It may be better to find $\dfrac{z}{\frac{1}{2}(1+\alpha_x)}$ first, and then its reciprocal in this case.

TABLE III.

Ratio of the Area to Bounding Ordinate for any portion of the Normal Curve, tabled to the Abscissa. (John P. Mills and B. H. Camp, *Biometrika*, Vol. XVIII. pp. 395—400.)

The ratio, $\mathscr{R}_x$, is given by

$$\mathscr{R}_x = \int_x^\infty \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2} dx \Big/ \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2}$$

$$= \frac{\frac{1}{2}(1-\alpha_x)}{z_x}, \text{ in our notation.}$$

This table differs from Table II in that the argument is here the abscissa, there the permille of area. Further, while the ratio is here taken only to five significant figures and there to ten, yet the abscissa is here taken to 10·00 and there only to 3·0*.

The table may be used for a variety of purposes.

(*a*) The *reciprocal* of $\mathscr{R}_x$ gives, when multiplied by the standard deviation, the mean of the tail values. Up to $x = 3·0$ this is more conveniently found from Table II, but from $x = 3·0$ to 10·0 the present table must be used. Not infrequently the mean of the tail values is required when the argument is the area of the tail, $\frac{1}{2}(1-\alpha_x)$. In this case, if $\frac{1}{2}(1-\alpha_x)$ is < ·001, Table II cannot be used. We must then fall back on this table, first, however, finding x by backward interpolation into Table II or Table IV of Part I of this work.

(*b*) Camp† has shown that the area of the extreme tail of most frequency distributions can be expressed approximately in terms of $\mathscr{R}_x$. In this case the value of x (and therefore of $\mathscr{R}_x$) depends on the first and second derivatives at the stump of the tail.

In fitting a normal curve to the tail of any frequency distribution we have two available constants after we have made the ordinates at the stump agree, i.e. the mean and the standard deviation of the normal curve.

Let y_a be the ordinate, y_a', y_a'' the first and the second derivatives at the stump of the frequency distribution, a denoting the abscissa of the stump. The origin of the frequency curve will not be the same as that of the auxiliary normal curve. A, x and σ shall represent the total area, the abscissa at the stump and the standard deviation of this curve. Then, to obtain an approximation to the area of the tail, we take

$$y_x = y_a, \quad y_x' = y_a', \quad y_x'' = y_a'',$$

where y_x is the ordinate of the auxiliary curve at x, the abscissa of the stump.

* Here, as in all cases of normal curve tables, the abscissa is measured in terms of the standard deviation as unit.

† *Biometrika*, Vol. XVI. p. 164 *et seq.*; Vol. XVII. p. 61 *et seq.*

The area of the tail of the normal curve*

$$A_a = A\tfrac{1}{2}(1-\alpha_{x'}) = A\mathscr{R}_{x'} z_{x'},$$

but
$$y_x = \frac{A}{\sigma} z_{x'} = y_a.$$

Hence
$$A_a = y_a \sigma \mathscr{R}_{x'} \quad\text{.................................(i).}$$

It remains to determine the σ and x of the auxiliary curve. Differentiating the normal curve twice we have

$$y_x' = -\frac{x}{\sigma^2} y_x, \text{ and } y_x'' = \left(1 - \frac{x^2}{\sigma^2}\right)\frac{y_x'}{x},$$

or
$$\frac{x}{\sigma} = -\frac{\sigma y_a'}{y_a}, \text{ and } \frac{y_a''}{y_a'}\frac{x}{\sigma} = 1 - \frac{x^2}{\sigma^2}.$$

Hence we deduce
$$\sigma = \frac{y_a}{\sqrt{y_a'^2 - y_a y_a''}} \quad\text{.................................(ii),}$$

and
$$x' = \frac{x}{\sigma} = -\frac{y_a'}{\sqrt{y_a'^2 - y_a y_a''}} \quad\text{..........................(iii).}$$

The latter equation enables us to find x' and so $\mathscr{R}_{x'}$ from the table, the former gives us σ, and then substituting in (i) we have A_a as an approximation to the tail area.

The process must be modified when the frequency curve is replaced by a discrete series such as the binomial or hypergeometrical. We then proceed in a manner to be described later.

Illustration (i). Suppose we require to find the integral of the incomplete Γ-function, i.e.

$$I(a, p) = \int_a^\infty v^{p-1} e^{-v} dv / \Gamma(p),$$

where a is large. Here we have $y = v^{p-1} e^{-v}$.

Hence by differentiating twice (ii) above gives

$$\sigma = \frac{y_a}{\sqrt{y_a'^2 - y_a y_a''}} = \frac{a}{\sqrt{p-1}},$$

and (iii)
$$x' = \frac{x}{\sigma} = \frac{a-(p-1)}{\sqrt{p-1}},$$

and thus by (i)
$$A_a = a^{p-1} e^{-a} \frac{a}{\sqrt{p-1}} \mathscr{R}_{x'}$$
$$= \frac{a^p e^{-a}}{\sqrt{p-1}} \mathscr{R}_{x'},$$

and accordingly
$$I(a, p) = \frac{1}{\Gamma(p)} \frac{a^p e^{-a}}{\sqrt{p-1}} \mathscr{R}_{x'} \quad\text{..........................(iv).}$$

* x' is written for the x/σ of the auxiliary curve.

Suppose $a = 11{\cdot}52$, $p = 7{\cdot}5$, then

$$x' = \frac{11{\cdot}52 - 6{\cdot}5}{\sqrt{6{\cdot}5}} = \frac{5{\cdot}02}{2{\cdot}549{,}510} = 1{\cdot}969{,}006.$$

Hence, by linear interpolation from the table,

$$\mathscr{R}_{x'} = {\cdot}42630.$$

Accordingly from (iv)

$$\log I(a, p) = 7{\cdot}5 \log 11{\cdot}52 + \log {\cdot}4263 - 11{\cdot}52 \log e - \tfrac{1}{2}\log 6{\cdot}5 - \log \Gamma(7{\cdot}5).$$

The value of $\log \Gamma(7{\cdot}5)$, found by aid of Table XXXI of Part I, is $3{\cdot}272{,}1329$, and so we have

$$\log I(a, p) = \bar{2}{\cdot}908{,}9468,$$
$$I(a, p) = {\cdot}0811.$$

Its true value is ·0834, and as found from the normal curve with the same area, mean and standard deviation as $y = x^{6{\cdot}5}e^{-x}$, it is ·0787. We have therefore considerably improved our approximation by taking for the desired area a normal curve fitting better at the tail.

Illustration (ii). Find the mean errors of (a) all errors greater than the probable error, and (b) all errors less than the probable error in the case of a normal distribution of standard deviation σ.

The distance from the mean of the probable error ($\tfrac{1}{2}(1-\alpha) = {\cdot}25$, or $\alpha = {\cdot}50$) is known from Table III of Part I to be ·674,4898. Interpolating into the present table between 67 and 68 we find $\mathscr{R}_x = {\cdot}78672$. Hence, if $\bar{x}_2$ be the mean error of all errors greater than the probable error,

$$\bar{x}_2 = \sigma/\mathscr{R}_x = \sigma/({\cdot}78672)$$
$$= 1{\cdot}271{,}1003\sigma.$$

Let $\bar{x}_1$ be the mean error of all errors less than the probable error, and $\bar{x}_{1+2}$ the mean error of the whole distribution beyond its mean, then

$$\bar{x}_{1+2} = \sigma/1{\cdot}25331 = {\cdot}797{,}8872\sigma$$

by the present table.

But $$\tfrac{1}{2}\bar{x}_{1+2} = \tfrac{1}{4}\bar{x}_1 + \tfrac{1}{4}\bar{x}_2,$$

or $$\bar{x}_1 = 2\bar{x}_{1+2} - \bar{x}_2$$
$$= (1{\cdot}595{,}7744 - 1{\cdot}271{,}1003)\,\sigma$$
$$= {\cdot}324{,}6741\sigma,$$

or, the mean error of all errors greater than the probable error is slightly less than four times* greater than the mean error of all errors less than the probable error.

The exact numbers are

$$\bar{x}_1 = 1{\cdot}271{,}1063\sigma, \quad \bar{x}_2 = {\cdot}324{,}6628\sigma,$$

so that the above values, as we might expect, fail in the fifth decimal place, the table itself being only to that number of places.

* Actually 3·915,0037, the more exact value being 3·915,1587: see p. xxviii above.

By using ten-figure tables such as Table II for $\frac{\frac{1}{2}(1-\alpha)}{z}$ and then comparing the results with Table III the reader will judge the degree of accuracy—often quite sufficient for practical purposes—of the latter table.

Further Applications of Tables II and III. (*Illustrations of Camp's Method.*)

(*c*) To sum the first $t+1$ terms of a binomial $(p+q)^n$, where $p+q=1$.

Let
$$u_t = \frac{n!}{(n-t)!\,t!} p^{n-t} q^t,$$
then, if $S_{t+1} = u_0 + u_1 + \ldots + u_t =$ sum of first $t+1$ terms, find, if $s = n - t$,

$$\left.\begin{array}{l} Q = \dfrac{t}{s+1}\dfrac{p}{q}, \quad R = \sqrt{\dfrac{t}{t-1}\dfrac{s+2}{s+1}}, \\ c_1 = -\dfrac{\log_{10} QR}{\log_{10} e}, \quad \dfrac{1}{\sigma^2} = \dfrac{\log_{10} R^2}{\log_{10} e^*}, \quad x_1 = c_1\sigma \\ \text{Then approximately} \quad S_{t+1} = u_t\left\{\dfrac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}}\sigma + \psi\right\}, \end{array}\right\} \ldots\ldots\ldots\ldots\ldots\text{(v)}.$$

where $\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}}$ is the ratio of tail to ordinate of normal curve with dichotomic ordinate at x_1 from its mean, and

$$\psi = 0\cdot5 + \frac{1}{12}c_1\left\{1 + \frac{3 - x_1^2}{60\sigma^2} + \frac{15 - 10x_1^2 + x_1^4}{2520\sigma^4}\right\} \ldots\ldots\ldots\ldots\ldots\text{(vi)}.$$

Since we are really concerned only with cases in which n and t are relatively large numbers, u_t must be evaluated by logarithmic calculation; we therefore replace $\frac{n!}{(n-t)!\,t!}$ by $\frac{\Gamma(n+1)}{\Gamma(n-t+1)\,\Gamma(t+1)}$, and use E. S. Pearson's Tables of the Γ-function†; for $p^{n-t}q^t$ the ordinary logarithm tables to seven figures are often not sufficiently accurate, and we must use Vega's or Peters' ten-figure tables.

Illustration (iii). To find the sum of the first 261 terms of the binomial $(\frac{1}{3}+\frac{2}{3})^{450}$.

Here
$$p = \tfrac{1}{3}, \quad q = \tfrac{2}{3}, \quad t = 260, \quad s = n - t = 190,$$
$$Q = \frac{260}{191}\frac{1}{2} = \frac{130}{191}, \quad R = \sqrt{\frac{260}{191}\frac{192}{259}},$$
$$\frac{1}{\sigma^2} = 2\log_e R = \frac{\log 260 + \log 192 - \log 191 - \log 259}{\log_{10} e}$$
$$= \frac{\cdot003{,}94145}{\cdot434{,}29448} = \cdot009{,}0755,$$
thus
$$\frac{1}{\sigma} = \cdot095{,}2655, \quad \frac{1}{\sigma^2} = \cdot009{,}0755, \quad \frac{1}{\sigma^4} = \cdot0000{,}8236,$$
$$c_1 = -\frac{\log_{10} QR}{\log_{10} e} = +\frac{\cdot165{,}11929}{\cdot434{,}29448} = \cdot380{,}2012.$$

Thus $x_1 = 3\cdot990{,}964$, $x_1^2 = 15\cdot927{,}794$, and $x_1^4 = 253\cdot694{,}622$.

* $\log_{10} e = \cdot434{,}2944{,}819$, and $1/\log_{10} e = 2\cdot302{,}5850{,}930$.

† *Tracts for Computers*, No. VIII. Cambridge University Press.

We have then:

$$\psi = \cdot 5 + \tfrac{1}{12}\cdot 380{,}2012\,(1 - \cdot 00195{,}5437 + \cdot 00000{,}3576)$$
$$= \cdot 5 + \cdot 031{,}6216 = \cdot 531{,}6216.$$

Again
$$\frac{\frac{1}{2}(1-\alpha_{x_1})^*}{z_{x_1}} = \cdot 2371{,}3534,$$

and therefore
$$S_{t+1} = u_t \left\{\frac{\cdot 2371{,}3534}{\cdot 095{,}2655} + \cdot 531{,}6216\right\}$$
$$= u_t \times 3\cdot 020{,}8264.$$

Now
$$u_t = u_{260} = \frac{450\,!}{190\,!\;260\,!}\left(\frac{1}{3}\right)^{190}\left(\frac{2}{3}\right)^{260}$$
$$= 1\cdot 710072 \times 10^{-5}.$$

Accordingly
$$S_{t+1} = 1\cdot 710072 \times 3\cdot 020{,}8264 \times 10^{-5}$$
$$= 5\cdot 1658 \times 10^{-5}.$$

The true value found by adding the terms, retaining nine decimals, is $5\cdot 1662 \times 10^{-5}$ †.

Illustration (iv). Not infrequently this method of summing $t+1$ terms of a binomial will give good results when we have to evaluate an Incomplete B-function lying outside the range of our tables, where the dichotomic ordinate lies between 1·5 and 3·0 times the standard deviation from the mode.

If
$$B_x(p, q) = \int_0^x x^{p-1}(1-x)^{q-1}dx,$$

and
$$B(p, q) = \int_0^1 x^{p-1}(1-x)^{q-1}dx,$$

then $B_x(p, q)/B(p, q)$ is the Incomplete B-function Ratio and is the probability integral of the Type I curve $y = y_0 x^{p-1}(1-x)^{q-1}$.

Now we know ‡ that

$$\frac{B_x(p, q)}{B(p, q)} = 1 - \text{the sum of the first } p \text{ terms of the binomial } ((1-x)+x)^n \quad \text{(vii)},$$

where
$$n = p + q - 1.$$

But $((1-x)+x)^n = 1$. Hence

$$\frac{B_x(p, q)}{B(p, q)} = ((1-x)+x)^n - \text{the sum of the first } p \text{ terms}$$
$$= \text{the sum of the last } q \text{ terms},$$

or
$$\frac{B_x(p, q)}{B(p, q)} = \text{the sum of the first } q \text{ terms of the binomial } (x+(1-x))^n \ldots \text{(viii)}.$$

* $\frac{1}{2}(1-\alpha_{x_1}) = \cdot 0000{,}3290{,}245$, $z_{x_1} = \cdot 0001{,}3874{,}967$.

† Had we used, as is not infrequently done, a normal curve to fit the whole binomial (for it has the high power of 450), the answer would have been $3\cdot 91 \times 10^{-5}$!

‡ *Biometrika*, Vol. XVI. p. 202.

Whether a better result will be obtained by summing the first p terms of $((1-x)+x)^n$ or the first q terms of $(x+(1-x))^n$ by our present approximate method largely depends on where the mode of the binomial is situated. We must remember that if i be the greatest integer less than $nu-v$, then the mode of the binomial $(u+v)^n$ will be the $(i+1\text{th})$ term, supposing $u+v=1$.

Now consider $\qquad B_{\cdot 12}(21, 81)/B(21, 81)$.

The mode of the curve $y=y_0x^{20}(1-x)^{80}$ is at $\cdot 20$ from the origin, and the standard deviation of the curve is slightly less than $\cdot 04$. Hence if we place our dichotomic ordinate at $x=\cdot 12$ it will be about twice the standard deviation from the mode of the curve, i.e. in a position where Wishart's methods described later on do not provide very good results.

Here $x=\cdot 12$ and $1-x=\cdot 88$. Hence in the binomial $(\cdot 88+\cdot 12)^{101}$, the mode is at the 13th term, and therefore within the sum of $p=21$ terms. On the other hand the mode of the binomial treated as $(\cdot 12+\cdot 88)^{101}$ is at the 89th term from the start and not in the first 81 from the start. We therefore reduce the problem to summing the first 81 terms of the binomial $(\cdot 12+\cdot 88)^{101}$ by an approximative method.

The 81st term is u_t, where $t=80$, and is given by:

$$u_t=\frac{n!}{s!\,t!}(\cdot 12)^s(\cdot 88)^t \qquad (s=n-t)$$

or

$$u_{80}=\frac{101!}{21!\,80!}(\cdot 12)^{21}(\cdot 88)^{80},$$

or $\quad \log u_{80}=\log\Gamma(102)+21\log(\cdot 12)+80\log(\cdot 88)-\log\Gamma(22)-\log\Gamma(81).$

Using E. S. Pearson's Table of the Γ-function and ten-figure logarithms we find

$$u_{80}=\cdot 00429{,}21344.$$

Then by formulae (v) and (vi) we have:

$$Q=\frac{80}{22}\left(\frac{\cdot 12}{\cdot 88}\right)=\frac{60}{121},\quad R=\sqrt{\frac{80}{22}\times\frac{23}{79}}=\sqrt{\frac{920}{869}},$$

$$\log_{10}Q=\bar{1}\cdot 695{,}3658{,}801,\quad \log_{10}R=\cdot 012{,}3840{,}254^5,$$

$$\log_{10}QR=\bar{1}\cdot 707{,}7499{,}055^5,\quad 2c_2=\frac{1}{\sigma^2}=\frac{2\log_{10}R}{\log_{10}e},$$

$$c_1=-\frac{\log_{10}QR}{\log_{10}e}=\cdot 67293{,}07108,\quad \frac{1}{\sigma^2}=\cdot 05703{,}05448,$$

$$x_1=c_1\sigma=2\cdot 8178{,}4168,\qquad \frac{1}{\sigma}=\cdot 23881{,}06882,$$

$$x_1^2=7\cdot 9402{,}3173,\qquad \sigma=4\cdot 1874{,}1727,$$

$$x_1^4=63\cdot 0472{,}7993,\qquad \frac{1}{\sigma^4}=\cdot 00325{,}24830.$$

We are now in a position to find ψ:

$$\frac{3-x_1^2}{60\sigma^2} = -\cdot 00469{,}57351, \quad \frac{15-10x_1^2+x_1^4}{2520\sigma^4} = -\cdot 00000{,}17489,$$

$$\frac{c_1}{12}\left(1+\frac{3-x_1^2}{60\sigma^2}+\frac{15-10x_1^2+x_1^4}{2520\sigma^4}\right) = \cdot 05607{,}75592 \times \cdot 99530{,}25160$$

$$= \cdot 05581{,}41358,$$

and

$$\psi = \cdot 55581{,}41358.$$

Again:

$$\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} = \cdot 3210{,}9583^* \text{ for } x_1 = 2\cdot 8178{,}4167,$$

and since

$$\sigma = 4\cdot 1874{,}1727, \quad \sigma\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} = 1\cdot 3445{,}6222,$$

$$\sigma\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} + \psi = 1\cdot 9003{,}7636,$$

$$S_t = u_t\left(\sigma\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} + \psi\right) = \cdot 0081{,}5667.$$

Thus $1-S_t$, representing the area-ratio from the far terminal of the curve $y=y_0x^{20}(1-x)^{80}$ up to the distance ·08 beyond the mode, $=\cdot 991{,}8433$. The true area-ratio $=\cdot 991{,}8381$, or we have an error of five units in the sixth decimal place.

We shall often be less successful than this, although we obtain results accurate enough for practical purposes. Thus let us take $\int_{\cdot 20}^{\cdot 28} x^{20}(1-x)^{80}\,dx/B(21, 81)$. The ratio $\int_0^{\cdot 20} x^{20}(1-x)^{80}dx/B(21, 81)$ is ·4603,98454. Hence we can solve the problem if we find, not the above integral, but $\int_{\cdot 28}^{1\cdot 00} x^{20}(1-x)^{80}\,dx = \int_{0\cdot 00}^{\cdot 72} x'^{80}(1-x')^{20}dx'$, which gives for the required quantity the first 21 terms of the binomial $(\cdot 72+\cdot 28)^{101}$, thus escaping the mode of the binomial, which is at the 28th or 29th term. We find, since $t=20$:

$$u_t = \frac{101!}{20!\,81!}(\cdot 72)^{81}(\cdot 28)^{20} = \cdot 01629{,}59807,$$

$$c_1 = \cdot 434{,}8180{,}372,$$

$$x_1 = 1\cdot 72668{,}34840, \quad \sigma = 3\cdot 9710{,}4843,$$

$$\psi = \cdot 53623{,}52048,$$

$$\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} = \cdot 4687{,}1524,$$

$$S_{t+1} = \cdot 03907{,}00400,$$

or

$$\int_0^{\cdot 28} x^{20}(1-x)^{80}\,dx/B(21, 81) = \cdot 9609{,}2996.$$

* By interpolation from the ten-figure Table II.

But the area up to the mode is ·4603,9845, hence the required area-ratio

$$\int_{\cdot 20}^{\cdot 28} x^{20}(1-x)^{80}\,dx/B(21, 81) = \cdot 5005{,}3151.$$

The true value is ·5006,4116.

The most difficult area-ratios for the incomplete B-function are those where the dichotomic ordinate lies between 1·5 and 2·0 times the standard deviation from the mode of the curve. In the present case the mode is at ·20 and the standard deviation slightly under ·04. We are accordingly measuring in the difficult region; the principal source of error is that the stump of the tail of our binomial starts too near its maximum ordinate.

In the above illustrations we have endeavoured to show the greatest accuracy that can be obtained by this method, but for a large number of practical purposes Table III will be adequate to provide the ratio $\frac{1}{2}(1-\alpha_{x_1})/z_{x_1}$.

(*d*) Sum of $t+1$ terms from the start of the hypergeometrical series

$$F(\alpha, \beta, \gamma, 1) = 1 + \frac{\alpha\beta}{1!\gamma} + \frac{\alpha(\alpha+1)\beta(\beta+1)}{2!\gamma(\gamma+1)} + \dots \quad \text{............(i).}$$

If the series be finite, or converging, then its sum $= \dfrac{\Gamma(\gamma)\Gamma(\gamma-\alpha-\beta)}{\Gamma(\gamma-\alpha)\Gamma(\gamma-\beta)}$, where Γ denotes the complete Γ-function. Accordingly:

$$\frac{\Gamma(\gamma-\alpha)\Gamma(\gamma-\beta)}{\Gamma(\gamma)\Gamma(\gamma-\alpha-\beta)}\left(1 + \frac{\alpha\beta}{1!\gamma} + \frac{\alpha(\alpha+1)\beta(\beta+1)}{2!\gamma(\gamma+1)} + \dots\right) \quad \text{.........(ii)}$$

is a series the sum of which is unity, and if

$$u_p = \frac{\Gamma(\gamma-\alpha)\Gamma(\gamma-\beta)}{\Gamma(\gamma)\Gamma(\gamma-\alpha-\beta)}\,\frac{\alpha(\alpha+1)\dots(\alpha+p-1)\beta(\beta+1)\dots(\beta+p-1)}{p!\,\gamma(\gamma+1)\dots(\gamma+p-1)} \quad \text{...(iii),}$$

$$S_{t+1} = u_0 + u_1 + u_2 + \dots + u_{t_1} \quad \text{........................(iv)}$$

will be the ratio of the sum of the first $t+1$ terms of $F(\alpha, \beta, \gamma, 1)$ to the total of all the terms, or a "probability integral" of the hypergeometrical series $F(\alpha, \beta, \gamma, 1)$. To find the sum of the first $(t+1)$ terms of (ii) approximately, provided they do *not* include the "mode" of the series, i.e. the maximum term*, we proceed as follows:

Compute

$$\left.\begin{aligned}
Q &= \frac{t(\gamma+t-1)}{(\alpha+t-1)(\beta+t-1)}\\
R &= \sqrt{\frac{t}{t-1}\,\frac{\gamma+t-1}{\gamma+t-2}\,\frac{\alpha+t-2}{\alpha+t-1}\,\frac{\beta+t-2}{\beta+t-1}}\\
c_1 &= -\frac{\log_{10} QR}{\log_{10} e}, \quad \frac{1}{\sigma^2} = \frac{\log_{10} R^2}{\log_{10} e}, \quad \text{whence } \frac{1}{\sigma} \text{ and } \sigma\\
\text{and} \qquad x_1 &= c_1\sigma
\end{aligned}\right\} \text{............(v).}$$

* The maximum term will be obtained by u_p when we give p the least integer value greater than $\dfrac{\alpha\beta-\gamma-1}{1-\alpha-\beta+\gamma}$. If the $t+1$ terms contain the mode, then we sum the remainder and subtract from unity to obtain the desired approximation when the series is finite.

Then $$S_{t+1} = u_t \left\{\sigma \frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} + \psi\right\},$$

where $$\psi = 0{\cdot}5 + \frac{1}{12}\frac{x_1}{\sigma}\left\{1 + \frac{3 - x_1^2}{60\sigma^2} + \frac{15 - 10x_1^2 + x_1^4}{2520\sigma^4}\right\} \text{ .... (vi).}$$

Here $\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}}$ may be obtained from Table II, or if x_1 be *very* large from Schlömilch's formula, i.e.

$$\frac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} = \frac{1}{x_1}\left(1 - \frac{1}{(x_1^2+2)} + \frac{1}{(x_1^2+2)(x_1^2+4)} - \frac{5}{(x_1^2+2)(x_1^2+4)(x_1^2+6)}\right.$$
$$+ \frac{9}{(x_1^2+2)(x_1^2+4)(x_1^2+6)(x_1^2+8)} - \frac{129}{(x_1^2+2)(x_1^2+4)(x_1^2+6)(x_1^2+8)(x_1^2+10)}$$
$$\left.+ \frac{57}{(x_1^2+2)(x_1^2+4)(x_1^2+6)(x_1^2+8)(x_1^2+10)(x_1^2+12)} - \dots\right) \text{ .... (vii).}$$

Table III will suffice for approximate results.

Illustration (v).[1]

A bag contains 360 balls, of which one-third are white and two-thirds black. What is the chance of drawing at least 45 white balls when we extract 90 balls at a single drawing?

If a bag contains n balls, pn white and qn black, the probability when we draw r balls that at least $r-t$ will be white is equal to the first $t+1$ terms of the series

$$\frac{pn(pn-1)\dots(pn-r+1)}{n(n-1)\dots(n-r+1)}$$
$$\times\left(1 + \frac{r}{1!}\frac{nq}{pn-r+1} + \frac{r(r-1)}{r!\,2!}\frac{nq(2q-1)}{(pn-r+1)(pn-r+2)} + \dots\right) \text{ ...... (viii).}$$

But this is a hypergeometrical series for which

$$\alpha = -r, \quad \beta = -nq, \quad \gamma = pn - r + 1, \quad \text{and} \quad n = \gamma - \alpha - \beta - 1.$$

In our special case

$$pn = 120, \quad qn = 240, \quad t = 45, \quad r = 90,$$

and we need the first 46 terms of the series (ii) for

$$\alpha = -90, \quad \beta = -240, \quad \gamma = 31 \text{ .... (ix).}$$

If $$\alpha = -\alpha', \quad \beta = -\beta',$$

the term $$\frac{\alpha(\alpha+1)\dots(\alpha+t-1)\beta(\beta+1)\dots(\beta+t-1)}{\gamma(\gamma+1)\dots(\gamma+t-1)}$$

in u_t becomes $$\frac{\Gamma(\alpha'+1)}{\Gamma(\alpha'-t+1)}\frac{\Gamma(\beta'+1)}{\Gamma(\beta'-t+1)}\frac{\Gamma(\gamma)}{\Gamma(\gamma+t)}$$

or $$u_t = \frac{\Gamma(\alpha'+1)\Gamma(\beta'+1)\Gamma(\gamma+\alpha')\Gamma(\gamma+\beta')}{\Gamma(\alpha'-t+1)\Gamma(\beta'-t+1)\Gamma(\gamma+t)\Gamma(t+1)\Gamma(\gamma+\alpha'+\beta')} \text{ ...... (x).}$$

Or, in our present illustration,

$$u_{45}=\frac{\Gamma(91)\,\Gamma(241)\,\Gamma(121)\,\Gamma(271)}{\Gamma(46)\,\Gamma(196)\,\Gamma(76)\,\Gamma(46)\,\Gamma(361)}.$$

This is most easy to compute by aid of the logarithms of the Γ-functions provided by E. S. Pearson*. We have

$$\begin{array}{rrr}
\log u_{45} = & 138\cdot171{,}935{,}7900 - & 56\cdot077{,}811{,}8611 \\
& 468\cdot609{,}368{,}7056 & 363\cdot413{,}618{,}0802 \\
& 198\cdot825{,}393{,}8472 & 109\cdot394{,}611{,}7241 \\
& 540\cdot823{,}612{,}0668 & 56\cdot077{,}811{,}8611 \\
\hline
& 1346\cdot430{,}310{,}4096 & 765\cdot600{,}228{,}5067 \\
\hline
& & -\,1350\cdot564{,}082{,}0332 \\
& = \bar{5}\cdot866{,}228{,}3764. &
\end{array}$$

Hence $\qquad u_{45}=\cdot00007{,}349002$ ....(xi).

We have now to substitute (ix) in the series of formulae in (v). We find

$$Q=\frac{45\times75}{46\times196}=\frac{3375}{9016},\ \text{ and }\ \log_{10}Q=\bar{1}\cdot57325{,}98742,$$

$$R=\sqrt{\frac{45\times75}{46\times196}\times\frac{47\times197}{44\times74}}=\sqrt{\frac{3375}{9016}\times\frac{9259}{3256}},$$

and $\qquad \log_{10}R=\cdot013{,}5697{,}810\,;\quad \log_e R=\cdot03124{,}55754.$

Hence $\qquad \dfrac{1}{\sigma^2}=\dfrac{\log_{10}R^2}{\log_{10}e}=\dfrac{\cdot02713{,}95621}{\cdot43429{,}44819}=\cdot06249{,}11511,$

or $\qquad \dfrac{1}{\sigma}=\cdot24998{,}23016,\quad \sigma=4\cdot00028{,}31944,$

and what is needful

$$\frac{1}{\sigma^4}=\cdot00390{,}51440,$$

$$\log_e Q=-\frac{\cdot42674{,}01258}{\cdot43429{,}44819}=-\cdot98260{,}54523,$$

$$c_1=-\log_e QR=+\cdot95135{,}98769.$$

Whence we have

$$x_1=c_1\sigma=3\cdot80570{,}89274,\quad x_1{}^2=14\cdot48342{,}04401,\quad x_1{}^4=209\cdot76946{,}76447.$$

We have next to find ψ from the above values

$$\psi=\cdot5+\tfrac{1}{12}\cdot95135{,}98769\,\{1-\cdot01196{,}02027+\cdot00012{,}38725\}$$
$$=\cdot57834{,}16056 \text{ ....(xii).}$$

It now remains to find $\dfrac{\frac{1}{2}(1-\alpha_{x_1})}{z_{x_1}}$ from the normal curve when

$$x_1=3\cdot80570{,}89274.$$

* *Tracts for Computers*, No. VIII. Cambridge University Press. In this particular case of course the logarithms might be cut down at once to seven figures.

We have from third differences in ten-figure tables

$$\tfrac{1}{2}(1-\alpha_{x_1}) = \cdot 00007{,}06993, \quad z_{x_1} = \cdot 00028{,}56770,$$

or

$$\frac{\tfrac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} = \cdot 2474{,}7985,$$

$$\sigma\frac{\tfrac{1}{2}(1-\alpha_{x_1})}{z_{x_1}} = \cdot 9899{,}8948 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(xiii)}.$$

Hence, gathering together our results,

$$S_{t+1} = u_{45}\left(\frac{\tfrac{1}{2}(1-\alpha_{x_1})}{z_{x_1}}\sigma + \psi\right)$$

$$= \cdot 0000{,}734{,}9002 \times 1\cdot 5683{,}3109$$

$$= \cdot 000{,}115{,}257,$$

or the chance of drawing at least 45 white balls from a bag containing 120 white and 240 black at one drawing of 90 balls is only 115 in 1,000,000.

The exact value found by adding up the terms of the hypergeometrical series is 0·000,115,254*, or three out in the ninth decimal place. But even using ten-figure logarithms, and interpolating into ten-figure normal function tables, we cannot be sure of our seventh and eighth decimals in the final result. The agreement found is good, but very likely not as good as it appears.

Table IV.

The Significance or Non-significance of Association as measured by the Correlation Ratio and of Multiple Association as measured by the Multiple Correlation Coefficient. (Table computed by Dr T. L. Woo, *Biometrika*, Vol. XXI. pp. 1—66.)

If we make the following assumptions:

(*a*) Independence of the variates in the sampled population,

(*b*) Indefinitely great size of sampled population, and

(*c*) Normal distribution of all variates,

then the frequency curves of η^2, the square of the correlation ratio of any variate on a second, and of R^2, the square of the multiple correlation coefficient of any variate with the remaining variates, are given by

$$z_1 = \frac{\Gamma(\tfrac{1}{2}(N-1))}{\Gamma(\tfrac{1}{2}(n-1))\,\Gamma(\tfrac{1}{2}(N-n))}(\eta^2)^{\frac{n-3}{2}}(1-\eta^2)^{\frac{N-n-2}{2}}\,[d\eta^2] \quad \ldots\ldots\ldots\text{(i)},$$

and

$$z_2 = \frac{\Gamma(\tfrac{1}{2}(N-1))}{\Gamma(\tfrac{1}{2}n')\,\Gamma(\tfrac{1}{2}(N-n'-1))}(R^2)^{\frac{n'-2}{2}}(1-R^2)^{\frac{N-n'-3}{2}}\,[dR^2] \quad \ldots\ldots\text{(ii)}.$$

These equations give the distributions of η^2 and R^2 on the hypothesis of no association, i.e. that η^2 and R^2 are zero in the parent population.

In (i) N is the size of the sample and n the number of arrays on which η^2 is based.

* See B. H. Camp, *Biometrika*, Vol. XVII. p. 65.

In (ii) N is the size of the sample and n' the number of variates $x_1, x_2, \ldots x_{n'}$, whose multiple correlation with x_0, the $(n'+1)$th variate, has to be tested.

Now it is clear that if we write $n = n' + 1$, (ii) becomes (i). Accordingly any table based on (i) to give properties of η^2, will give corresponding properties of R^2, if we enter it with $n = total$ number of variates involved, i.e. the variate x_0 with its n' multiply correlated variates.

From the above curves we deduce

$$\tilde{\eta}^2 \text{ or } \tilde{R}^2 = \text{Modal value of } \eta^2, \text{ or of } R^2 = \frac{n-3}{N-5} \quad \ldots\ldots\ldots\ldots\ldots\text{(iii)},$$

$$\bar{\eta}^2 \text{ or } \bar{R}^2 = \text{Mean value of } \eta^2, \text{ or of } R^2 = \frac{n-1}{N-1}{}^* \quad \ldots\ldots\ldots\ldots\ldots\text{(iv)},$$

$$\sigma_{\eta^2} = \text{Standard Deviation of } \eta^2 = \frac{1}{\sqrt{N+1}}\sqrt{2\bar{\eta}^2(1-\bar{\eta}^2)} \ldots\ldots\ldots\ldots\text{(v)},$$

$$\sigma_{R^2} = \text{Standard Deviation of } R^2 = \frac{1}{\sqrt{N+1}}\sqrt{2\bar{R}^2(1-\bar{R}^2)} \ldots\ldots\ldots\text{(vi)}.$$

Since $\bar{\eta}^2$ and $\bar{R}^2$ really stand for mean η^2 and mean R^2, or for $(\overline{\eta^2})$ and $(\overline{R^2})$, they must not be confused with the mean η, or $\bar{\eta}$, squared, and the mean R, or $\bar{R}$, squared†.

Now Table IV gives the mean η^2 or R^2, which for simplicity in printing we write $\bar{\eta}^2$ and $\bar{R}^2$, and the value of the corresponding standard deviations, which we will denote by $\sigma_{\bar{\eta}^2}$ and $\sigma_{\bar{R}^2}$.

We now take a quantity λ defined by

$$\lambda = \frac{\text{Observed } \eta^2 - \text{Mean } \eta^2}{\text{Standard Deviation of } \eta^2} = \frac{\eta^2 - \bar{\eta}^2}{\sigma_{\bar{\eta}^2}},$$

or alternatively by
$$\lambda = \frac{R^2 - \bar{R}^2}{\sigma_{\bar{R}^2}},$$

and consider what must be the value of λ, or of

$$\eta^2 = \bar{\eta}^2 + \lambda\sigma_{\bar{\eta}^2},$$
$$R^2 = \bar{R}^2 + \lambda\sigma_{\bar{R}^2},$$

in order that the tail cut off the distribution curves of η^2 or R^2 may be equal to $\frac{1}{100}$th or $\frac{2}{100}$ths of the total frequency. The two values, λ_1 and λ_2, are provided by Woo's table. Thus λ_1 and λ_2 measure the deviations from the mean, $\bar{\eta}^2$ and $\bar{R}^2$, at which the chances of an η^2 or R^2 occurring are respectively less than $P_1 = {\cdot}01$ or $P_2 = {\cdot}02$, supposing no correlation exists. When a value of η^2 (or R^2) gives a value of λ greater than λ_1, then we may reasonably predict the existence of correlation. When η^2 (or R^2) gives a value less than λ_2, then we must remain doubtful as to the existence of any correlation. Had the distribution of η^2 or R^2 been

* If the size of the sample be large, as in all satisfactory work it must be, $\frac{n-1}{N-1} \longrightarrow \frac{n-1}{N}$, the value in use before the publication of the papers of Fisher and Hotelling.

† A brief table indicating the differences between $\bar{\eta}$ and $\sqrt{(\overline{\eta^2})}$ and $(\bar{\eta})^2$ and $(\overline{\eta^2})$ is given in *Biometrika*, Vol. XXI. p. 3.

normal, then $P_1 = \cdot 01$ and $P_2 = \cdot 02$ would correspond to values of $\lambda_1 = 2\cdot 33$ and $\lambda_2 = 2\cdot 05$ or to deviations greater than 3·45 and 3·04 times the probable error. It is not unusual to consider values greater than 2·5 or 3·0 times the probable error as significant and values less than 2·5 as of doubtful significance.

We have no need to consider values of η^2 or R^2, which are less than $\bar{\eta}^2$ or $\bar{R}^2$, i.e. cases in which λ is *negative*, for such values being *less* than the mean values for no correlation cannot indicate significance on the basis of a sample of the given size.

Illustrations. We shall throughout use the observed value of η^2, *uncorrected* for number of arrays. We shall use λ_d to denote the value of λ deduced from the observations.

(i) *Association of Crowding with General Astigmatism.* We require to find $\eta^2_{p.A}$, the square of the correlation ratio of p the number of persons per room in the home on general astigmatism. We have the data for 716 schoolboys divided into eight arrays*, i.e. $N = 716$, $n = 8$.

We have from the data $\eta^2_{p.A} = \cdot 022{,}821$, and from the table

$$\bar{\eta}^2 = \cdot 009{,}790, \quad \sigma_{\bar{\eta}^2} = \cdot 005{,}200.$$

Hence
$$\lambda_d = \frac{\cdot 022{,}821 - \cdot 009{,}790}{\cdot 005{,}200} = 2\cdot 51.$$

$P_2 = \cdot 02$ corresponds to $\lambda_2 = 2\cdot 54$.

Accordingly, by rough extrapolation, we find that about once in 45 or 46 trials such a value of η^2 would occur if there were no association between general astigmatism and overcrowding. It is possible therefore that there may be some relationship, but no great stress can be laid on the result. We need more extended data to be certain of such a slight association.

(N.B. Since we are assuming normality in our distribution of variates, it is immaterial whether we test for $\eta^2_{p.A}$ or $\eta^2_{A.p}$.)

(ii) *Influence of Familial Income on Corneal Astigmatism.* We wish to consider the influence of poverty on corneal astigmatism. Our data† consist of 228 boys arranged in nine arrays.

Thus $N = 228$, $n = 9$, and our table shows us that

$$\bar{\eta}^2 = \cdot 035{,}242, \quad \sigma_{\bar{\eta}^2} = \cdot 017{,}332,$$

while the observations give $\eta^2_{CA.I} = \cdot 139{,}397$.

Thus
$$\lambda_d = \frac{\cdot 139{,}397 - \cdot 035{,}242}{\cdot 017{,}332} = 6\cdot 01.$$

λ_d is so much greater than $\lambda_1 = 2\cdot 96$ that we conclude that the odds are far higher than 99 to 1 against this correlation ratio arising from uncorrelated material. We conclude therefore that corneal astigmatism is influenced by poverty.

* *Annals of Eugenics*, Vol. III. pp. 29 *et seq.* † *Ibid.* p. 46.

(iii) *Mental Capacity and Place in Class.* The data concern 249 boys arranged in four categories of intelligence—Excellent, Good, Moderate, Dull—by teachers' estimate, and by place attained in class*. The observed $\eta^2_{P.I} = \cdot 525{,}045$, and as $N = 249$, $n = 4$, we have from the table

$$\bar{\eta}^2 = \cdot 012{,}097, \quad \sigma_{\bar{\eta}^2} = \cdot 009{,}778.$$

Hence $$\lambda_d = (\cdot 525{,}045 - \cdot 012{,}097)/\cdot 009{,}778 = 52\cdot 5,$$

but since $\lambda_1 = 3\cdot 20$ gives a $P_1 = \cdot 012$, we have no hesitation in asserting the significance of the relationship, which will connote a correlation greater than ·70.

(iv) *School Examination Marks and Intelligence Test Marks.* Dr Isserlis gives a table for the correlation of the above variates for 50 girls†.

Here there are $n = 5$ arrays and $N = 50$. The data give

$$\eta^2_{TM.EM} = \cdot 164{,}761.$$

We find $$\bar{\eta}^2 = \cdot 081{,}633 \text{ and } \sigma_{\bar{\eta}^2} = \cdot 054{,}221$$

from equations (iii) and (v). Thus we have

$$\lambda_d = (\cdot 164{,}761 - \cdot 081{,}633)/\cdot 054{,}221 = 1\cdot 53.$$

Now our table only starts at $N = 51$, but the constancy of λ_2 and P_2 shows us that for $\lambda_2 = 2\cdot 68$, P_2 will be ·019, also for $N = 51$ as for $N = 50$. Thus, since λ_d is far below λ_2, we can be quite sure that the numbers are inadequate for the purpose of ascertaining any correlation, should it exist.

(v) *Distance of Nearpoint and Colour of Iris.* The data‡ were obtained from 770 boys in seven categories of iris colour determined by Martin's scale.

For $n = 7$ and $N = 770$, our table provides

$$\bar{\eta}^2 = \cdot 007{,}802 \text{ and } \sigma_{\bar{\eta}^2} = \cdot 004{,}481,$$

and the data lead to $\eta^2_{NP.CI} = \cdot 021{,}727$.

Thus $$\lambda_d = (\cdot 021{,}727 - \cdot 007{,}802)/\cdot 004{,}481 = 3\cdot 11.$$

Here $P_1 = \cdot 010$ for $\lambda_1 = 3\cdot 08$, $P_2 = \cdot 021$ for $\lambda_2 = 2\cdot 58$, and accordingly λ_d will give a value of P_1 slightly less than ·010, say ·009, or the odds will be about 110 to 1 against such a value of η^2 arising, if there be no association between iris colour and distance of nearpoint. It is reasonable therefore to assume that there exists an association of the order of ·15 between the colour of the iris and the distance of the nearpoint.

(vi) *Rainfall in relation to Longitude, Latitude and Altitude.* The data refer to 57 recording stations in Hertfordshire, and Fisher‡ found the multiple correlation of rainfall on longitude, latitude and altitude to be given by $R^2 = \cdot 4431$.

* *Biometrika*, Vol. VIII. p. 544.

† "The Relation between Home Conditions and the Intelligence of School Children," *Medical Research Council, Special Report Series* 74.

‡ *Statistical Methods for Research Workers*, pp. 135 and 228.

Here $N=57$, $n'=3$, but as there are *four* variates, we enter the Table with $n=4$, and find:

$$\bar{R}^2 = \cdot 0536, \quad \sigma_{\bar{R}^2} = \cdot 0418, \quad \text{and } \lambda_d = (\cdot 4431 - \cdot 0536)/\cdot 0418 = 9\cdot 32.$$

This is almost three times as great as $\lambda_1 = 3\cdot 20$, which gives $P_1 = \cdot 011$; there is therefore a very significant correlation of an order about ·67 between rainfall and the three variates longitude, latitude and altitude.

Users of the table must bear in mind its limitations. The theory on which it is based depends upon our sampling being made from an indefinitely large *normal* population; the argument is based, in the case of both η^2 and R^2, on the improbability (or probability) of the observed result, *supposing the variates are uncorrelated.* The table tells us the probability of association, but if we conclude that the variates are correlated, it really throws no light on the closeness with which the value deduced from the sample approaches the actual value in the parent population. We do not know at present the distribution of η^2 for a normal surface, when correlation actually exists, and we cannot overlook the point that the chief value of the correlation ratio arises from cases in which we have at least grave doubts as to the nature of the regression being linear, i.e. from cases in which the variates are not normally correlated.

One fact may, however, be borne in mind for the normal case, the standard error of η^2 will be a maximum for the case of no association. In other cases it will be reduced by a factor of the form $1-\eta^2$, or some function of this factor, which vanishes when $\eta^2=1$. Accordingly $\sigma_{\bar{\eta}^2}$ sets a limit to the standard error of η^2, when correlation actually exists, and since twice the standard error gives a reasonable limit to the difference between the η^2 of the parent population and that of the sample, we may obtain from $\sigma_{\bar{\eta}^2}$ some appreciation of the range probable in the sample η^2.

For example, in Illustration (iii) we have $2\sigma_{\bar{\eta}^2} = \cdot 019{,}556$ and $\eta^2_{P.I} = \cdot 525{,}045$; thus we may reasonably expect the η^2 of the parent population to lie between ·505,489 and 544,601, or its correlation ratio between ·71 and ·74.

Again in Illustration (vi), $2\sigma_{\bar{R}^2} = \cdot 0836$ and $R^2 = \cdot 4431$, and we may reasonably expect the R^2 of the parent population to lie between ·3595 and ·5267, or the R of the population between ·60 and ·73, the greater range in this latter case being due to the paucity of observations.

TABLES V—VII. (For use in computing Tetrachoric Functions.)

Table of the First Twenty Tetrachoric Functions to Seven Decimal Places. (Alice Lee, D.Sc., *Biometrika*, Vol. XVII. pp. 343—354.)

Table XXIX of Part I of this work gives the values of the tetrachoric functions $\tau_1, \tau_2, \tau_3, \tau_4, \tau_5$ and τ_6 at intervals of one-thousandth in the argument $\tau_0 = \frac{1}{2}(1-\alpha_h)$. The value of h is also given. The range of τ_0 is from ·001 to ·500, and of h from 3·090 to ·000.

The present table gives the first twenty tetrachoric functions, τ_0 to τ_{19}, tabled, not to the argument $\tau_0 = \frac{1}{2}(1-\alpha_h)$, but to h itself, where h proceeds by intervals of 0·1 and ranges from 0·0 to 4·0. It is, therefore, for many purposes more valuable than the earlier table, but as the argument proceeds by greater intervals, it is necessary to use interpolation formulae of higher order.

The Biometric School defines the sth tetrachoric function $\tau_s(h)$ by the equation

$$\tau_s(h) = \frac{(-1)^{s-1}}{\sqrt{s!}} \frac{d^{s-1}}{dh^{s-1}} \left(\frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}h^2} \right) \quad \text{.....................(i).}$$

In place of the tetrachoric function, the Scandinavians have used the derivatives of

$$\phi(h) = \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}h^2}.$$

This practice suffers from certain disadvantages; it gives no simple nomenclature for the integral

$$\int_h^\infty \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2} dx,$$

which we take as τ_0, or $\frac{1}{2}(1-\alpha_h)$ of Sheppard's notation (see Part I, Tables I—III); and further it leads to much range of variation in the functions themselves, so that the differences may be very considerable at one part and small at another part of the table.

The simple expedient of using (i) as the function causes all the tetrachorics to be numerically less than unity. Lastly, (i) is the form which arises naturally when we are seeking the volume (d) of a bivariate normal surface of total volume N, of standard deviations σ_1, σ_2 and of correlation r, cut off by dichotomic planes at distances $h\sigma_1$ and $k\sigma_2$ perpendicular to the variate axes. For then

$$\frac{d}{N} = \tau_0(h)\,\tau_0(k) + r\tau_1(h)\,\tau_1(k) + r^2\tau_2(h)\,\tau_2(k) + r^s\tau_s(h)\,\tau_s(k) + \dots \quad \text{...(ii).}$$

This equation enables us to find d/N given r, h and k, or to find an equation to determine r when d, h and k are given. The construction of triple entry tables of d/N for r, h, k, now, however, very much simplifies the solution of either problem.

If we wish to get the value of $\tau_s(h)$ correct to the seventh figure, then fourth differences must be used in our interpolation formula; or, if we use central differences, we must take for $\theta\,(=1-\phi)$,

$$\begin{aligned}\tau_s(h+\theta) &= \theta\tau_s(h+0{\cdot}1) + \phi\tau_s(h) \\ &\quad - \frac{\theta\phi}{6}\{(1+\theta)\,\delta^2\tau_s(h+0{\cdot}1) + (1+\phi)\,\delta^2\tau_s(h)\} \\ &\quad + \frac{\theta(1+\theta)\,\phi(1+\phi)}{120}\{(2+\theta)\,\delta^4\tau_s(h+0{\cdot}1) + (2+\phi)\,\delta^4\tau_s(h)\}\end{aligned}$$

.........(iii).

The values of $\delta^2\tau_s(h)$ and $\delta^4\tau_s(h)$ may be found from the fundamental formulae

$$\left.\begin{aligned}\delta^2\tau_s(h) &= \tau_s(h+0\cdot1) + \tau_s(h-0\cdot1) - 2\tau_s(h)\\ \delta^4\tau_s(h) &= \delta^2\tau_s(h+0\cdot1) + \delta^2\tau_s(h-0\cdot1) - 2\delta^2\tau_s(h)\end{aligned}\right\} \quad \ldots\ldots\ldots\ldots(\text{iv}),$$

or they can be ascertained very closely indeed from the formulae

$$\left.\begin{aligned}\delta^2\tau_s &= {}_1\chi_s\tau_{s+2} + {}_2\chi_s\tau_{s+4}\\ \delta^4\tau_s &= {}_3\chi_s\tau_{s+4} + {}_4\chi_s\tau_{s+6}\end{aligned}\right\} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(\text{v}).$$

Here ${}_1\chi_s$, ${}_2\chi_s$, ${}_3\chi_s$ and ${}_4\chi_s$ are given in Table V below.

TABLE V.

Table of the χ-Coefficients.

Order of Tetrachoric Function s	$\delta^2\tau_s$		$\delta^4\tau_s$	
	${}_1\chi_s$	${}_2\chi_s$	${}_3\chi_s$	${}_4\chi_s$
0	·0141,4214	·0000,4082	·0004,8990	·0000,0447
1	·0244,9490	·0000,9129	·0010,9545⁻	·0000,1183
2	·0346,4102	·0001,5811	·0018,9737	·0000,2366
3	·0447,2136	·0002,4152	·0028,9828	·0000,4099
4	·0547,7226	·0003,4157	·0040,9878	·0000,6481
5	·0648,0741	·0004,5826	·0054,9909	·0000,9612
6	·0748,3315⁻	·0005,9161	·0070,9930	·0001,3594
7	·0848,5281	·0007,4162	·0088,9944	·0001,8526
8	·0948,6833	·0009,0830	·0108,9954	·0002,4507
9	·1048,8089	·0010,9163	·0130,9962	·0003,1639
10	·1148,9125⁺	·0012,9164	·0154,9968	·0004,0020
11	·1248,9996	·0015,0831	·0180,9972	·0004,9751
12	·1349,0738	·0017,4165⁻	·0208,9976	·0006,0933
13	·1449,1377	·0019,9165⁻	·0238,9979	·0007,3664
14	·1549,1933	·0022,5832	·0270,9981	·0008,8045⁺
15	·1649,2422	·0025,4165⁺	·0304,9984	·0010,4177

It is convenient to note that

$$\tfrac{1}{120}\theta(1+\theta)\phi(1+\phi) = \tfrac{1}{10}(\tfrac{1}{6}\theta\phi)\{1+3(\tfrac{1}{6}\theta\phi)\}\ldots\ldots\ldots\ldots(\text{vi}),$$

which gives an easy process for finding the coefficient of the δ^4 term from that of the δ^2 term.

We remark that the method of determining δ^2 and δ^4 by (v) will fail, if any one or more of the functions τ_{s+2}, τ_{s+4}, τ_{s+6} lie outside the table. Hence it cannot be used beyond τ_{13} when it is desired to go to fourth differences, or beyond τ_{15} when second differences suffice. It is, however, easy to obtain the values of the tetrachoric functions lying just beyond the borders of the table by aid of the recurrence formula

$$\tau_s(h) = hp_s\tau_{s-1}(h) - q_s\tau_{s-2}(h)\ldots\ldots\ldots\ldots\ldots\ldots(\text{vii}),$$

supposing $s \geqslant 20$.

Table VI below gives the values of p_s and q_s from $s = 2$ to 25.

TABLE VI.

Values of p_s and q_s.

s	p_s	q_s	s	p_s	q_s
2	·707,1067,812	·000,0000,000	14	·267,2612,419	·889,4991,800
3	·577,3502,692	·408,2482,905	15	·258,1988,897	·897,0852,271
4	·500,0000,000	·577,3502,692	16	·250,0000,000	·903,6961,141
5	·447,2135,955⁻	·670,8203,933	17	·242,5356,250	·909,5085,939
6	·408,2482,905⁻	·730,2967,433	18	·235,7022,604	·914,6591,208
7	·377,9644,730	·771,5167,498	19	·229,4157,339	·919,2547,198
8	·353,5533,906	·801,7837,257	20	·223,6067,978	·923,3805,169
9	·333,3333,333	·824,9579,114	21	·218,2178,902	·927,1050,693
10	·316,2277,660	·843,2740,427	22	·213,2007,163	·930,4842,104
11	·301,5113,446	·858,1163,303	23	·208,5144,141	·933,5638,714
12	·288,6751,346	·870,3882,798	24	·204,1241,452	·936,3821,838
13	·277,3500,981	·880,7048,459	25	·200,0000,000	·938,9710,681

N.B. The last figure in q_s may be a unit in doubt, but this will not affect seven-figure accuracy in the τ's.

As an alternative to this method we can apply differences taken from the table itself when s lies between 14 and 19, and h is not greater than 3·7. When s lies between 14 and 19 and h is greater than 3·7, we must use a backward difference formula.

We will now illustrate these cases.

Illustration (i). Find $\tau_{13}(1{\cdot}03467)$.

Here $\theta = {\cdot}3467, \quad \phi = {\cdot}6533,$

$$\tfrac{1}{6}\theta\phi = {\cdot}0377{,}4985, \quad \tfrac{1}{120}\theta(1+\theta)\phi(1+\phi) = {\cdot}0042{,}0250.$$

If the differences be found from the table we proceed as follows, using (iv):

$\tau_{13}(0{\cdot}8) = -{\cdot}042{,}6729,$

$\tau_{13}(0{\cdot}9) = -{\cdot}043{,}0704, \quad \delta^2\tau_{13}(0{\cdot}9) = +{\cdot}005{,}3224,$

$\tau_{13}(1{\cdot}0) = -{\cdot}038{,}1455, \quad \delta^2\tau_{13}(1{\cdot}0) = +{\cdot}004{,}1923, \quad \delta^4\tau_{13}(1{\cdot}0) = -{\cdot}000{,}4818,$

$\tau_{13}(1{\cdot}1) = -{\cdot}029{,}0283, \quad \delta^2\tau_{13}(1{\cdot}1) = +{\cdot}002{,}5804, \quad \delta^4\tau_{13}(1{\cdot}1) = -{\cdot}000{,}1935,$

$\tau_{13}(1{\cdot}2) = -{\cdot}017{,}3307, \quad \delta^2\tau_{13}(1{\cdot}2) = +{\cdot}000{,}7750,$

$\tau_{13}(1{\cdot}3) = -{\cdot}004{,}8581.$

Hence, using formula (iii),

$$\begin{aligned}\tau_{13}(1{\cdot}03467) &= {\cdot}3467\,(-{\cdot}029{,}0283) + {\cdot}6533\,(-{\cdot}038{,}1455)\\ &\quad - {\cdot}0377{,}4985\,\{1{\cdot}3467\,({\cdot}002{,}5804) + 1{\cdot}6533\,({\cdot}004{,}1923)\}\\ &\quad + {\cdot}0042{,}0250\,\{2{\cdot}3467\,(-{\cdot}000{,}1935) + 2{\cdot}6533\,(-{\cdot}000{,}4818)\}\\ &= \left.\begin{array}{r} -{\cdot}0100{,}6411\\ -{\cdot}0249{,}2046\\ -{\cdot}0003{,}9283\\ -{\cdot}0000{,}0728\end{array}\right\} = -{\cdot}0353{,}8468,\end{aligned}$$

or, to seven figures,

$$\tau_{13}(1{\cdot}03467) = -{\cdot}035{,}3847.$$

We should not be correct to the fifth figure had we not used fourth differences.

This is our "First Method," taking second and fourth differences from the table itself.

We will now use our "Second Method" or formula (v). We require to take out of the table

$$\tau_{13}(1{\cdot}0),\quad \tau_{15}(1{\cdot}0),\quad \tau_{17}(1{\cdot}0),\ \text{and}\ \ \tau_{19}(1{\cdot}0),$$

$$\tau_{13}(1{\cdot}1),\quad \tau_{15}(1{\cdot}1),\quad \tau_{17}(1{\cdot}1),\ \text{and}\ \ \tau_{19}(1{\cdot}1),$$

and from the auxiliary Table V (p. xlvi),

$$_1\chi_{13},\quad {}_2\chi_{13},\quad {}_3\chi_{13},\ \text{and}\ \ {}_4\chi_{13}.$$

These are respectively

$$-{\cdot}038{,}1455,\quad +{\cdot}029{,}2108,\quad -{\cdot}020{,}5443,\quad +{\cdot}012{,}5634,$$

$$-{\cdot}029{,}0283,\quad +{\cdot}017{,}9171,\quad -{\cdot}008{,}0852,\quad -{\cdot}000{,}2002,$$

$${\cdot}1449{,}1377,\quad {\cdot}0019{,}9165,\quad {\cdot}0238{,}9979,\quad {\cdot}0007{,}3664.$$

Hence by (v), each by continuous process on the machine,

$$\delta^2\tau_{13}(1{\cdot}0) = {\cdot}0041{,}9213,\qquad \delta^2\tau_{13}(1{\cdot}1) = {\cdot}0025{,}8033,$$

$$\delta^4\tau_{13}(1{\cdot}0) = -{\cdot}0004{,}8175,\quad \delta^4\tau_{13}(1{\cdot}1) = -{\cdot}0001{,}9338.$$

These values are close to those previously found directly from the table itself.

Substituting, we have

$$\begin{aligned}\tau_{13}(1{\cdot}03467) &= {\cdot}3467\,(-{\cdot}029{,}0283) + {\cdot}6533\,(-{\cdot}038{,}1455)\\ &\quad -{\cdot}0377{,}4985\,\{1{\cdot}3467\,({\cdot}0025{,}8033) + 1{\cdot}6533\,({\cdot}0041{,}9213)\}\\ &\quad +{\cdot}0042{,}0250\,\{2{\cdot}3467\,(-{\cdot}0001{,}9338) + 2{\cdot}6533\,(-{\cdot}0004{,}8175)\}\\ &= \left.\begin{array}{r}-{\cdot}0100{,}6411\\ -{\cdot}0249{,}2046\\ -{\cdot}0003{,}9282\\ -{\cdot}0000{,}0728\end{array}\right\} = -{\cdot}0353{,}8467,\end{aligned}$$

which only differs by a unit in the eighth decimal place from the value found by the "First Method."

Illustration (ii). Required $\tau_5(3{\cdot}9746)$. The function lies between $\tau_5(3{\cdot}9)$ and $\tau_6(4{\cdot}0)$, and accordingly, being on the border of the table, we cannot take out of it the values $\tau_5(4{\cdot}1)$ and $\tau_5(4{\cdot}2)$ needful to find δ^2 and δ^4 from the table; we must use formula (v) or else we must use a backward difference formula like

$$z_{n-\theta} = z_n + \theta\Delta z_n + \tfrac{1}{2}\theta(\theta-1)\,\Delta^2 z_n + \tfrac{1}{6}\theta(\theta-1)(\theta-2)\,\Delta^3 z_n$$
$$+\tfrac{1}{24}\theta(\theta-1)(\theta-2)(\theta-3)\,\Delta^4 z_n + \text{etc.}\ \ldots\text{(viii)},$$

where $$\Delta z_n = z_{n-1} - z_n,\ \text{etc.}$$

It is, however, shorter to use (v) to calculate the differences. We have

$$\tau_5(3{\cdot}9) = +{\cdot}002{,}5948,\quad \tau_7(3{\cdot}9) = +{\cdot}002{,}0092,\quad \tau_9(3{\cdot}9) = -{\cdot}000{,}8923,$$
$$\tau_{11}(3{\cdot}9) = -{\cdot}001{,}1120,$$
$$\tau_5(4{\cdot}0) = +{\cdot}001{,}9914,\quad \tau_7(4{\cdot}0) = +{\cdot}001{,}8116,\quad \tau_9(4{\cdot}0) = -{\cdot}000{,}4459,$$
$$\tau_{11}(4{\cdot}0) = -{\cdot}001{,}0974,$$
$${}_1\chi_5 = {\cdot}0648{,}0741,\quad {}_2\chi_5 = {\cdot}0004{,}5826,\quad {}_3\chi_5 = {\cdot}0054{,}9909,\quad {}_4\chi_5 = {\cdot}0000{,}9612\,;$$

whence
$$\delta^2\tau_5(3{\cdot}9) = {\cdot}0001{,}2980,\qquad \delta^2\tau_5(4{\cdot}0) = {\cdot}0001{,}1720,$$
$$\delta^4\tau_5(3{\cdot}9) = -{\cdot}0000{,}0501,\quad \delta^4\tau_5(4{\cdot}0) = -{\cdot}0000{,}0256.$$

But
$$\theta = {\cdot}746,\quad \phi = {\cdot}254,\quad \tfrac{1}{6}\theta\phi = {\cdot}0315{,}8067,\quad \tfrac{1}{120}\theta(1+\theta)\phi(1+\phi) = {\cdot}0034{,}5727.$$

Thus
$$\begin{aligned}\tau_5(3{\cdot}9746) &= {\cdot}746\,({\cdot}001{,}9914) + {\cdot}254\,({\cdot}002{,}5948)\\ &\quad - {\cdot}0315{,}8067\,\{1{\cdot}746\,({\cdot}0001{,}1720) + 1{\cdot}254\,({\cdot}0001{,}2980)\}\\ &\quad + {\cdot}0034{,}5727\,\{2{\cdot}746\,(-{\cdot}0000{,}0256) + 2{\cdot}254\,(-{\cdot}0000{,}0501)\}\\ &= \left.\begin{array}{r}{\cdot}0021{,}4466\\ -{\cdot}0000{,}1160\\ -{\cdot}0000{,}0006\end{array}\right\} = {\cdot}0021{,}3300,\end{aligned}$$

or to seven figures $\qquad \tau_5(3{\cdot}9746) = {\cdot}002{,}1330.$

We will now take an illustration from the most difficult part of the table as far as interpolation is concerned.

Illustration (iii). Required the value of $\tau_{19}(3{\cdot}94725)$. This lies between $\tau_{19}(3{\cdot}9)$ and $\tau_{19}(4{\cdot}0)$. The δ^2 and δ^4 of these values cannot be found from the table, because it does not proceed beyond the argument 4·0. Nor can they be found from (v) because this would involve our knowing τ_{25}, τ_{23} and τ_{21}. These might be found by repeated applications of (vii), but this would involve the calculation from (vii) of 12 additional tetrachoric functions, which would be very laborious. It seems simpler to write our table for τ_{19} thus:

h	τ_{19}	Δ	Δ^2	Δ^3	Δ^4	Δ^5	Δ^6
4·0	+·000,5010						
		+·000,3266					
3·9	+·000,8276		−·000,0334				
		+·000,2932		−·000,0856			
3·8	+·001,1208		−·000,1190		−·000,0101		
		+·000,1742		−·000,0957		+·000,0211	
3·7	+·001,2950		−·000,2147		+·000,0110		+·000,0053
		−·000,0405		−·000,0847		+·000·0264	
3·6	+·001,2545		−·000,2994		+·000,0374		
		−·000,3399		−·000,0473			
3·5	+·000,9146		−·000,3467				
		−·000,6866					
3·4	+·000,2280						

Now the forward difference formula is

$$u_\theta = u_0 + \theta\Delta u - \tfrac{1}{2}\theta(1-\theta)\Delta^2 u + \tfrac{1}{6}\theta(1-\theta)(2-\theta)\Delta^3 u$$
$$- \tfrac{1}{24}\theta(1-\theta)(2-\theta)(3-\theta)\Delta^4 u + \text{etc.} \quad \ldots\text{(ix)}.$$

But θ, as measured from 4·0, = ·5275; $1-\theta$ = ·4725.

$$\therefore\ \tau_{19}(3{\cdot}94725) = {\cdot}000{,}5010 + {\cdot}5275\,({\cdot}000{,}3266) - {\cdot}1246{,}21875\,(-{\cdot}000{,}0334)$$
$$+ {\cdot}0611{,}6857\,(-{\cdot}000{,}0856) - {\cdot}0378{,}0982\,(-{\cdot}000{,}0101)$$
$$+ {\cdot}0262{,}5892\,(-{\cdot}000{,}0211) - {\cdot}0195{,}7384\,(+{\cdot}000{,}0053).$$

$$\tau_{19}(3{\cdot}94725) = \left.\begin{array}{l} {\cdot}000{,}50100 - {\cdot}000{,}00524 \\ + {\cdot}000{,}17228 - {\cdot}000{,}00055 \\ + {\cdot}000{,}00416 - {\cdot}000{,}00010 \\ + {\cdot}000{,}00038 \end{array}\right\} = {\cdot}000{,}6719.$$

The convergence is not very rapid, but the result is probably correct to a unit in the last place. For most statistical purposes linear interpolation, i.e.

$$\tau_{19}(3{\cdot}94725) = {\cdot}000{,}5010 + {\cdot}000{,}1722 = {\cdot}000{,}6732,$$

or a result correct to a unit in the sixth decimal place, would be adequate.

Those who wish to describe frequency distributions not diverging too greatly from the normal by tetrachoric series will find the fundamental formulae below useful*. The first gives the ordinate z_x of the frequency curve in terms of the total frequency N, the standard deviation σ_x for the character x and the tetrachoric functions of $h = x/\sigma_x$. The second gives the area of the frequency curve from $h = -\infty$ up to a given value of $h = x/\sigma_x$.

If we denote this tail area by $N\tfrac{1}{2}(1-\alpha_h)$, in accordance with the notation of the probability integral of the normal curve, and write β_3' for $\beta_3/\sqrt{\beta_1}$, these formulae are:

$$z_x = \frac{N}{\sigma_x}\left\{\tau_1(h) + \frac{4}{\sqrt{24}}\sqrt{\beta_1}\,\tau_4(h) + \frac{5}{\sqrt{120}}(\beta_2 - 3)\,\tau_5(h)\right.$$
$$\left. + \frac{6}{\sqrt{720}}(\beta_3' - 10\sqrt{\beta_1})\,\tau_6(h) + \ldots\right\} \quad \ldots\ldots\ldots\text{(x)},$$

or

$$z_x = \frac{N}{\sigma_x}\{\tau_1(h) + {\cdot}8164{,}9658\sqrt{\beta_1}\,\tau_4(h) + {\cdot}4564{,}3546\,(\beta_2 - 3)\,\tau_5(h)$$
$$+ {\cdot}2236{,}0680\,(\beta_3' - 10\sqrt{\beta_1})\,\tau_6(h) + \ldots\} \quad \ldots\ldots\text{(x) } bis\dagger.$$

* The method may be *occasionally* useful, but is not to be generally commended, because (i) the series in practice does not invariably converge, (ii) impossible negative frequencies occur, and what is of most importance, (iii) the resultant curve not infrequently exhibits sinuosities quite out of keeping with our experience of the frequency distributions of homogeneous material.

† The additional term introduced by Edgeworth as giving a closer approximation to the value of z_x than the terms to $\tau_6(h)$, namely,

$$+\sqrt{\frac{35}{36}}\beta_1\tau_7(h) = +{\cdot}9860{,}1330\beta_1\tau_7(h),$$

is, we believe, idle. It assumes that this term is markedly larger than ·2236,0680 $(\beta_3' - 10\sqrt{\beta_1})\,\tau_6(h)$ or, if

Integrating

$$\int_{-\infty}^{h} z_x dx = N\left\{\tau_0'(h) - \frac{1}{\sqrt{6}}\sqrt{\beta_1}\tau_3(h) - \frac{1}{\sqrt{24}}(\beta_2 - 3)\tau_4(h) - \frac{1}{\sqrt{120}}(\beta_3' - 10\sqrt{\beta_1})\tau_6(h) - \dots\right\},$$

or $$N\tfrac{1}{2}(1+\alpha_h) = N\{\tau_0'(h) - \cdot 4082{,}4829\sqrt{\beta_1}\tau_3(h) - \cdot 2041{,}2415(\beta_2-3)\tau_4(h) - \cdot 0912{,}8709(\beta_3' - 10\sqrt{\beta_1})\tau_6(h) - \dots\} \quad \text{.........(xi).}$$

On the other hand, if h be negative, α_h changes sign and the even tetrachoric functions change sign. Thus

$$\int_{-\infty}^{-h} z_x dx = N\tfrac{1}{2}(1-\alpha_h) = N\{\tau_0''(h) - \cdot 4082{,}4829\sqrt{\beta_1}\tau_3(h) + \cdot 2041{,}2415(\beta_2-3)\tau_4(h) - \cdot 0912{,}8709(\beta_3' - 10\sqrt{\beta_1})\tau_6(h) + \dots\} \quad \text{...(xi) } bis.$$

Here $\beta_1 = \mu_3^2/\mu_2^3$, $\beta_2 = \mu_4/\mu_2^2$, where μ_s is the sth moment coefficient of the distribution, and $\sqrt{\beta_1}$ follows the sign of μ_3. $\tau_0'(h)$ is the $\frac{1}{2}(1+\alpha)$, and $\tau_0''(h)$ is the $\frac{1}{2}(1-\alpha)$ of the probability integral of the normal curve. The $\tau_0(h)$ of our table

$$= \int_{-\infty}^{-h}\frac{1}{\sqrt{2\pi}}e^{-\frac{1}{2}x^2}dx = \int_{h}^{\infty}\frac{1}{\sqrt{2\pi}}e^{-\frac{1}{2}x^2}dx$$

$$= \tfrac{1}{2}(1-\alpha) \text{ if } h \text{ be negative}, \quad = 1 - \tfrac{1}{2}(1+\alpha) \text{ if } h \text{ be positive},$$

as in the second integral. Accordingly:

$$\tau_0'(h) = 1 - \tau_0(h), \quad \tau_0''(h) = \tau_0(h).$$

We introduce $\tau_0'(h)$ and $\tau_0''(h)$ to avoid tabling $\tau_0(h)$ throughout the range from $-\infty$ to $+\infty$. A like artifice is not required with other even order tetrachorics, as they are all odd in h, and merely change their sign with h. This point must be borne in mind when plotting z_x from equations (x) and (x) *bis*; the second and fourth terms, i.e. those in $\tau_4(h)$ and $\tau_6(h)$, will be negative for h negative.

It is clear that equations (xi) and (xi) *bis* will provide the frequency of any subrange of a distribution, by subtracting $N\frac{1}{2}(1+\alpha_h)$ from $N\frac{1}{2}(1+\alpha_{h'})$, if h and h' ($h' > h$) correspond to the limits of the subrange. For applications of these equations, the reader is referred to pp. 289—290, 303—304 of *Biometrika*, Vol. XVII.

we assume that $\tau_6(h)$ and $\tau_7(h)$ are of the same order, that β_1 is much larger than $\cdot 22678(\beta_3' - 10\sqrt{\beta_1})$. This is not confirmed by statistical experience. In other words the hypotheses from which Edgeworth started are invalid. See for example an illustration given in *Biometrika*, Vol. XVII. p. 227, with

$$\beta_1 = \cdot 4, \quad \beta_2 = 3\cdot 6, \quad \beta_3' = 7\cdot 08350.$$

In this case we must have $\cdot 4\tau_7(h)$ much larger than $\cdot 17\tau_6(h)$, but as $\tau_6(h)$ can for some values of h be 4, 5 or even 6 times as large as $\tau_7(h)$, it is clear that there is no validity in neglecting the $\tau_6(h)$ term in favour of Edgeworth's term.

TABLES VIII AND IX.

Tables for determining the volume of any quadrant or of any cell of a Bivariate Normal Frequency Distribution. (*Biometrika*, Vol. XI. pp. 284—291, Vol. XIX. pp. 354—404, Vol. XXII. pp. 1—35. Alice Lee, Margaret Moul, Ethel M. Elderton, A. E. R. Church, E. C. Fieller and J. Pretorius, with introductions by K. Pearson.)

These tables give the complete series of values needful for determining the theoretical contents of any cell of a correlation table *provided we can assume the distribution to be of the normal type.* They also provide a ready means of determining the correlation coefficient from a tetrachoric table, i.e. r_t. A table (Table XXX) was given in Part I of this work for the range $r = 0{\cdot}80$ to $1{\cdot}00$ to four decimal places only. That table was adequate for the purpose then in view, that of finding the correlation from a fourfold table, when the correlation took a high positive value, and it can still be used advantageously.

We start with the fundamental tetrachoric table

a	b	$a+b$
c	d	$c+d$
$a+c$	$b+d$	N

and assume the frequency distribution to be normal; we suppose

$$\left.\begin{aligned}(b+d)/N &= \int_h^\infty \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}x^2} dx = \tfrac{1}{2}(1-\alpha_h)\\ (c+d)/N &= \int_k^\infty \frac{1}{\sqrt{2\pi}} e^{-\frac{1}{2}y^2} dy = \tfrac{1}{2}(1-\alpha_k)\end{aligned}\right\} \quad \text{..................(i)},$$

and we take as our standard case h and k both positive. We can always arrange our table so that this shall be so. But having done this the correlation coefficient r will sometimes be positive and sometimes negative according to whether $ad - bc$ is positive or negative. The equation for r is known to be

$$d/N = \tau_0(h)\,\tau_0(k) + \tau_1(h)\,\tau_1(k)\,r + \tau_2(h)\,\tau_2(k)\,r^2 + \ldots + \tau_n(h)\,\tau_n(k)\,r^n + \ldots \quad \text{(ii)},$$

where $\tau_0(h) = \frac{1}{2}(1-\alpha_h)$, $\tau_0(k) = \frac{1}{2}(1-\alpha_k)$ and τ_n is the tetrachoric function of the nth order.

Our tables supply the values of d/N for $h = 0{\cdot}0$ to $2{\cdot}6$, $k = 0{\cdot}0$ to $2{\cdot}6$ and $r = -1{\cdot}0$ to $+1{\cdot}0$.

The general method of interpolating into tables of *double* entry has been discussed on pp. xvii–xxi of the present part. An occasionally useful formula going, however, merely to second differences, but involving only table entries is

(ϵ) *Forward Difference Formula* (compare Fig. 1, p. xviii).

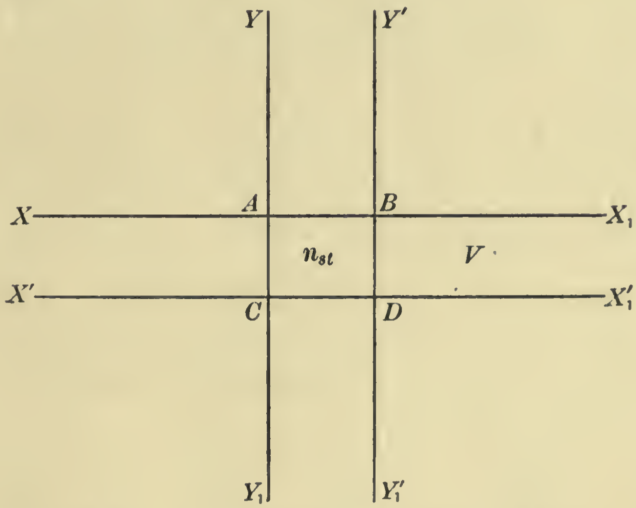
$$z_{\theta,\chi} = z_{0,0} + \theta(z_{1,0} - z_{0,0}) + \chi(z_{0,1} - z_{0,0})$$
$$+ \tfrac{1}{2}[\theta(\theta-1)(z_{2,0} - 2z_{1,0} + z_{0,0}) + 2\theta\chi(z_{1,1} - z_{0,1} - z_{1,0} + z_{0,0})$$
$$+ \chi(\chi-1)(z_{0,2} - 2z_{0,1} + z_{0,0})] \quad \text{.......................(iii).}$$

Linear interpolation will generally suffice for the final r interpolation if we are seeking d/N, or for the final d/N interpolation if we require r.

It must be remembered that in our standard table we suppose d to be the contents of the quadrant for which the limits of integration are $x=h$ to ∞, $y=k$ to ∞, h and k being positive. It may be needful at times to find a, b or c from d, or on the contrary d from a, b or c. Since h and k are supposed known the connecting equations clearly are:

$$\left.\begin{aligned} \frac{a}{N} &= \tfrac{1}{2}(1+\alpha_h) - \tfrac{1}{2}(1-\alpha_k) + \frac{d}{N} \\ \frac{b}{N} &= \tfrac{1}{2}(1-\alpha_h) - \frac{d}{N} \\ \frac{c}{N} &= \tfrac{1}{2}(1-\alpha_k) - \frac{d}{N} \end{aligned}\right\} \quad \text{.........................(iv).}$$

Now let n_{st} be the contents of the cell in the sth row and tth column of a correlation table.



Let n_u equal the total frequency or volume of the normal surface in the quadrant standing on YAX_1; n_u' that in the quadrant on $Y'BX_1$; n_v that in the quadrant on YCX_1'; and n_v' that in the quadrant on $Y'DX_1'$. Then $n_v - n_u = n_{st} + V$, where V is the volume standing on X_1BDX_1'. But $V = n_v' - n_u'$.

Accordingly $$n_{st} = n_v - n_u - n_v' + n_u' \quad \text{...............................(v).}$$

Now it is clear that the h_1, h_2 giving the lines YY_1 and $Y'Y_1'$, and the k_1, k_2 giving the lines XX_1 and $X'X_1'$, will be known; also r, the correlation coefficient, will be known. Thus either n_v, n_u, n_v', n_u' form the d's of four tetrachoric tables and are known, or, if they be a's, b's or c's, the corresponding d's can be obtained from the equations (iv) above and the marginal totals of the fourfold tables.

Thus we deduce the "normal value" of n_{st}. We propose in the first place to illustrate this process.

(a) The applications of Tables VIII—IX are so wide and so important that we shall illustrate them somewhat at length, beginning with fairly simple illustrations of the methods of applying higher interpolation formulae.

Illustration (i). In a table for the correlation of Father and Son for stature we find, for the heights of Fathers 68″·875—69″·875, twelve Sons of the heights 66″·875—67″·875. This is a perfectly arbitrary cell taken out of a table of 20 × 17 cells*. The correlation coefficient of this table worked by the product-moment method is ·5189. The problem we put before ourselves is this: Supposing the table corresponds to a normal surface, is a frequency of twelve individuals reasonable for this cell? As much of the table as concerns our present purpose can be written as follows:

Sons' Stature	Fathers' Stature			Totals
	Below 68″·875	68″·875—69″·875	Above 69″·875	
Below 66″·875	206	9	10	225
66″·875—67″·875	105	$\boxed{12}$	12	129
Above 67″·875	326	104	216	646
Totals	637	125	238	1000

Clearly $$n_u = 19,\quad n_u' = 10,\quad n_v = 43,\quad n_v' = 22,$$

and $$n_{st} = 12 = n_v - n_u - n_v' + n_u' = 43 - 19 - 22 + 10.$$

We can now examine the requisite four tables which have to be solved to obtain n_{st} for the normal surface. They are:

(i)			(ii)			(iii)			(iv)		
206	(n_u) 19	225	215	(n_u') 10	225	311	(n_v) 43	354	332	(n_v') 22	354
431	344	775	547	228	775	326	320	646	430	216	646
637	363	1000	762	238	1000	637	363	1000	762	238	1000

* See *Biometrika*, Vol. XIV. p. 151, Table XV.

If we re-arrange these tables in standard form, we have:

(i)			(ii)			(iii)			(iv)		
(a_1) 431	(b_1) 344	775	(a_2) 547	(b_2) 228	775	(a_3) 326	(b_3) 320	646	(a_4) 430	(b_4) 216	646
(c_1) 206	$(d_1=n_u)$ 19	225	(c_2) 215	$(d_2=n_u')$ 10	225	(c_3) 311	$(d_3=n_v)$ 43	354	(c_4) 332	$(d_4=n_v')$ 22	354
637	363	1000	762	238	1000	637	363	1000	762	238	1000

and we see at once that $ad-bc$ is *negative* for all of them, or the d/N is to be found from the part of the tables for *negative* correlation: i.e. $r=-\cdot5189$. In the next place in *every* case the n_u, n_u', n_v, n_v' of the quadrant to be found is the d of the standard form. Hence we have, by equation (v),

$$n_{st}=N\left(\frac{d_3}{N}-\frac{d_1}{N}-\frac{d_4}{N}+\frac{d_2}{N}\right),$$

where the d/N's are to be found from our present table. To use these, however, we require to ascertain the h and k corresponding to the above four tables. This is most easily done by the use of the first and last columns in Table XXIX of the *Tables for Statisticians*, Part I, which give h (or k) for $\frac{1}{2}(1-\alpha)$ to five figures, or we can obtain more figures from Table II of this Part II. In the present case we have:

$$\tfrac{1}{2}(1-\alpha_{h_1})=\cdot363,\quad \tfrac{1}{2}(1-\alpha_{k_1})=\cdot225,\quad \text{or: } h_1=\cdot35045,\quad k_1=\cdot75541,$$
$$\tfrac{1}{2}(1-\alpha_{h_2})=\cdot238,\quad \tfrac{1}{2}(1-\alpha_{k_2})=\cdot225,\quad \text{or: } h_2=\cdot71275,\quad k_2=\cdot75541,$$
$$\tfrac{1}{2}(1-\alpha_{h_3})=\cdot363,\quad \tfrac{1}{2}(1-\alpha_{k_3})=\cdot354,\quad \text{or: } h_3=\cdot35045,\quad k_3=\cdot37454,$$
$$\tfrac{1}{2}(1-\alpha_{h_4})=\cdot238,\quad \tfrac{1}{2}(1-\alpha_{k_4})=\cdot354,\quad \text{or: } h_4=\cdot71275,\quad k_4=\cdot37454.$$

For most cases h and k to five decimal figures are fully adequate.

If the four tables be now worked out by the interpolation formulae using first four entries, and secondly twelve entries (i.e. formulae (α) and (β) of p. xviii above), we find:

	d_1	d_2	d_3	d_4
(β)	27·113	12·752	56·437	28·348
(α)	27·313	12·847	56·674	28·467
Observed values:	19	10	43	22

In both cases linear interpolation alone has been used to deduce the value of d for $r=-\cdot5189$ from those found for $r=-\cdot50$ and $r=-\cdot55$. These latter values of d have been obtained from the corresponding h's and k's by (α) and (β). It will be seen at once that (α) and (β) are in very close agreement, and that, at any rate in this portion of the tables, the hyperbolic formula (α) is fully adequate for most practical statistical purposes.

But the deviations from the observed values of d in the four cases are very considerable. Notwithstanding, if we proceed to determine n_{st} we have:

$$\text{from } (\beta): \ n_{st} = d_3 - d_1 - d_4 + d_2$$
$$= 56{\cdot}437 - 27{\cdot}113 - 28{\cdot}348 + 12{\cdot}752 = 13{\cdot}728,$$
$$\text{from } (\alpha): \ n_{st} = 56{\cdot}674 - 27{\cdot}313 - 28{\cdot}467 + 12{\cdot}847 = 13{\cdot}741,$$

or (β) only improves on (α) by ·013, a quantity of no practical importance.

Now the standard error of 13·74 in 1000 $= \sqrt{\dfrac{13{\cdot}74 \times 986{\cdot}27}{1000}} = 3{\cdot}68$ nearly, corresponding to a probable error of 2·48.

Clearly $13{\cdot}74 \pm 2{\cdot}48$ easily covers the probability of 12 arising in a random sample. Or, the observed cell content of 12 is quite consistent with the hypothesis of normality holding for the correlation of father's and son's statures.

Illustration (ii). We will take another example from the same correlation table, which indicates a greater variety in the methods of treatment; namely, we will consider the cell for fathers of stature 67″·875—68″·875 and for sons 67″·875—68″·875. It contains 27 cases, and the full table condensed for our purposes is as follows:

Sons' Stature	Fathers' Stature			Totals
	Below 67″·875	67″·875—68″·875	Above 68″·875	
Below 67″·875	277	34	43	354
67″·875—68″·875	89	$\boxed{27}$	65	181
Above 68″·875	132	78	255	465
Totals	498	139	363	1000

We have at once:

$$n_u = 77, \quad n_u' = 43, \quad n_v = 169, \quad n_v' = 108.$$

Thus the four tables take the forms:

(i)			(ii)			(iii)			(iv)		
277	(n_u) 77	354	311	(n_u') 43	354	366	(n_v) 169	535	427	(n_v') 108	535
221	425	646	326	320	646	132	333	465	210	255	465
498	502	1000	637	363	1000	498	502	1000	637	363	1000

or, arranged in standard form:

(i)			(ii)		
$a_1=425$	$b_1=221$	646	$a_2=326$	$b_2=320$	646
(n_u) $c_1=77$	$d_1=277$	354	$c_2=311$	(n_u') $d_2=43$	354
502	498	1000	637	363	1000

(iii)			(iv)		
(n_v) $a_3=169$	$b_3=366$	535	$a_4=427$	(n_v') $b_4=108$	535
$c_3=333$	$d_3=132$	465	$c_4=210$	$d_4=255$	465
502	498	1000	637	363	1000

We see at once that:

$n_u = c_1$, and r is positive in Table (i) $= +\cdot 5189$,

$n_u' = d_2$, and r is negative in Table (ii) $= -\cdot 5189$,

$n_v = a_3$, and r is negative in Table (iii) $= -\cdot 5189$,

$n_v' = b_4$, and r is positive in Table (iv) $= +\cdot 5189$.

Accordingly:
$$n_{st} = N\left(\frac{a_3}{N} - \frac{c_1}{N} - \frac{b_4}{N} + \frac{d_2}{N}\right).$$

There are thus two tables to be worked for r positive (i.e. (i) and (iv)) and two tables for r negative (i.e. (ii) and (iii)).

Accordingly, in only one case is the n_u or n_v equal to d, namely $n_u' = d_2$. For the other cases we require to use the formulae given in equations (iv).

Further, we shall need to use special interpolation formulae for three of the cases, as we are at the edges of our tables for d/N. We may arrange our work as shown on the following page, where α, β, γ, γ *bis*, and δ refer to the formulae on pp. xvii—xxi above.

(i)

$\tfrac{1}{2}(1-\alpha_h)=\cdot498,\ \tfrac{1}{2}(1-\alpha_k)=\cdot354$

$h=\cdot00501,\ k=\cdot37454$

Finial panel in h

Use Formula γ *bis*.

$\theta=\cdot0501,\quad \chi=\cdot7454$

$\phi=\cdot9499,\quad \psi=\cdot2546$

$\phi\psi=\cdot24184,\quad \phi\chi=\cdot70806$

$\theta\psi=\cdot01276,\quad \theta\chi=\cdot03734$

$\tfrac{1}{6}\theta\phi=\cdot00793,\quad \tfrac{1}{6}\chi\psi=\cdot03163$

$r=\cdot50$

$z_{00}=\cdot270{,}344,\quad z_{10}=\cdot255{,}392$

$z_{01}=\cdot248{,}589,\quad z_{11}=\cdot235{,}345$

$\delta^2 z_{10}=-722,\quad \delta'^2 z_{00}=-213$

$\delta^2 z_{11}=-704,\quad \delta'^2 z_{10}=-278$

$\delta^2 z_{20}=-556,\quad \delta'^2 z_{01}=+\ 44$

$\delta^2 z_{21}=-561,\quad \delta'^2 z_{11}=-\ 38$

$\phi\psi z_{00}+\phi\chi z_{01}+\theta\psi z_{10}+\theta\chi z_{11}=\cdot2534{,}4250$

$-\tfrac{1}{6}\theta\phi\,(4+\phi)\,(\psi\delta^2 z_{10}+\chi\delta^2 z_{11})\qquad +2781$

$+\tfrac{1}{6}\theta\phi\,(1+\phi)\,(\psi\delta^2 z_{20}+\chi\delta^2 z_{21})\qquad -\ 865$

$-\tfrac{1}{6}\chi\psi\,(1+\psi)\,(\phi\delta'^2 z_{00}+\theta\delta'^2 z_{10})\qquad +\ 858$

$-\tfrac{1}{6}\chi\psi\,(1+\chi)\,(\phi\delta'^2 z_{01}+\theta\delta'^2 z_{11})\qquad -\ 220$

$d_1/N=\cdot2534{,}6804$

$r=\cdot55$

$z_{00}=\cdot279{,}133,\quad z_{01}=\cdot256{,}963$

$z_{10}=\cdot264{,}313,\quad z_{11}=\cdot243{,}907$

$\delta^2 z_{10}=-845,\quad \delta'^2 z_{00}=-319$

$\delta^2 z_{11}=-821,\quad \delta'^2 z_{10}=-391$

$\delta^2 z_{20}=-678,\quad \delta'^2 z_{01}=-\ 46$

$\delta^2 z_{21}=-679,\quad \delta'^2 z_{11}=-137$

The five several contributions to $z_{\theta,\chi}$ are:

	·2619,3087
+	3247
−	1050
+	1280
+	279
	·2619,6843

$\dfrac{d_1}{N}=\cdot2534{,}6804+\dfrac{189}{500}\,(850039)$

$=\cdot2566{,}8118$

$d_1=256\cdot681$

If we used only the hyperbolic terms:

$d_1=256\cdot651$

But $n_u=c_1$

$=354-256\cdot681$

$=97\cdot319$ from γ *bis*

$=354-256\cdot651$

$=97\cdot349$ from α

(ii)

$\tfrac{1}{2}(1-\alpha_h)=\cdot363,\ \tfrac{1}{2}(1-\alpha_k)=\cdot354$

$h=\cdot35045,\ k=\cdot37454$

Neither h nor k finial

Use Formula β.

$\theta=\cdot5045,\quad \chi=\cdot7454$

$\phi=\cdot4955,\quad \psi=\cdot2546$

$\phi\psi=\cdot12615,\quad \phi\chi=\cdot36935$

$\theta\psi=\cdot12845,\quad \theta\chi=\cdot37605$

$\tfrac{1}{6}\theta\phi=\cdot04166,\quad \tfrac{1}{6}\chi\psi=\cdot03163$

$r=-\cdot50$

$z_{00}=\cdot072{,}4876,\quad z_{10}=\cdot061{,}5434$

$z_{01}=\cdot061{,}5434,\quad z_{11}=\cdot052{,}0367$

$\delta^2 z_{00}=11101,\quad \delta'^2 z_{00}=11101$

$\delta^2 z_{01}=10164,\quad \delta'^2 z_{10}=10164$

$\delta^2 z_{10}=11309,\quad \delta'^2 z_{01}=11309$

$\delta^2 z_{11}=10248,\quad \delta'^2 z_{11}=10248$

$\phi\psi z_{00}+\phi\chi z_{01}+\theta\psi z_{10}+\theta\chi z_{11}=\cdot0593{,}4901$

$-\tfrac{1}{6}\theta\phi\,(1+\phi)\,(\psi\delta^2 z_{00}+\chi\delta^2 z_{01})\qquad -6481$

$-\tfrac{1}{6}\theta\phi\,(1+\theta)\,(\psi\delta^2 z_{10}+\chi\delta^2 z_{11})\qquad -6592$

$-\tfrac{1}{6}\chi\psi\,(1+\psi)(\phi\delta'^2 z_{00}+\theta\delta'^2 z_{10})\qquad -4218$

$-\tfrac{1}{6}\chi\psi\,(1+\chi)\,(\phi\delta'^2 z_{01}+\theta\delta'^2 z_{11})\qquad -5948$

$d_2/N=\cdot0591{,}1662$

$r=-\cdot55$

$z_{00}=\cdot064{,}7508,\quad z_{01}=\cdot054{,}3306$

$z_{10}=\cdot054{,}3306,\quad z_{11}=\cdot064{,}3610$

$\delta^2 z_{00}=11859,\quad \delta'^2 z_{00}=11859$

$\delta^2 z_{01}=10801,\quad \delta'^2 z_{10}=10801$

$\delta^2 z_{10}=11876,\quad \delta'^2 z_{01}=11876$

$\delta^2 z_{11}=10696,\quad \delta'^2 z_{11}=10696$

The five several contributions to $z_{\theta,\chi}$ are:

	·0522,7209
−	6897
−	6892
−	4494
−	6228
	·0520,2698

$\dfrac{d_2}{N}=\cdot0591{,}1662-\dfrac{189}{500}\,(708967)$

$=\cdot0564{,}3672$

$d_2=56\cdot437$

If we used only the hyperbolic terms:

$d_2=56\cdot674$

But $n_u'=d_2$

$=56\cdot437$

from β

$=56\cdot674$

from α

(iii)

$\tfrac{1}{2}(1-\alpha_h)=\cdot498,\ \tfrac{1}{2}(1-\alpha_k)=\cdot465$

$h=\cdot00501,\ k=\cdot08784$

Doubly finial panel

Use Formula δ.

$\theta=\cdot0501,\quad \chi=\cdot8784$

$\phi=\cdot9499,\quad \psi=\cdot1216$

$\phi\psi=\cdot11551,\quad \phi\chi=\cdot83439$

$\theta\psi=\cdot00609,\quad \theta\chi=\cdot04401$

$\tfrac{1}{6}\theta\phi=\cdot00793,\quad \tfrac{1}{6}\chi\psi=\cdot01780$

$r=-\cdot50$

$z_{00}=\cdot166{,}6667,\quad z_{10}=\cdot147{,}2109$

$z_{01}=\cdot147{,}2109,\quad z_{11}=\cdot129{,}5818$

$\delta^2 z_{10}=10992=\delta'^2 z_{01}$

$\delta^2 z_{11}=10689=\delta'^2 z_{11}$

$\delta^2 z_{20}=12466=\delta'^2 z_{02}$

$\delta^2 z_{21}=11936=\delta'^2 z_{12}$

$\phi\psi z_{00}+\phi\chi z_{01}+\theta\psi z_{10}+\theta\chi z_{11}=\cdot1486{,}8238$

$-\tfrac{1}{6}\theta\phi\,(4+\phi)\,(\psi\delta^2 z_{10}+\chi\delta^2 z_{11})\qquad -4210$

$+\tfrac{1}{6}\theta\phi\,(1+\phi)\,(\psi\delta^2 z_{20}+\chi\delta^2 z_{21})\qquad +1856$

$-\tfrac{1}{6}\chi\psi\,(4+\psi)(\phi\delta'^2 z_{01}+\theta\delta'^2 z_{11})\qquad -8053$

$+\tfrac{1}{6}\chi\psi\,(1+\psi)(\phi\delta'^2 z_{02}+\theta\delta'^2 z_{12})\qquad +2484$

$d_3/N=\cdot1486{,}0315$

$r=-\cdot55$

$z_{00}=\cdot157{,}3139,\quad z_{01}=\cdot137{,}9225$

$z_{10}=\cdot137{,}9225,\quad z_{11}=\cdot120{,}4240$

$\delta^2 z_{10}=12254=\delta'^2 z_{01}$

$\delta^2 z_{11}=11911=\delta'^2 z_{11}$

$\delta^2 z_{20}=13648=\delta'^2 z_{02}$

$\delta^2 z_{21}=13054=\delta'^2 z_{12}$

The five several contributions to $z_{\theta,\chi}$ are:

	·1393,9229
−	4692
+	2030
−	8977
+	2719
	·1393,0309

$\dfrac{d_3}{N}=\cdot1486{,}0315-\dfrac{189}{500}\,(930006)$

$=\cdot1450{,}8773$

$d_3=145\cdot088$

If we used only the hyperbolic terms:

$d_3=145\cdot171$

But $n_v=a_3$

$=502-465+145\cdot088$

$=182\cdot088$ from δ

$=182\cdot171$

from α

(iv)

$\tfrac{1}{2}(1-\alpha_h)=\cdot363,\ \tfrac{1}{2}(1-\alpha_k)=\cdot465$

$h=\cdot35045,\ k=\cdot08784$

Finial panel in k

Use Formula γ.

$\theta=\cdot5045,\quad \chi=\cdot8784$

$\phi=\cdot4955,\quad \psi=\cdot1216$

$\phi\psi=\cdot06025,\quad \phi\chi=\cdot43525$

$\theta\psi=\cdot06135,\quad \theta\chi=\cdot44315$

$\tfrac{1}{6}\theta\phi=\cdot04166,\quad \tfrac{1}{6}\chi\psi=\cdot01780$

$r=\cdot50$

$z_{00}=\cdot270{,}344,\quad z_{10}=\cdot248{,}589$

$z_{01}=\cdot255{,}392,\quad z_{11}=\cdot235{,}345$

$\delta^2 z_{00}=-213,\quad \delta'^2 z_{01}=-722$

$\delta^2 z_{01}=-278,\quad \delta'^2 z_{11}=-704$

$\delta^2 z_{10}=+\ 44,\quad \delta'^2 z_{02}=-556$

$\delta^2 z_{11}=-\ 38,\quad \delta'^2 z_{12}=-561$

$\phi\psi z_{00}+\phi\chi z_{01}+\theta\psi z_{10}+\theta\chi z_{11}=\cdot2469{,}9167$

$-\tfrac{1}{6}\theta\phi\,(1+\phi)\,(\psi\delta^2 z_{00}+\chi\delta^2 z_{01})\qquad +1683$

$-\tfrac{1}{6}\theta\phi\,(1+\theta)\,(\psi\delta^2 z_{10}+\chi\delta^2 z_{11})\qquad +\ 176$

$-\tfrac{1}{6}\chi\psi\,(4+\psi)\,(\phi\delta'^2 z_{01}+\theta\delta'^2 z_{11})\qquad +5230$

$+\tfrac{1}{6}\chi\psi\,(1+\psi)\,(\phi\delta'^2 z_{02}+\theta\delta'^2 z_{12})\qquad -1115$

$d_4/N=\cdot2470{,}5141$

$r=\cdot55$

$z_{00}=\cdot279{,}133,\quad z_{01}=\cdot264{,}313$

$z_{10}=\cdot256{,}963,\quad z_{11}=\cdot243{,}907$

$\delta^2 z_{00}=-319,\quad \delta'^2 z_{01}=-845$

$\delta^2 z_{01}=-391,\quad \delta'^2 z_{11}=-821$

$\delta^2 z_{10}=-\ 46,\quad \delta'^2 z_{02}=-678$

$\delta^2 z_{11}=-137,\quad \delta'^2 z_{12}=-679$

The five several contributions to $z_{\theta,\chi}$ are:

	·2557,1206
+	2381
+	789
+	6110
−	1355
	·2557,9131

$\dfrac{d_4}{N}=\cdot2470{,}5141+\dfrac{189}{500}\,(873990)$

$=\cdot2503{,}5509$

$d_4=250\cdot355$

If we used only the hyperbolic terms:

$d_4=250\cdot288$

But $n_v'=b_4$

$=363-250\cdot355$

$=112\cdot645$ from γ

$=112\cdot712$

from α

Hence from the fuller formulae, $n_{st}=182\cdot088-97\cdot319-112\cdot645+56\cdot437=28\cdot561$; or from α, $n_{st}=182\cdot171-97\cdot349-112\cdot712+56\cdot674=28\cdot784$.

It is, we think, clear that a difference of the order 0·223 is not of much statistical importance in a cell containing 28, and thus the formula (α) might have been used throughout. We have given the work up to third differences, which much increases the labour, in order to show the reasonable effectiveness of the shorter hyperbolic formula.

The following table shows the order of differences from the observed values:

	d_1	d_2	d_3	d_4
(i) From β and γ formulae	256·681	56·437	145·088	250·355
(ii) From α formula ...	256·651	56·674	145·171	250·288
(iii) Observed values ...	277	43	132	255
(iv) Difference (i)—(ii) ...	+ ·030	− ·237	− ·083	+ ·067
(v) Difference (i)—(iii) ...	−20·319	+13·437	+13·088	−4·645
(vi) S.D. of (i)	13·813	7·297	11·137	13·700
(vii) Ratio of (v) to (vi) ...	− 1·47	+1·84	+ 1·18	− ·34

The ratio (vii) is in no case beyond the bounds of random sampling, and since n_u contains n_u', n_v' contains n_u' and n_v contains n_u, n_u' and n_v' we should expect a high correlation between all these deviations. The actual number 27 in the chosen cell might easily occur in a random sample from a population containing either 28·4 or 28·8 in this cell.

We will now take illustrations of the reverse process of finding r from the observed d/N.

Illustration (iii). The following table indicates the relation between Athletic Capacity and Intelligence in 1708 Schoolboys:

	"Intelligent" and above	"Slow Intelligent" and below	Totals
Athletic	581·25	566·75	1148
Non-athletic	209·25	350·75	560
Totals	790·5	917·5	1708

In standard arrangement:

$a=566{\cdot}75$ $c=350{\cdot}75$	$b=581{\cdot}25$ $d=209{\cdot}25$	1148 560
917·5	790·5	1708

and the correlation in this form is *negative*, though in the original table it is positive, i.e. the more intelligent boys are the more athletic.

We have:

$$d/N = {\cdot}122{,}5117\,; \quad \tfrac{1}{2}(1-\alpha_h) = {\cdot}462{,}822, \quad \tfrac{1}{2}(1-\alpha_k) = {\cdot}327{,}869.$$

Hence by linear interpolation from Table XXIX of *Tables for Statisticians*, Part I,

$$h = {\cdot}09333, \qquad k = {\cdot}44580.$$

Our present tables show that, for d/N lying between ·115 and ·125, and h between ·0 and ·1 and k between ·4 and ·5, we must deal with the values of r, $-{\cdot}20$ and $-{\cdot}25$. We have first then to find the value of d/N for the above values of h and k when $r=-{\cdot}20$ and $-{\cdot}25$.

We need here a "single finial" formula for x (h) because we are for this variate on the border of our table. The appropriate formula is (γ *bis*)*, or:

$$\begin{aligned} z_{\theta,\chi} = {} & \phi\psi z_{0,0} + \phi\chi z_{0,1} + \theta\psi z_{1,0} + \theta\chi z_{1,1} \\ & - \tfrac{1}{6}\theta\phi\ \{(4+\phi)(\psi\delta^2 z_{1,0} + \chi\delta^2 z_{1,1}) - (1+\phi)(\psi\delta^2 z_{2,0} + \chi\delta^2 z_{2,1})\} \\ & - \tfrac{1}{6}\chi\psi\ \{(1+\psi)(\phi\delta'^2 z_{0,0} + \theta\delta'^2 z_{1,0}) + (1+\chi)(\phi\delta'^2 z_{0,1} + \theta\delta'^2 z_{1,1})\}. \end{aligned}$$

In our case:

$$\theta = {\cdot}9333, \quad \phi = {\cdot}0667\,; \quad \chi = {\cdot}4580, \quad \psi = {\cdot}5420\,;$$

$$\phi\psi = {\cdot}03615, \quad \phi\chi = {\cdot}03055, \quad \theta\psi = {\cdot}50585, \quad \theta\chi = {\cdot}42745\,;$$

$$\tfrac{1}{6}\theta\phi = {\cdot}01038, \quad \tfrac{1}{6}\chi\psi = {\cdot}04137.$$

For $r=-{\cdot}20$:

$$z_{00} = {\cdot}142{,}7384, \quad z_{10} = {\cdot}129{,}2840, \quad z_{01} = {\cdot}126{,}0358, \quad z_{11} = {\cdot}114{,}0334\,;$$

$$\delta^2 z_{10} = 4265, \quad \delta^2 z_{20} = 5421, \quad \delta^2 z_{11} = 3979, \quad \delta^2 z_{21} = 4999,$$

$$\delta'^2 z_{00} = 9853, \quad \delta'^2 z_{10} = 9221, \quad \delta'^2 z_{01} = 10914, \quad \delta'^2 z_{11} = 10163.$$

For $r=-{\cdot}25$:

$$z_{00} = {\cdot}135{,}2305, \quad z_{10} = {\cdot}121{,}8861, \quad z_{01} = {\cdot}118{,}8755, \quad z_{11} = {\cdot}106{,}9947\,;$$

$$\delta^2 z_{10} = 5012, \quad \delta^2 z_{20} = 6113, \quad \delta^2 z_{11} = 4684, \quad \delta^2 z_{21} = 5644,$$

$$\delta'^2 z_{00} = 10508, \quad \delta'^2 z_{10} = 9851, \quad \delta'^2 z_{01} = 11470, \quad \delta'^2 z_{11} = 10691.$$

* See our pp. xix–xx and the diagram, Fig. 3, p. xx.

From these two sets of values we can write down the values of $z_{\theta,\chi}$, i.e. those of d/N, for the above formula. There result the following numbers:

$z_{\theta,\chi}=d/N=$	When $r=-\cdot 20$	When $r=-\cdot 25$
$\phi\psi z_{0,0}+\phi\chi z_{0,1}+\theta\psi z_{1,0}+\theta\chi z_{1,1}$	$=\cdot 1231{,}5228$	$=\cdot 1159{,}1120$
$-\frac{1}{6}\theta\phi\ \{(4+\phi)(\psi\delta^2 z_{1,0}+\chi\delta^2 z_{1,1})\}$	$-$ 1745	$-$ 2052
$+\frac{1}{6}\theta\phi\ \{(1+\phi)(\psi\delta^2 z_{2,0}+\chi\delta^2 z_{2,1})\}$	$+$ 579	$+$ 653
$-\frac{1}{6}\chi\psi\ \{(1+\psi)(\phi\delta'^2 z_{0,0}+\theta\delta'^2 z_{1,0})\}$	$-$ 5909	$-$ 6312
$-\frac{1}{6}\chi\psi\ \{(1+\chi)(\phi\delta'^2 z_{0,1}+\theta\delta'^2 z_{1,1})\}$	$-$ 6160	$-$ 6480
	$\cdot 1230{,}1993$	$\cdot 1157{,}6929$

Hence by linear interpolation:

$$r=-\cdot 20-\frac{5082}{72501}\times\cdot 05=-\cdot 2035.$$

If we use only the first term, the hyperbolic formula, we have:

$$r=-\cdot 20-\frac{6406}{72411}\times\cdot 05=-\cdot 2044.$$

This would be a sufficiently accurate value of r for most practical purposes.

Illustration (iv). The following table illustrates the influence of Wage of Father on the nature of the Mother's Employment:

Employment of Mother.

Wage of Father	Homework	Outwork	Totals
Under 22/-	144	106	250
22/- and over	168	39	207
Totals	312	145	457

Clearly d is the category 39, and the correlation in the table thus arranged is negative. We have:

$$\tfrac{1}{2}(1-\alpha_h)=\frac{145}{457}=\cdot 317{,}287;\quad \tfrac{1}{2}(1-\alpha_k)=\frac{207}{457}=\cdot 452{,}954.$$

Accordingly

$$d/N=\cdot 085{,}3392,\ \text{and}\ h=\cdot 47530,\ k=\cdot 11821.$$

$$\theta=\cdot 7530,\quad \phi=\cdot 2470;\quad \chi=\cdot 1821,\quad \psi=\cdot 8179;$$

$$\phi\psi=\cdot 20202,\quad \phi\chi=\cdot 04498,\quad \theta\psi=\cdot 61588,\quad \theta\chi=\cdot 13712;$$

$$\tfrac{1}{6}\theta\phi=\cdot 03100,\quad \tfrac{1}{6}\chi\psi=\cdot 02482.$$

The above value of d/N, for a value of h between ·40 and ·50, and of k between ·10 and ·20, lies between the values for $r=-\cdot 40$ and $r=-\cdot 45$:

$$r=-\cdot 40 \begin{cases} z_{0,0}=\cdot 099{,}2408, & z_{1,0}=\cdot 085{,}5431, \quad z_{0,1}=\cdot 087{,}0997, \quad z_{1,1}=\cdot 074{,}8716; \\ \delta^2 z_{0,0}=11853, & \delta^2 z_{1,0}=12327, \quad \delta^2 z_{0,1}=11026, \quad \delta^2 z_{1,1}=11382, \\ \delta'^2 z_{0,0}=\ 7394, & \delta'^2 z_{1,0}=\ 6895, \quad \delta'^2 z_{0,1}=\ 8263, \quad \delta'^2 z_{1,1}=\ 7616. \end{cases}$$

$$r=-\cdot 45 \begin{cases} z_{0,0}=\cdot 091{,}4776, & z_{1,0}=\cdot 078{,}2330, \quad z_{0,1}=\cdot 079{,}6341, \quad z_{1,1}=\cdot 067{,}8782; \\ \delta^2 z_{0,0}=12573, & \delta^2 z_{1,0}=12899, \quad \delta^2 z_{0,1}=11675, \quad \delta^2 z_{1,1}=11878, \\ \delta'^2 z_{0,0}=\ 8255, & \delta'^2 z_{1,0}=\ 7680, \quad \delta'^2 z_{0,1}=\ 9021, \quad \delta'^2 z_{1,1}=\ 8289. \end{cases}$$

Accordingly we have the following values for:

$z_{\theta,\chi}=d/N=$	When $r=-\cdot 40$	When $r=-\cdot 45$
$\phi\psi z_{0,0}+\phi\chi z_{0,1}+\theta\psi z_{1,0}+\theta\chi z_{1,1}$	$=\cdot 0869{,}1705$	$=\cdot 0795{,}5185$
$-\frac{1}{6}\theta\phi\ \{(1+\phi)(\psi\delta^2 z_{0,0}+\chi\delta^2 z_{0,1})\}$	$-$ 4524	$-$ 4797
$-\frac{1}{6}\theta\phi\ \{(1+\theta)(\psi\delta^2 z_{1,0}+\chi\delta^2 z_{1,1})\}$	$-$ 6605	$-$ 6909
$-\frac{1}{6}\chi\psi\ \{(1+\psi)(\phi\delta'^2 z_{0,0}+\theta\delta'^2 z_{1,0})\}$	$-$ 3167	$-$ 3529
$-\frac{1}{6}\chi\psi\ \{(1+\chi)(\phi\delta'^2 z_{0,1}+\theta\delta'^2 z_{1,1})\}$	$-$ 2281	$-$ 2485
	·0867,5128	·0793,7465

Hence by linear interpolation

$$r=-\cdot 40-\frac{14121}{73766}\times\cdot 05=-\cdot 4096,$$

or the correlation of Mother's increasing Outwork with Father's decreasing Wage is ·4096.

Had we used only the hyperbolic formula, i.e. the first line of the above expression for $z_{\theta,\chi}$, we should have found

$$r=-\cdot 40-\frac{15778}{73652}\times\cdot 05=-\cdot 40-\cdot 0107$$

$$=-\cdot 4107, \text{ a value fairly close to the above.}$$

Thus, from the examples worked in this Introduction, it would appear as if the hyperbolic formula were adequate for either finding a cell content, or determining the value of the coefficient of correlation.

Illustration (v). An appreciation of sex was made by two different observers on 216 femora. It is required to find a measure of the association in judgment between the two observers.

In appreciating sex by the examination of a bone the observer's opinion varies from practical certainty of maleness through every shade of doubt to practical certainty of femaleness. The strength of the judgment is therefore a continuous character, although the actual sex forms a rigid categorical differentiation. It is with the judgment, and not with the actual sex, that we are here concerned, and we have simplified those judgments down to unique categories ♂ and ♀, classifying under each such category all queried values like ♂? and ♀?.

The table is:

First Observer

Second Observer		♂	♀	Totals
	♂	98	16	114
	♀	6	96	102
	Totals	104	112	216

Mean

Mean

We will work this example by a different method, using throughout linear interpolation.

Rearranging in standard form:

16	98	114
96	6	102
112	104	216

we see that h and k will now both be positive and r will be negative.

We have $$d/N = 6/216 = \cdot 02778,$$

$$\tfrac{102}{216} = \tfrac{1}{2}(1-\alpha_h) = \cdot 47222, \qquad \tfrac{104}{216} = \tfrac{1}{2}(1-\alpha_k) = \cdot 48148,$$

or $$h = \cdot 04644. \qquad k = \cdot 06969.$$

From the Tables for $r = -\cdot 95$

$$\left.\begin{array}{l} \left.\begin{array}{l} h=0 \\ k=0 \end{array}\right\} \dfrac{d}{N} = \cdot 050{,}542 \\[2ex] \left.\begin{array}{l} h=\cdot 1 \\ k=0 \end{array}\right\} \dfrac{d}{N} = \cdot 033{,}024 \end{array}\right\}, \text{ hence } \left.\begin{array}{r} h=0 \\ k=\cdot 06969 \end{array}\right\} \dfrac{d}{N} = \cdot 038{,}334,$$

$$\left.\begin{array}{l} \left.\begin{array}{l} h=0 \\ k=\cdot 1 \end{array}\right\} \dfrac{d}{N} = \cdot 033{,}024 \\[2ex] \left.\begin{array}{l} h=\cdot 1 \\ k=\cdot 1 \end{array}\right\} \dfrac{d}{N} = \cdot 020{,}318 \end{array}\right\}, \text{ hence } \left.\begin{array}{r} h=\cdot 1 \\ k=\cdot 06969 \end{array}\right\} \dfrac{d}{N} = \cdot 024{,}169.$$

From the last column on right we deduce:

$$h = \cdot 04644, \quad k = \cdot 06969, \quad \frac{d}{N} = \cdot 031{,}756.$$

For the given values of h and k we have accordingly:

$$r = -1{\cdot}00, \qquad r = -{\cdot}95,$$

$$d/N = 0, \qquad d/N = {\cdot}031{,}756.$$

Thus for $d/N = {\cdot}02778$, we have $r = -{\cdot}9563$.

Accordingly from the table in its original form, we conclude that the association between judgments of sex made by two independent and very competent observers from mere inspection of the femora is measured by a tetrachoric correlation of $+{\cdot}956$.

If the reader will use the hyperbolic formula (α) of p. xviii, he will find values of d/N and r identical with those just obtained.

Illustration (vi). The following data are for the maximum lengths of the long bones in the French male:

Femur: Mean = 452·28 mm. *Humerus:* Mean = 330·10 mm.

Standard deviation = 23·72 mm. Standard deviation = 15·38 mm.

Correlation of femur and humerus = ·8421.

(i) Find the percentage of cases in which a humerus of under 300 mm. will be combined in the same individual with a femur of over 480 mm.

Here $h = 27{\cdot}72/23{\cdot}72 = 1{\cdot}16863$; $k = -30{\cdot}10/15{\cdot}38 = -1{\cdot}95709$.

Since h is positive, k negative and r positive, we must replace our system by

$$h = 1{\cdot}16863, \quad k = 1{\cdot}95709, \quad \text{and} \quad r = -{\cdot}8421.$$

Our tables for $r = -{\cdot}80$ and $-{\cdot}85$ show that for the given values of h and k the required frequency would probably be less than 1 in 50,000,000. We may conclude therefore that no such individuals would probably occur in the total French male population. This is a result the order of which would hardly be appreciated without the aid of the present tables.

(ii) Find the percentage of cases in which a humerus of under 320 mm. will be associated with a femur of over 460 mm.

Here $h = 7{\cdot}72/23{\cdot}72 = {\cdot}32546$; $k = -10{\cdot}10/15{\cdot}38 = -{\cdot}65670$.

Accordingly our system is

$$h = {\cdot}32546, \qquad k = {\cdot}65670, \qquad r = -{\cdot}8421.$$

The Tables give for $r = -{\cdot}80$

$$\left.\begin{matrix} h = {\cdot}3 \\ k = {\cdot}6 \end{matrix}\right\} d/N = {\cdot}009{,}0146; \qquad \left.\begin{matrix} h = {\cdot}3 \\ k = {\cdot}7 \end{matrix}\right\} d/N = {\cdot}006{,}2334.$$

Thus for $h = {\cdot}3$, $k = {\cdot}65670$, $d/N = {\cdot}007{,}4377$.

Again $$\left.\begin{matrix} h = {\cdot}4 \\ k = {\cdot}6 \end{matrix}\right\} d/N = {\cdot}006{,}3352; \qquad \left.\begin{matrix} h = {\cdot}4 \\ k = {\cdot}7 \end{matrix}\right\} d/N = {\cdot}004{,}3066.$$

Thus, for $h = {\cdot}4$, $k = {\cdot}65670$, $d/N = {\cdot}005{,}1850$. Accordingly for

$$h = {\cdot}32546, \qquad k = {\cdot}65670,$$

we find

$$d/N = {\cdot}006{,}8642.$$

We must now repeat this work for $r = -{\cdot}85$.

$$\left.\begin{matrix} h = {\cdot}3 \\ k = {\cdot}6 \end{matrix}\right\} d/N = {\cdot}004{,}6616; \qquad \left.\begin{matrix} h = {\cdot}3 \\ k = {\cdot}7 \end{matrix}\right\} d/N = {\cdot}002{,}9477.$$

For $h = {\cdot}3$, $k = {\cdot}65670$, $d/N = {\cdot}003{,}6898$,

$$\left.\begin{matrix} h = {\cdot}4 \\ k = {\cdot}6 \end{matrix}\right\} d/N = {\cdot}002{,}9950; \qquad \left.\begin{matrix} h = {\cdot}4 \\ k = {\cdot}7 \end{matrix}\right\} d/N = {\cdot}001{,}8483.$$

Thus, for $h = {\cdot}4$, $k = {\cdot}65670$, $d/N = {\cdot}032{,}3448$. Accordingly for

$$h = {\cdot}32546, \qquad k = {\cdot}65670,$$

we find

$$d/N = {\cdot}003{,}3474.$$

Hence we have for the given values of h and k:

$$r = -{\cdot}80, \qquad r = -{\cdot}85,$$

$$d/N = {\cdot}006{,}8642, \qquad d/N = {\cdot}003{,}3474,$$

or, for

$$r = -{\cdot}8421, \qquad d/N = {\cdot}003{,}9031.$$

Accordingly individuals with femur and humerus within the limits given would form about 0·4 per cent. of the male French population.

Precisely the same value (·003,903) arises from the use of the hyperbolic formula (a) of p. xviii.

Illustration (vii). *Intelligence and Enlarged Glands.* (*Boys.*)

Intelligence

State of Glands	Intelligent and Over	Slow Intelligent and Under	Totals
Normal	241	215	456
Enlarged	82	81	163
Totals	323	296	619

$$\tfrac{1}{2}(1 - \alpha_h) = \tfrac{296}{619} = {\cdot}478{,}191, \quad \tfrac{1}{2}(1 - \alpha_k) = \tfrac{163}{619} = {\cdot}263{,}328.$$

Hence by Table XXIX of Part I, using linear interpolation,

$$h = {\cdot}05469, \quad k = {\cdot}63312.$$

Further:

$$d/N = \tfrac{81}{619} = {\cdot}130{,}8562.$$

From these arguments we are to find r. Clearly h lies between ·0 and ·1 and k between ·6 and ·7. The value of d for these values of h and k might lie in the tables for $r = {\cdot}00$, $r = {\cdot}05$ or $r = {\cdot}10$. The latter is very improbable because the point corresponding to our h and k lies in the triangle of which the z's are ·150..., ·139... and ·133..., all greater than $d/N = ·130....$ It is safest, however, to start interpolating from the mid-table $r = ·05$.

We have $\theta = ·5469$, $\phi = ·4531$, $\chi = ·3312$, $\psi = ·6688$ and the scheme:

	$h=0·0$	$h=0·1$
$k=0·6$	·143,775 $(z_{0,0})$	·132,829 $(z_{1,0})$
$k=0·7$	·127,212 $(z_{0,1})$	·117,555 $(z_{1,1})$

We can then arrange our work thus, using formula (α):

$$d/N = \left.\begin{matrix}·6688 \times ·4531\\ ·3030,3228\end{matrix}\right\}\left\{\begin{matrix}·143,775\\ ·137,127\end{matrix}\right\} + \left.\begin{matrix}·6688 \times ·5469\\ ·3657,6672\end{matrix}\right\}\left\{\begin{matrix}·132,829\\ ·126,204\end{matrix}\right.$$

$$+ \left.\begin{matrix}·3312 \times ·4531\\ ·1500,6672\end{matrix}\right\}\left\{\begin{matrix}·127,212\\ ·120,984\end{matrix}\right\} + \left.\begin{matrix}·3312 \times ·5469\\ ·1811,3328\end{matrix}\right\}\left\{\begin{matrix}·117,555\\ ·111,345\end{matrix}\right.$$

The lower number in the single curled brackets facing left is the product of the θ, ϕ, χ, ψ pairs standing above them. Taking the upper numbers in the double curled brackets and multiplying them continuously on the machine by the lower numbers in the single curled brackets facing left, we find

$$d/N = ·132,5363.$$

This value is too high; we must therefore reduce the correlation by taking the table for $r = ·00$. The corresponding values for the z's are those in the lower line of the double curled brackets, and repeating the continuous multiplication process on the machine we have $d/N = ·126,0388$. Interpolating linearly for $d/N = ·130,8562$ we find

$$r = ·00 + ·05 \times \frac{48174}{64975} = ·0371.$$

This result would be close enough for the great majority of practical investigations, but the true value of r is ·0379. It is of interest to determine how the above result may be brought into accord with the actual value of r. Our d/N is in a finial panel of the table; we cannot get the central difference for $z_{0,0}$ and $z_{0,1}$ as we are on the border of the table $h = 0·0$. Accordingly, let us try the forward difference formula (ϵ): see p. liii.

Here $\theta = ·5469$ and $\chi = ·3312$ as before, and we have for the two tables $r = ·00$ and $r = ·05$:

$$z_{\theta,\chi} = \begin{Bmatrix}·137,127\\ ·143,775\end{Bmatrix} + ·5469\begin{Bmatrix}-·010,923\\ -·010,946\end{Bmatrix} + ·3312\begin{Bmatrix}-·016,145\\ -·016,563\end{Bmatrix}$$

$$- ·1239,0019\begin{Bmatrix}·000,108\\ ·000,043\end{Bmatrix} - ·1107,5328\begin{Bmatrix}·001,091\\ ·001,058\end{Bmatrix}$$

$$+ ·1811,3228\begin{Bmatrix}·001,286\\ ·001,289\end{Bmatrix}$$

$= ·125,905$, from upper line,

$= ·132,414$, from lower line.

Interpolating linearly, $r = \cdot 00 + \cdot 05 \times \frac{4951}{6509} = \cdot 0380$, which is in good agreement with the value ·0379 found by developing the full tetrachoric equation and solving it.

Let us now use the appropriate central difference finial formula (γ *bis*). We require the values of the following eight δ^2's and δ'^2's for the two tables of r*:

	$r = \cdot 00$	$r = \cdot 05$
$\delta^2 z_{1,0}$	·000,108	·000,043
$\delta^2 z_{1,1}$	·000,096	·000,034
$\delta^2 z_{2,0}$	·000,215	·000,151
$\delta^2 z_{2,1}$	·000,189	·000,129
$\delta'^2 z_{0,0}$	·000,997	·000,956
$\delta'^2 z_{1,0}$	·000,917	·000,876
$\delta'^2 z_{0,1}$	·001,091	·001,058
$\delta'^2 z_{1,1}$	·001,004	·000,971

We need only compute the second and third lines of (γ *bis*), as we have already obtained the values of the first. Calling this remainder R, we have:

$$\begin{aligned} R = &-\cdot 0413{,}0006 \left[4\cdot 4531 \left(\cdot 6688 \begin{Bmatrix} \cdot 000{,}108 \\ \cdot 000{,}043 \end{Bmatrix} + \cdot 3312 \begin{Bmatrix} \cdot 000{,}096 \\ \cdot 000{,}034 \end{Bmatrix} \right) \right. \\ &\left. - 1\cdot 5469 \left(\cdot 6688 \begin{Bmatrix} \cdot 000{,}215 \\ \cdot 000{,}151 \end{Bmatrix} + \cdot 3312 \begin{Bmatrix} \cdot 000{,}189 \\ \cdot 000{,}129 \end{Bmatrix} \right) \right] \\ &- \cdot 0369{,}1776 \left[1\cdot 6688 \left(\cdot 4531 \begin{Bmatrix} \cdot 000{,}997 \\ \cdot 000{,}956 \end{Bmatrix} + \cdot 5469 \begin{Bmatrix} \cdot 000{,}917 \\ \cdot 000{,}876 \end{Bmatrix} \right) \right. \\ &\left. + 1\cdot 3312 \left(\cdot 4531 \begin{Bmatrix} \cdot 001{,}091 \\ \cdot 001{,}058 \end{Bmatrix} + \cdot 5469 \begin{Bmatrix} \cdot 001{,}004 \\ \cdot 000{,}971 \end{Bmatrix} \right) \right], \end{aligned}$$

the upper line in the curled brackets referring to $r = \cdot 00$, and the lower to $r = \cdot 05$. These give:

$$R = \begin{cases} -\cdot 000{,}1159 \\ -\cdot 000{,}1040\text{'} \end{cases}$$

which must be taken away from the hyperbolic formula values of d/N, i.e. ·126,0388 and ·132,5363 respectively.

Thus we get

$$d/N = \cdot 125{,}9229 \text{ for } r = 0\cdot 00,$$

and

$$\cdot 132{,}4323 \text{ for } r = 0\cdot 05.$$

* It is extremely easy to obtain by the machine the central differences of any table entry. To get δ^2 for any entry, add the entries to right and left of the given entry, place the entry itself on the machine and subtract it twice; the result on the slide is the δ^2. To get δ'^2 for any entry, add the entries above and below it and subtract twice the given entry. The discovery of either δ^2 or δ'^2 is thus a single continuous operation, and one of great simplicity and rapidity.

Hence, interpolating for $d/N = \cdot 130{,}8562$ we find $r = \cdot 0379$, the correct value. We accordingly conclude that the correct value in a finial panel will usually be obtained by the central difference formula (γ *bis*), although this value fails to be given exactly by the forward difference formula (ϵ). At the same time we note that a unit error in the fourth decimal place of r will rarely be of any importance in statistical inquiries.

Illustration (viii). *Intelligence and General Nutrition.* (*Girls.*)

Intelligence

Nutrition	Intelligent and Above	Slow Intelligent and Under	Totals
Good	91	171	262
Medium to Bad	102	221	323
Totals	193	392	585

In this case $\frac{1}{2}(1-\alpha_h) = \cdot 329{,}915, \quad \frac{1}{2}(1-\alpha_k) = \cdot 447{,}863,$

leading by aid of Table XXIX of Part I to

$$h = \cdot 44015, \quad k = \cdot 13107,$$

while $$d/N = \frac{91}{585} = \cdot 155{,}5556.$$

Clearly $$\theta = \cdot 4015, \quad \phi = \cdot 5985, \quad \chi = \cdot 3107, \quad \psi = \cdot 6893.$$

Between the values $h = \cdot 4$ and $\cdot 5$ and $k = \cdot 1$ and $\cdot 2$, our value for d/N occurs in the r tables for values $\cdot 00$, $\cdot 05$, $\cdot 10$ and $\cdot 15$ but the h and k values are nearer to $\cdot 4$ and $\cdot 1$ than $\cdot 5$ and $\cdot 2$. This excludes $r = \cdot 15$, as clearly $d/N = \cdot 155\ldots$ lies more than half-way from $\cdot 4$ to $\cdot 5$ and $\cdot 1$ to $\cdot 2$, i.e. the diagonal right top to left bottom corner is from $\cdot 163\ldots$ to $\cdot 166\ldots$. Accordingly we start with interpolating into the $r = \cdot 05$ table. We have

$$d/N = z_{\theta,\chi} = \left.\begin{matrix}\cdot 6893 \times \cdot 5985 \\ \cdot 4125{,}4605\end{matrix}\right\} \left\{\begin{matrix}\cdot 165{,}835 \\ \cdot 173{,}234\end{matrix}\right\} + \left\{\begin{matrix}\cdot 6893 \times \cdot 4015 \\ \cdot 2767{,}5395\end{matrix}\right\} \left\{\begin{matrix}\cdot 148{,}979 \\ \cdot 156{,}008\end{matrix}\right\}$$

$$+ \left.\begin{matrix}\cdot 3107 \times \cdot 5985 \\ \cdot 1859{,}5395\end{matrix}\right\} \left\{\begin{matrix}\cdot 159{,}512 \\ \cdot 159{,}456\end{matrix}\right\} + \left\{\begin{matrix}\cdot 3107 \times \cdot 4015 \\ \cdot 1247{,}4605\end{matrix}\right\} \left\{\begin{matrix}\cdot 136{,}717 \\ \cdot 143{,}667\end{matrix}\right\}.$$

The upper numbers in the right-facing curled brackets give $d/N = \cdot 155{,}0218$. This is not large enough, and we accordingly choose the $r = \cdot 10$ table for our second interpolation and this gives $d/N = \cdot 162{,}2162$. Finally, interpolating linearly for $d/N = \cdot 155{,}5556$, we have

$$r = \cdot 05 + \cdot 05 \times \frac{5338}{71944} = \cdot 0537.$$

The true value of r is $\cdot 0542$.

If we proceed by the forward difference formula, we find $r = \cdot 0545$, again a result slightly in excess of the true value. As our value of d/N does not fall into a finial panel, formula (β) applies, and we proceed to calculate the additional terms. We find:

	$r=\cdot 05$	$r=\cdot 10$
$\delta^2 z_{0,0}$	·000,614	·000,552
$\delta^2 z_{0,1}$	·000,756	·000,703
$\delta^2 z_{1,0}$	·000,558	·000,496
$\delta^2 z_{1,1}$	·000,687	·000,634
$\delta'^2 z_{0,0}$	·000,063	– ·000,010
$\delta'^2 z_{1,0}$	·000,053	– ·000,017
$\delta'^2 z_{0,1}$	·000,201	·000,130
$\delta'^2 z_{1,1}$	·000,175	·000,107

Substituting in the formula in a manner suitable for a nearly continuous operation we obtain—the upper figures in curled brackets referring to $r = \cdot 05$, and the lower to $r = \cdot 10$ interpolation:

$$\begin{aligned} R = & \left.\begin{matrix} -\tfrac{1}{6}\cdot 4015 \times \cdot 5985 \\ -\cdot 0400{,}4963 \end{matrix}\right] \left[1\cdot 5985\left(\cdot 6893\begin{Bmatrix} \cdot 000{,}614 \\ \cdot 000{,}552 \end{Bmatrix} + \cdot 3107\begin{Bmatrix} 000{,}756 \\ \cdot 000{,}703 \end{Bmatrix}\right)\right. \\ & \qquad \left. + 1\cdot 4015\left(\cdot 6893\begin{Bmatrix} \cdot 000{,}558 \\ \cdot 000{,}496 \end{Bmatrix} + \cdot 3107\begin{Bmatrix} \cdot 000{,}687 \\ \cdot 000{,}634 \end{Bmatrix}\right)\right] \\ & \left.\begin{matrix} -\tfrac{1}{6}\cdot 3107 \times \cdot 6893 \\ -\cdot 0356{,}9425 \end{matrix}\right] \left[1\cdot 6893\left(\cdot 5985\begin{Bmatrix} \cdot 000{,}063 \\ -\cdot 000{,}010 \end{Bmatrix} + \cdot 4015\begin{Bmatrix} \cdot 000{,}053 \\ -\cdot 000{,}017 \end{Bmatrix}\right)\right. \\ & \qquad \left. + 1\cdot 3107\left(\cdot 5985\begin{Bmatrix} \cdot 000{,}201 \\ \cdot 000{,}130 \end{Bmatrix} + \cdot 4015\begin{Bmatrix} \cdot 000{,}175 \\ \cdot 000{,}107 \end{Bmatrix}\right)\right] \\ = & -\cdot 0400{,}4963\left[\begin{Bmatrix} \cdot 001{,}0520 \\ \cdot 000{,}9574 \end{Bmatrix} + \begin{Bmatrix} \cdot 000{,}8382 \\ \cdot 000{,}7552 \end{Bmatrix}\right] \\ & -\cdot 0356{,}9425\left[\begin{Bmatrix} \cdot 000{,}0996 \\ -\cdot 000{,}0216 \end{Bmatrix} + \begin{Bmatrix} \cdot 000{,}2498 \\ \cdot 000{,}1583 \end{Bmatrix}\right] \\ = & -\begin{Bmatrix} \cdot 000{,}0757 \\ \cdot 000{,}0686 \end{Bmatrix} - \begin{Bmatrix} \cdot 000{,}0125 \\ \cdot 000{,}0049 \end{Bmatrix} = -\begin{Bmatrix} \cdot 000{,}0882 \\ \cdot 000{,}0735 \end{Bmatrix}. \end{aligned}$$

Accordingly:

For $r = \cdot 05$: $d/N = \cdot 155{,}0218 - \cdot 000{,}0882 = \cdot 154{,}9336$,

„ $r = \cdot 10$: $d/N = \cdot 162{,}2162 - \cdot 000{,}0935 = \cdot 162{,}1227$,

and finally for $d/N = \cdot 155{,}5556$,

$$r = \cdot 05 + \cdot 05 \times \frac{6220}{71891} = \cdot 0543.$$

The result is thus in excellent agreement with that found by forming the high order tetrachoric equation and solving it. We conclude that formula (α) will suffice for three and formula (β) or formula (γ) for four-figure accuracy. We shall give further illustrations with greater brevity as the method of arranging the work will now be clear to the reader.

Illustration (ix). *Mother's Habits and Baby's Health.*

Mother's Habits

Baby's Health	Good	Not Good	Totals
Good ...	625	218	843
Not Good	206	136	342
Totals	831	354	1185

Here $\frac{1}{2}(1-\alpha_h) = \cdot 298{,}734, \quad \frac{1}{2}(1-\alpha_k) = \cdot 288{,}608,$

and thus $h = \cdot 52805, \quad k = \cdot 55746,$

while $d/N = \cdot 114{,}7679,$

$$\theta = \cdot 2805, \quad \phi = \cdot 7195, \quad \chi = \cdot 5746, \quad \psi = \cdot 4254.$$

Between $h = \cdot 50$ and $\cdot 60$, and $k = \cdot 50$ and $\cdot 60$, the above value of d/N occurs in tables of r for $\cdot 20$, $\cdot 25$ and $\cdot 30$, but not in those for $r = \cdot 15$ and $\cdot 35$. We therefore start by interpolating into $\cdot 25$. Using formula (α)

$$d/N = \cdot 3060{,}7530 \begin{Bmatrix} \cdot 127{,}375 \\ \cdot 120{,}715 \end{Bmatrix} + \cdot 4134{,}2470 \begin{Bmatrix} \cdot 115{,}238 \\ \cdot 108{,}878 \end{Bmatrix}$$
$$+ \cdot 1193{,}2470 \begin{Bmatrix} \cdot 115{,}238 \\ \cdot 108{,}878 \end{Bmatrix} + \cdot 1611{,}7530 \begin{Bmatrix} \cdot 104{,}390 \\ \cdot 098{,}302 \end{Bmatrix}.$$

The first or upper series of numbers gives us $d/N = \cdot 117{,}2044$, or too high a value. Hence the second system is inserted for $r = \cdot 20$. This gives $d/N = \cdot 110{,}7964$, and by linear interpolation,

$$r = \cdot 20 + \cdot 05 \times \frac{39715}{64080} = \cdot 2310.$$

The true value is $\cdot 2317$.

We now examine this result by aid of formula (β). The δ^2's and δ'^2's are as follows:

	$r = \cdot 20$	$r = \cdot 25$
$\delta^2 z_{0,0} = \delta'^2 z_{0,0}$	$\cdot 000{,}337$	$\cdot 000{,}278$
$\delta^2 z_{0,1} = \delta'^2 z_{1,0}$	$\cdot 000{,}284$	$\cdot 000{,}227$
$\delta^2 z_{1,0} = \delta'^2 z_{0,1}$	$\cdot 000{,}445$	$\cdot 000{,}395$
$\delta^2 z_{1,1} = \delta'^2 z_{1,1}$	$\cdot 000{,}383$	$\cdot 000{,}333$

Hence

$$R = -\cdot 0336{,}3662^{(5)} \left[1\cdot 7195 \left(\cdot 4254 \begin{Bmatrix} \cdot 000{,}337 \\ \cdot 000{,}278 \end{Bmatrix} + \cdot 5746 \begin{Bmatrix} \cdot 000{,}284 \\ \cdot 000{,}227 \end{Bmatrix} \right) \right.$$
$$\left. + 1\cdot 2805 \left(\cdot 4254 \begin{Bmatrix} \cdot 000{,}445 \\ \cdot 000{,}395 \end{Bmatrix} + \cdot 5746 \begin{Bmatrix} \cdot 000{,}383 \\ \cdot 000{,}333 \end{Bmatrix} \right) \right]$$
$$- \cdot 0407{,}3914 \left[1\cdot 4254 \left(\cdot 7195 \begin{Bmatrix} \cdot 000{,}337 \\ \cdot 000{,}278 \end{Bmatrix} + \cdot 2805 \begin{Bmatrix} \cdot 000{,}284 \\ \cdot 000{,}227 \end{Bmatrix} \right) \right.$$
$$\left. + 1\cdot 5746 \left(\cdot 7195 \begin{Bmatrix} \cdot 000{,}445 \\ \cdot 000{,}395 \end{Bmatrix} + \cdot 2805 \begin{Bmatrix} \cdot 000{,}383 \\ \cdot 000{,}333 \end{Bmatrix} \right) \right]$$
$$= -\cdot 000{,}0814 \text{ for } r = \cdot 20, \text{ and } = -\cdot 000{,}0694 \text{ for } r = \cdot 25.$$

Accordingly we have

$$d/N = \cdot 110{,}7150 \text{ for } r = \cdot 20 \text{ and } = \cdot 117{,}1350 \text{ for } r = \cdot 25.$$

Interpolating linearly for $d/N = \cdot 114{,}7679$, we find

$$r = \cdot 20 + \cdot 05 \times \frac{40529}{64200} = \cdot 2316.$$

The result from the tetrachoric equation is ·2317.

If we use the forward difference formula (ϵ) (p. liii) we find $r = \cdot 2316$, also quite a good result.

Illustration (x). *Ventilation of Home and Health of Mother.*

Health of Mother

Ventilation	Good	Indifferent and Bad	Totals
Good and Fair	1080	352	1432
Poor	133	131	264
Totals	1213	483	1696

Here $\frac{1}{2}(1-\alpha_h) = \cdot 284{,}788, \quad \frac{1}{2}(1-\alpha_k) = \cdot 155{,}660,$

while $d/N = \cdot 077{,}2406.$

We find $h = \cdot 56868, \quad k = 1\cdot 01245,$

$$\theta = \cdot 6868, \quad \phi = \cdot 3132, \quad \chi = \cdot 1245, \quad \psi = \cdot 8755.$$

The required value of d/N will be found in the section $h = \cdot 5$ to $\cdot 6$ and $k = 1\cdot 0$ to $1\cdot 1$ in the tables for $r = \cdot 35$, $\cdot 40$ and $\cdot 45$. We therefore first determine d/N for ·40.

$z_{\theta,\chi}$ from (α) is given by

$$z_{\theta,\chi} = \quad \cdot 2742{,}0660 \begin{Bmatrix} \cdot 086{,}679 \\ \cdot 081{,}519 \end{Bmatrix} + \cdot 6012{,}9340 \begin{Bmatrix} \cdot 079{,}913 \\ \cdot 074{,}857 \end{Bmatrix}$$
$$+ \cdot 0389{,}9340 \begin{Bmatrix} \cdot 075{,}987 \\ \cdot 071{,}320 \end{Bmatrix} + \cdot 0855{,}0660 \begin{Bmatrix} \cdot 070{,}212 \\ \cdot 065{,}619 \end{Bmatrix}.$$

$d/N = \cdot 080{,}7857$ for $r = \cdot 40$, or from the upper figures. This is too high; we therefore take the value for ·35, from the lower figures. These give

$$d/N = \cdot 075{,}7559.$$

Hence by linear interpolation

$$r = \cdot 35 + \cdot 05 \times \frac{14847}{50298} = \cdot 3648.$$

The exact value is $r = \cdot 3653$.

The answer is correct to three figures. To get a better approximation we must proceed to second differences.

Let us try forward differences in this case using formula (ϵ). We have

$$z_{\theta,\chi} = \begin{Bmatrix} \cdot 081,519 \\ \cdot 086,679 \end{Bmatrix} + \cdot 6868 \begin{Bmatrix} - \cdot 006,662 \\ - \cdot 006,766 \end{Bmatrix} + \cdot 1245 \begin{Bmatrix} - \cdot 010,199 \\ - \cdot 010,692 \end{Bmatrix}$$

$$- \cdot 1075,5288 \begin{Bmatrix} \cdot 000,051 \\ - \cdot 000,014 \end{Bmatrix} + \cdot 0855,0660 \begin{Bmatrix} \cdot 000,961 \\ \cdot 000,991 \end{Bmatrix}$$

$$- \cdot 0544,9988 \begin{Bmatrix} \cdot 000,758 \\ \cdot 000,756 \end{Bmatrix}$$

$$= \cdot 075,709, \text{ for } r = \cdot 35,$$

$$= \cdot 080,745, \text{ for } r = \cdot 40.$$

Hence, by linear interpolation for $d/N = \cdot 077,241$, we have

$$r = \cdot 35 + \cdot 05 \times \frac{1532}{5036} = \cdot 3652.$$

The result could scarcely agree better with the actual value $r = \cdot 3653$ found from the tetrachoric equation had we proceeded by the central difference instead of by a forward difference formula. For a table of this type the latter formula gives very fair results and can be applied to any panel whatever*.

Illustration (xi). *Cleanliness of Home and Mother's Health.*

Health of Mother

Cleanliness of Home	Good	Indifferent and Bad	Totals
Clean	939	234	1173
"Fair" and Dirty	274	249	523
Totals	1213	483	1696

Here $\frac{1}{2}(1 - \alpha_h) = \cdot 284,788, \quad \frac{1}{2}(1 - \alpha_k) = \cdot 308,373,$

$$d/N = \cdot 146,8160.$$

Hence $h = \cdot 56868, \quad k = \cdot 50047.$

We have $\theta = \cdot 6868, \quad \phi = \cdot 3132, \quad \chi = \cdot 0047, \quad \psi = \cdot 9953.$

The value of d/N occurs in the tables for h and k between $\cdot 5$ and $\cdot 6$ for $r = \cdot 40$, $\cdot 45$, $\cdot 50$ and $\cdot 55$. The last clearly need not be considered as k is only slightly over $\cdot 5$ and a value such as $\cdot 146\ldots$ could not occur in this region. We may also discard the first ($r = \cdot 40$), for when k is close to $\cdot 50$ the value $d/N = \cdot 146\ldots$

* It is clearly less exact than the central difference formula in that it neglects third differences, but these reach practical importance in very few of the cases tested in this Introduction.

could only occur when h is slightly greater than ·50. Working with the ·45 and ·50 table we have

$$z_{\theta,\chi} = \cdot 3117{,}2796 \begin{Bmatrix} \cdot 155{,}684 \\ \cdot 162{,}320 \end{Bmatrix} + \cdot 6835{,}7204 \begin{Bmatrix} \cdot 142{,}361 \\ \cdot 149{,}694 \end{Bmatrix}$$
$$+ \cdot 0014{,}7204 \begin{Bmatrix} \cdot 142{,}361 \\ \cdot 149{,}694 \end{Bmatrix} + \cdot 0032{,}2796 \begin{Bmatrix} \cdot 130{,}483 \\ \cdot 137{,}570 \end{Bmatrix}$$
$$= \begin{Bmatrix} \cdot 146{,}4758 \\ \cdot 153{,}9025 \end{Bmatrix}.$$

Interpolating linearly we have

$$r = \cdot 45 + \cdot 05 \times \frac{3402}{74267} = \cdot 4523.$$

The value found from the full tetrachoric equation is ·4524.

Or, the agreement is complete without passing to second order differences.

Illustration (xii). *Eye Colour in Brother and Sister.*

Brother

Sister	Light Eyes	Dark Eyes	Totals
Light Eyes	616	219	835
Dark Eyes	293	372	665
Totals	909	591	1500

Here $\frac{1}{2}(1 - \alpha_h) = \cdot 394{,}000, \quad \frac{1}{2}(1 - \alpha_k) = \cdot 443{,}333,$

$$d/N = \cdot 248{,}0000,$$

and $h = \cdot 26891, \quad k = \cdot 14253.$

This value of d/N can lie in the ·40, ·45, or ·50 tables for r, we therefore start by interpolating into that for $r = \cdot 45$. We have

$$\theta = \cdot 6891, \quad \phi = \cdot 3109, \quad \chi = \cdot 4253, \quad \psi = \cdot 5747.$$

$$z_{\theta,\chi} = \cdot 1786{,}7423 \begin{Bmatrix} \cdot 266{,}295 \\ \cdot 275{,}161 \end{Bmatrix} + \cdot 3960{,}2577 \begin{Bmatrix} \cdot 246{,}755 \\ \cdot 255{,}392 \end{Bmatrix}$$
$$+ \cdot 1322{,}2577 \begin{Bmatrix} \cdot 248{,}905 \\ \cdot 257{,}709 \end{Bmatrix} + \cdot 2930{,}7423 \begin{Bmatrix} \cdot 231{,}089 \\ \cdot 239{,}718 \end{Bmatrix}.$$

Hence $$z_{\theta,\chi} = \begin{Bmatrix} \cdot 245{,}9393 \\ \cdot 254{,}6369 \end{Bmatrix},$$

the upper number showing that we need $r = \cdot 50$, and not ·40.

Thus by linear interpolation

$$r = \cdot 45 + \cdot 05 \times \frac{20607}{86976} = \cdot 4618.$$

The actual value of r is ·4614.

We will next inquire how much closer we get to this result by using a higher difference formula. The following δ^2's and δ'^2's are needed for (β):

	$r=\cdot45$	$r=\cdot50$
$\delta^2 z_{0,0}$	$-\cdot000,397$	$-\cdot000,508$
$\delta^2 z_{1,0}$	$-\cdot000,176$	$-\cdot000,278$
$\delta^2 z_{0,1}$	$-\cdot000,426$	$-\cdot000,539$
$\delta^2 z_{1,1}$	$-\cdot000,225$	$-\cdot000,330$
$\delta'^2 z_{0,0}$	$-\cdot000,614$	$-\cdot000,727$
$\delta'^2 z_{1,0}$	$-\cdot000,611$	$-\cdot000,722$
$\delta'^2 z_{0,1}$	$-\cdot000,426$	$-\cdot000,539$
$\delta'^2 z_{1,1}$	$-\cdot000,444$	$-\cdot000,556$

Hence

$$\begin{aligned} R = -\cdot0357,0686^{(5)} & \left[1\cdot3109\left(\cdot5747\begin{Bmatrix}-\cdot000,397\\-\cdot000,508\end{Bmatrix}+\cdot4253\begin{Bmatrix}-\cdot000,426\\-\cdot000,539\end{Bmatrix}\right)\right.\\ & \left.+1\cdot6891\left(\cdot5747\begin{Bmatrix}-\cdot000,176\\-\cdot000,278\end{Bmatrix}+\cdot4253\begin{Bmatrix}-\cdot000,225\\-\cdot000,330\end{Bmatrix}\right)\right]\\ -\cdot0407,3665 & \left[1\cdot5747\left(\cdot3109\begin{Bmatrix}-\cdot000,614\\-\cdot000,727\end{Bmatrix}+\cdot6891\begin{Bmatrix}-\cdot000,611\\-\cdot000,722\end{Bmatrix}\right)\right.\\ & \left.+1\cdot4253\left(\cdot3109\begin{Bmatrix}-\cdot000,426\\-\cdot000,539\end{Bmatrix}+\cdot6891\begin{Bmatrix}-\cdot000,444\\-\cdot000,556\end{Bmatrix}\right)\right].\end{aligned}$$

Thus $R=\cdot000,0959$, for $r=\cdot45$,

$=\cdot000,1209$, for $r=\cdot50$.

These give $d/N=\cdot246,0352$, for $r=\cdot45$,

$=\cdot254,7578$, for $r=\cdot50$.

Whence, interpolating for $d/N=\cdot248,0000$, we have

$$r=\cdot45+\cdot05\times\frac{19648}{87226}=\cdot4613,$$

only differing by a unit in the last figure from the actual value.

Illustration (xiii). *Intelligence and Conscientiousness.* (*Girls.*)

Intelligence

Conscientiousness	Slow Intelligent and below	Intelligent and above	Totals
Dull and Moderate	250	67	317
Keen	76	96	172
Totals	326	163	489

Here $\frac{1}{2}(1-\alpha_h)=\cdot333,333$, $\frac{1}{2}(1-\alpha_k)=\cdot351,738$,

and $d/N=\cdot196,3190$.

Hence $h=\cdot43072$, $k=\cdot38063$.

We have $\theta = \cdot 3072,\quad \phi = \cdot 6928,\quad \chi = \cdot 8063,\quad \psi = \cdot 1937.$

Thus
$$z_{\theta,\chi} = \cdot 1341{,}9536\begin{Bmatrix}\cdot 206{,}888\\ \cdot 215{,}474\end{Bmatrix} + \cdot 0595{,}0464\begin{Bmatrix}\cdot 190{,}114\\ \cdot 198{,}360\end{Bmatrix}$$
$$+ \cdot 5586{,}0464\begin{Bmatrix}\cdot 191{,}979\\ \cdot 200{,}401\end{Bmatrix} + \cdot 2476{,}9536\begin{Bmatrix}\cdot 176{,}847\\ \cdot 184{,}994\end{Bmatrix}.$$

The observed value of d/N occurs in the $h = \cdot 4$ to $\cdot 5$ and $k = \cdot 3$ to $\cdot 4$ in the r tables for $\cdot 45$, $\cdot 50$ and $\cdot 55$; we therefore try $r = \cdot 50$ first, i.e. the upper numbers in the curled brackets, and find $d/N = \cdot 190{,}1206$ too small; we then compute for the higher number $r = \cdot 55$, i.e. the lower figures. These give us $d/N = \cdot 198{,}4860$. Interpolating linearly for $d/N = \cdot 196{,}3190$, we have

$$r = \cdot 50 + \cdot 05 \times \frac{61984}{83654} = \cdot 5370.$$

The value found from the full tetrachoric equation is $r = \cdot 5370$, in exact agreement. Thus the hyperbolic formula appears quite adequate in this case.

Illustration (xiv). *Habits of Mother and Cleanliness of Home.* (*Bradford.*)

Habits of Mother

Cleanliness of Home	Good	Indifferent and Bad	Totals
Clean	1009	164	1173
Fair and Dirty	144	379	523
Totals	1153	543	1696

Here $\frac{1}{2}(1 - \alpha_h) = \cdot 320{,}165, \quad \frac{1}{2}(1 - \alpha_k) = \cdot 308{,}373,$

and $d/N = \cdot 223{,}4670.$

Hence $h = \cdot 46724, \quad k = \cdot 50047.$

We have $\theta = \cdot 6724,\quad \phi = \cdot 3276,\quad \chi = \cdot 0047,\quad \psi = \cdot 9953.$

The value of d/N occurs in the (h, k) range for $r = \cdot 80$ and $r = \cdot 85$ only. It is sufficient therefore to interpolate into these tables. We have

$$z_{\theta,\chi} = \cdot 3260{,}6028\begin{Bmatrix}\cdot 233{,}252\\ \cdot 245{,}704\end{Bmatrix} + \cdot 6692{,}3972\begin{Bmatrix}\cdot 218{,}560\\ \cdot 230{,}869\end{Bmatrix}$$
$$+ \cdot 0015{,}3972\begin{Bmatrix}\cdot 215{,}207\\ \cdot 226{,}826\end{Bmatrix} + \cdot 0031{,}6028\begin{Bmatrix}\cdot 202{,}791\\ \cdot 214{,}580\end{Bmatrix}$$
$$= \begin{Bmatrix}\cdot 223{,}2955\\ \cdot 235{,}6484\end{Bmatrix}.$$

Hence, interpolating for the observed value of d/N, we find

$$r = \cdot 80 + \cdot 05 \times \frac{1715}{123{,}529} = \cdot 8007.$$

Using 18 tetrachoric functions and adjusting for the remainder we find $r = \cdot 80013$.

The labour of determining and solving an equation of this order is very great, and we cannot even then be absolutely sure to a unit in the fifth figure of r. We accordingly proceed to a more close interpolation from the tables. We need the following δ^2's and δ'^2's:

	$r = \cdot 80$	$r = \cdot 85$
$\delta^2 z_{0,0}$	$-\cdot 001{,}305$	$-\cdot 001{,}695$
$\delta^2 z_{1,0}$	$-\cdot 001{,}077$	$-\cdot 001{,}454$
$\delta^2 z_{0,1}$	$-\cdot 001{,}279$	$-\cdot 001{,}633$
$\delta^2 z_{1,1}$	$-\cdot 001{,}116$	$-\cdot 001{,}486$
$\delta'^2 z_{0,0}$	$-\cdot 000{,}989$	$-\cdot 001{,}343$
$\delta'^2 z_{1,0}$	$-\cdot 001{,}077$	$-\cdot 001{,}454$
$\delta'^2 z_{0,1}$	$-\cdot 000{,}648$	$-\cdot 000{,}930$
$\delta'^2 z_{1,1}$	$-\cdot 000{,}795$	$-\cdot 001{,}125$

Using formula (β) we have for the remainder

$$R = \left.\begin{matrix} -\frac{1}{6}(\cdot 6724 \times \cdot 3276) \\ -\cdot 0367{,}1304 \end{matrix}\right] \left[1\cdot 3276 \left(\cdot 9953 \begin{Bmatrix} -\cdot 001{,}305 \\ -\cdot 001{,}695 \end{Bmatrix} + \cdot 0047 \begin{Bmatrix} -\cdot 001{,}279 \\ -\cdot 001{,}633 \end{Bmatrix} \right) \right.$$
$$\left. + 1\cdot 6724 \left(\cdot 9953 \begin{Bmatrix} -\cdot 001{,}077 \\ -\cdot 001{,}454 \end{Bmatrix} + \cdot 0047 \begin{Bmatrix} -\cdot 001{,}116 \\ -\cdot 001{,}486 \end{Bmatrix} \right) \right]$$
$$\left.\begin{matrix} -\frac{1}{6}(\cdot 0047 \times \cdot 9953) \\ -\cdot 0007{,}7965 \end{matrix}\right] \left[1\cdot 9953 \left(\cdot 3276 \begin{Bmatrix} -\cdot 000{,}989 \\ -\cdot 001{,}343 \end{Bmatrix} + \cdot 6724 \begin{Bmatrix} -\cdot 001{,}077 \\ -\cdot 001{,}454 \end{Bmatrix} \right) \right.$$
$$\left. + 1\cdot 0047 \left(\cdot 3276 \begin{Bmatrix} -\cdot 000{,}648 \\ -\cdot 000{,}930 \end{Bmatrix} + \cdot 6724 \begin{Bmatrix} -\cdot 000{,}795 \\ -\cdot 001{,}125 \end{Bmatrix} \right) \right],$$

or
$$R = +\cdot 000{,}1320, \text{ for } r = \cdot 80,$$
$$= +\cdot 000{,}1749, \text{ for } r = \cdot 85.$$

Hence
$$d/N = \cdot 223{,}4275, \text{ for } r = \cdot 80,$$
$$= \cdot 235{,}8233, \text{ for } r = \cdot 85.$$

Then interpolating linearly for $d/N = \cdot 223{,}4670$, we have

$$r = \cdot 80 + \cdot 05 \times \frac{395}{124958} = \cdot 80016,$$

which is sufficiently close to the result ·80013 of the equation method.

The forward difference formula (ϵ) gives a slightly worse result, namely $r = \cdot 80021$.

Illustration (xv). *Binocular Vision and Vision of Better Eye.* (*Boys.*)

Vision of Better Eye

Binocular Vision	6/9 and better	Below 6/9	Totals
6/6 and better	296	9	305
Below 6/6 ...	35	99	134
Totals	331	108	439

When the correlation is over ·90 it is difficult to test the accuracy of the result by the complete tetrachoric equation; the terms converge so slowly that it is scarcely possible to compute enough of them. On the other hand, if we take material of which the correlation is known, say by the product-moment method, it is again not easy to obtain adequate numbers in the cells not on the "correlation diagonal." The above table is one for the correlation of binocular vision and the vision of the better eye. The correlation coefficient worked by the product-moment process on the full table was ·9485. The above was the best fourfold table we could make, i.e. the others gave two or three units only in one or other cell.

We have $\frac{1}{2}(1-\alpha_h) = \cdot 246{,}0137, \quad \frac{1}{2}(1-\alpha_k) = \cdot 305{,}2392,$

and $d/N = \cdot 225{,}5125.$

Thus we have $h = \cdot 68709, \quad k = \cdot 50939.$

Further $\theta = \cdot 8709, \quad \phi = \cdot 1291, \quad \chi = \cdot 0939, \quad \psi = \cdot 9061.$

The value required of d/N occurs within the given (h, k) range only for $r = \cdot 95$ and $r = \cdot 90$. Accordingly we have

$$z_{\theta,\chi} = \cdot 1169{,}7751 \begin{Bmatrix} \cdot 245{,}878 \\ \cdot 228{,}353 \end{Bmatrix} + \cdot 7891{,}2249 \begin{Bmatrix} \cdot 225{,}035 \\ \cdot 209{,}730 \end{Bmatrix}$$
$$+ \cdot 0121{,}2249 \begin{Bmatrix} \cdot 232{,}102 \\ \cdot 214{,}481 \end{Bmatrix} + \cdot 0817{,}7751 \begin{Bmatrix} \cdot 215{,}259 \\ \cdot 198{,}793 \end{Bmatrix},$$

or
$$d/N = \cdot 226{,}7594, \text{ for } r = \cdot 95,$$
$$= \cdot 211{,}0717, \text{ for } r = \cdot 90.$$

Interpolating linearly for $d/N = \cdot 225{,}5125$, we have

$$r = \cdot 90 + \cdot 05 \times \frac{144408}{156877} = \cdot 9460.$$

This is as good a result as could possibly be anticipated for the agreement of a product-moment and a tetrachoric coefficient, when we bear in mind that the accordance depends on the existence of nine individuals only in the right-hand upper cell.

To sum up we see that the table throughout the range of r gives very satisfactory results with far less labour than the equation method, if we use second differences for h and k and linear interpolation for r. There is not much to choose in accuracy between the results from a central difference and from a forward difference second order interpolation. For many purposes where two to three decimals are adequate in the value of r the simple hyperbolic formula (α) is sufficient.

(b) We will now proceed to illustrate the application of Tables VIII and IX to determine *all* the cell contents of a contingency table of which the frequency distribution is supposed to be normal, and it is desired to test the accuracy of the hypothesis.

Illustration (xvi). To test whether the following contingency table for Stature in Father and Son may reasonably be considered normal.

Stature of Father

Stature of Son	Short	Shortish	Medium	Tallish	Tall	Totals
Short	203*	91	26†	9†	6†	335
Shortish	95	75	66	22	26	284
Medium	30†	36	37*	14*	20*	137
Tallish	18†	27	26*	11*	23*	105
Tall	12†	35	25*	13*	54*	139
Totals	358	264	180	69	129	1000

This table has been reduced to broad categories from a much larger table where the categories were all quantitatively given. The ten cell contents to which an asterisk is attached were found with great ease by means of formula (α) from the section of the Table for positive r. The contents of six further cells—those in which a dagger is placed—were found by the like formula from the section of the Table for negative r. The contents of the remaining nine cells could then be found from the marginal totals and a knowledge of the sixteen cell contents already found.

The actual correlation coefficient of this table as found by the product-moment method on the original data was $r = \cdot 5189$. The result would have been practically the same had the value obtained by mean square contingency corrected for class indices, namely $r = \cdot 5179$, been used. The following table gives the computed frequencies:

Stature of Father

Stature of Son	Short	Shortish	Medium	Tallish	Tall	Totals
Short	196·4	83·3	36·1	9·5	9·7	335
Shortish	99·2	86·7	54·7	18·4	25·0	284
Medium	32·2	39·8	31·5	12·5	21·0	137
Tallish	17·8	27·7	25·6	11·3	22·6	105
Tall	12·4	26·5	32·1	17·3	50·7	139
Totals	358	264	180	69	129	1000

The method of determining the cell contents from the table is easily indicated. Take for example the cell for "Tall" Sons and "Tall" Fathers. We have from Table XXIX of Part I of this work for

$$\tfrac{1}{2}(1-\alpha_h) = \cdot 129, \quad \tfrac{1}{2}(1-\alpha_k) = \cdot 139,$$

the values $h = 1{\cdot}13113$ and $k = 1{\cdot}08482$. Thus

$$\theta = \cdot 3113, \quad \phi = \cdot 6887, \quad \chi = \cdot 8482, \text{ and } \psi = \cdot 1516.$$

Here we find for

$$r = \cdot 50,\quad d/N = \cdot 049{,}092; \qquad r = \cdot 55,\quad d/N = \cdot 053{,}263,$$

and by interpolation for $r = \cdot 5189$ we have

$$d/N = \cdot 05066 \text{ and } d = 50\cdot 7.$$

Next we take "Tall" Fathers with "Tall" and "Tallish" Sons and find in the same way $d = 73\cdot 3$; the difference of this and the former d gives $22\cdot 6$ as the cell frequency of "Tall" Fathers and "Tallish" Sons. Thus gradually the individual cell frequency is built up from combinations of cell frequencies.

It seemed worth while applying the "goodness of fit" test. Here, as we have applied the normal surface *assuming the marginal frequencies to be the same for the surface and the sample,* we have introduced nine restrictions instead of the single usual one, accordingly we must look up P for $n = 25 - 8 = 17$. The $\chi^2 = 17\cdot 37$ and we have accordingly $P = \cdot 363$, a reasonable fit. Thus the distribution of Stature in Fathers and Sons may be described legitimately by a normal surface.

TABLES X, XI^a, XI^b.

For computing the Frequency Distribution of the First Product Moment Coefficient, p_{xy}, in samples from an indefinitely large Normal Population. (Pearson, Jeffery and Elderton, *Biometrika*, Vol. XXI. pp. 164—201.)

(a) The aim of this table is to render it relatively easy to obtain a curve of frequency for the distribution of $p_{xy} = p_{11}$ in samples of size n drawn from a normal bivariate population characterised by standard deviations σ_1, σ_2 and correlation coefficient ρ.

We shall find it convenient to introduce a new variate v which is only p_{11} multiplied by a constant, a function of the characters of the sampled population, i.e.

$$v = \frac{n}{1-\rho^2}\frac{p_{11}}{\sigma_1\sigma_2} \quad \text{.................................(i).}$$

Here p_{11} is the variable value of the product moment coefficient changing generally with each sample of size n. The following are the constants for the distribution of v and p_{11}:

$$\bar{v} = (n-1)\frac{\rho}{1-\rho^2}, \qquad \bar{p}_{11} = \left(1 - \frac{1}{n}\right)\sigma_1\sigma_2\rho \quad \text{..................(ii),}$$

$$\sigma_v = \sqrt{n-1}\,\frac{\sqrt{1+\rho^2}}{1-\rho^2}, \qquad \sigma_{p_{11}} = \frac{\sqrt{n-1}}{n}\sqrt{1+\rho^2}\,\sigma_1\sigma_2 \quad \text{............(iii),}$$

$$_{p_{11}}\beta_1 = {}_v\beta_1 = \frac{4}{n-1}\,\frac{\rho^2(\rho^2+3)^2}{(1+\rho^2)^3} \quad \text{..(iv),}$$

$$_{p_{11}}\beta_2 = {}_v\beta_2 = 3 + \frac{6}{n-1}\left(1 + \frac{4\rho^2}{(1+\rho^2)^2}\right) \quad \text{..................................(v).}$$

The actual curve of frequency of v (or p_{11}) depends upon a function $T_m(v)$, where $m = \frac{1}{2}n - 1$, related to the Bessel function of the second kind with imaginary argument. But beyond the value $n = 25$, or $m = 11\cdot 5$, Pearson curves of Types IV and VI with their constants determined by (ii)—(v) above, give excellent fits. Thus for $n=50$, $\rho=\cdot 6$ we have Fig. (i), where the dots show the ordinates calculated from a Type VI curve.

For n below 25 when the correlation is high, we still get good fits, as in Fig. (ii), for $n=22$ and $\rho=\cdot 9$.

But for values of n below 25 when the correlation is low, the Pearson curves diverge too much from the true distribution as in Figs. (iii) and (iv).

If N be the number of samples the actual curve of frequency of v is

$$y_v = N(1-\rho^2)^{\frac{1}{2}(n-1)} e^{\rho v} T_{\frac{1}{2}n-1}(v) \quad\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(vi)},$$

where $T_{\frac{1}{2}n-1}(v) = T_m(v)$ is the function tabled in Table X for $n=2$ to 25, $m=0$ to 11·5. This function is independent of ρ.

The reader must be cautious not to confuse $p_{11}/\sigma_1\sigma_2 = Q_{11}$, say, with r the correlation in the sample; σ_1 and σ_2 are the standard deviations in the parent population, and if Σ_1, Σ_2 be those in a sample with correlation coefficient r,

$$r = \frac{p_{11}}{\Sigma_1\Sigma_2} = \frac{\sigma_1\sigma_2}{\Sigma_1\Sigma_2}\frac{p_{11}}{\sigma_1\sigma_2} = \frac{\sigma_1\sigma_2}{\Sigma_1\Sigma_2}Q_{11},$$

and the variation of Σ_1, Σ_2 with the sample gives wholly different distributions for r and Q_{11}, even when the sample becomes large.

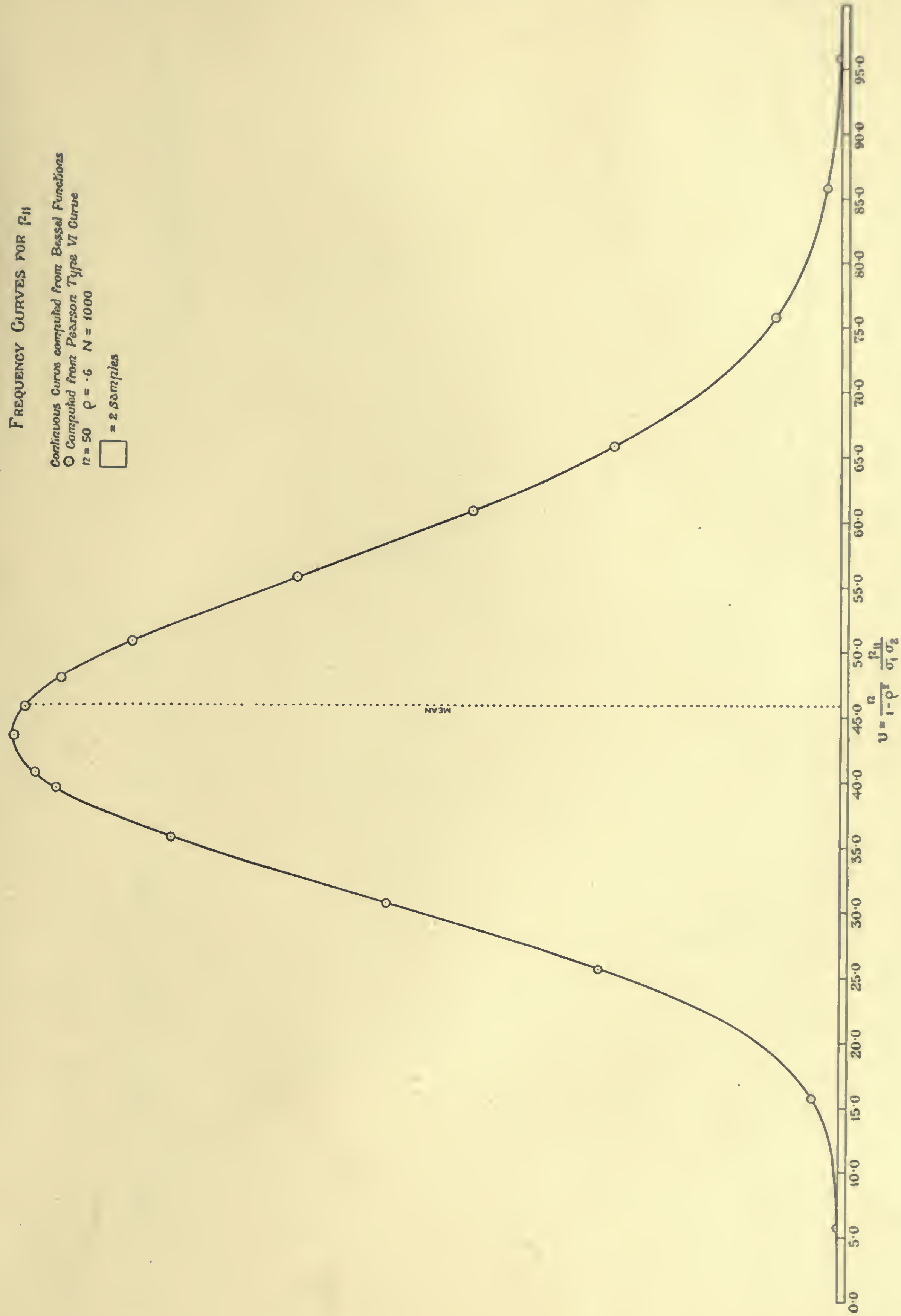
Fig. (v) illustrates the difference between the distributions of r and $Q_{11}=p_{11}/\sigma_1\sigma_2$ in the case of samples of 20 for $\rho=0{\cdot}6$ in the parent population.

That the student may appreciate the great difference in sampling between the distribution of r and of $Q_{11} = \frac{p_{11}}{\sigma_1\sigma_2} = \frac{\Sigma_1\Sigma_2}{\sigma_1\sigma_2}r$, Tables XI^a and XI^b are provided. It will be seen from Table XI^a that with samples of 100 even, for considerable correlation in the present population the means are only approaching equality, and the standard deviations still remain widely apart. Table XI^b indicates by the series of values of β_1 and β_2 for various samples, how different are the forms of the two curves. By mere inspection or by rough interpolation from these tables the student may appreciate in the case of any given sample the grossness of the error which arises when $p_{11}/\sigma_1\sigma_2$ is substituted for r, for example in dealing with the standard error of a 'tetrad' in investigations as to factors of general intelligence in psychology*.

* It may be suggested that the divergence of the two curves would be less if we took much larger samples. That this is not so, the following values of the standard deviations in the case of $\rho=0{\cdot}5$ sufficiently indicate:

	Size of Sample		
	50	100	400
Standard Deviation of r	·108,620	·075,897	·037,612
,, ,, $\frac{p_{11}}{\sigma_1\sigma_2}$	·156,525	·111,243	·055,832

In each case the standard deviation of $\frac{p_{11}}{\sigma_1\sigma_2}$ is about 50 per cent. increase on that of r. The $\frac{p_{11}}{\sigma_1\sigma_2}$ curve tends more rapidly, even when ρ is large, to approach the normal form.



Frequency Curves for r_{11}
Continuous Curve computed from Bessel Functions
⊙ Computed from Pearson Type VI Curve
$n = 50$ $\rho = \cdot 6$ $N = 1000$
= 2 samples
MEAN
0·0
5·0
10·0
15·0
20·0
25·0
30·0
35·0
40·0
45·0
50·0
55·0
60·0
65·0
70·0
75·0
80·0
85·0
90·0
95·0
$v = \frac{n}{1-\rho^2} \frac{r_{11}}{\sigma_1 \sigma_2}$

Fig. (i).

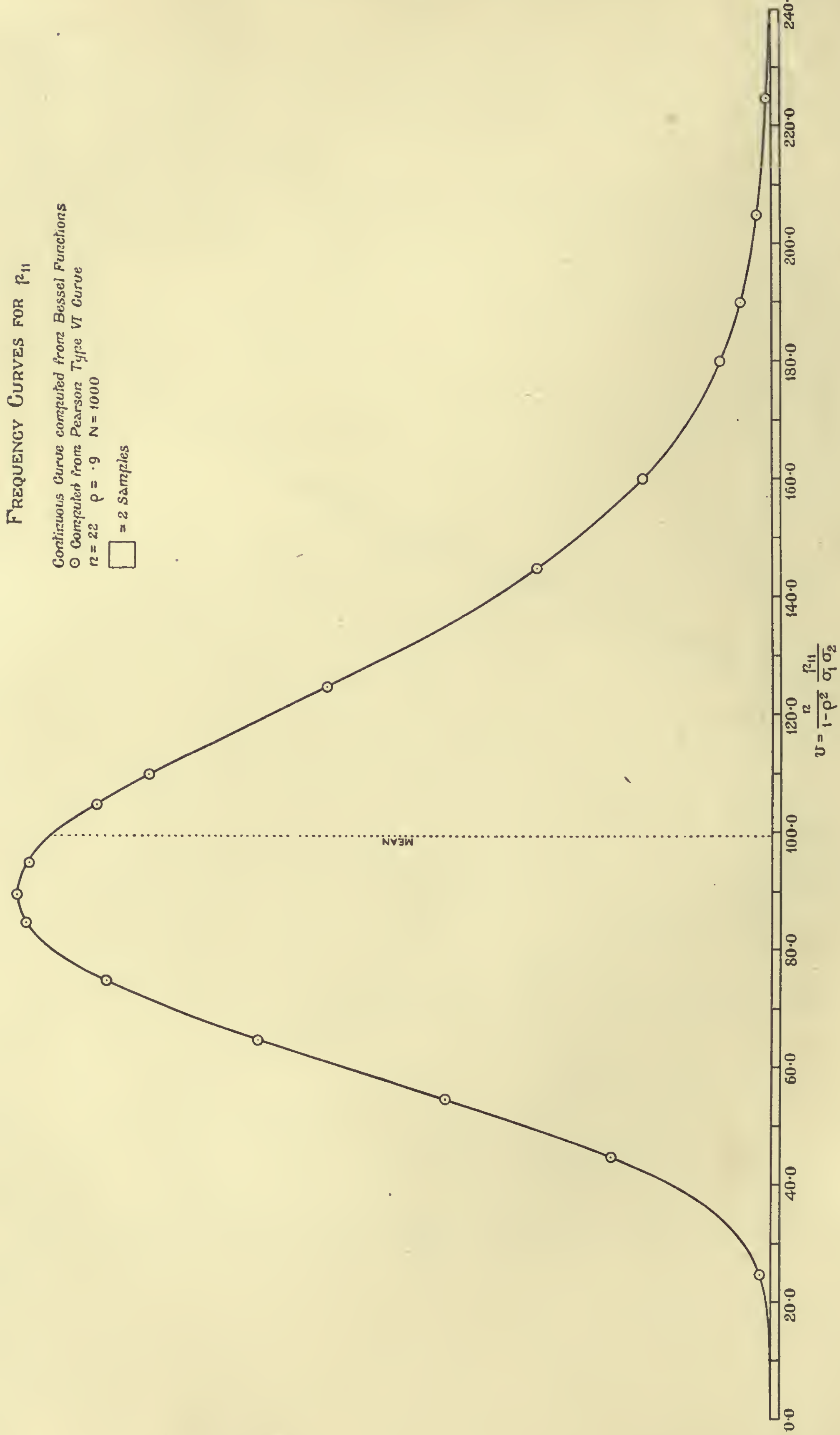

FREQUENCY CURVES FOR r_{11}
Continuous Curve computed from Bessel Functions
⊙ Computed from Pearson Type VI Curve
$n = 22$ $\rho = \cdot 9$ $N = 1000$
= 2 Samples
MEAN
0·0
20·0
40·0
60·0
80·0
100·0
120·0
140·0
160·0
180·0
200·0
220·0
240·0
$v = \frac{n}{1-\rho^2} \frac{r_{11}}{\sigma_1 \sigma_2}$

Fig. (ii)

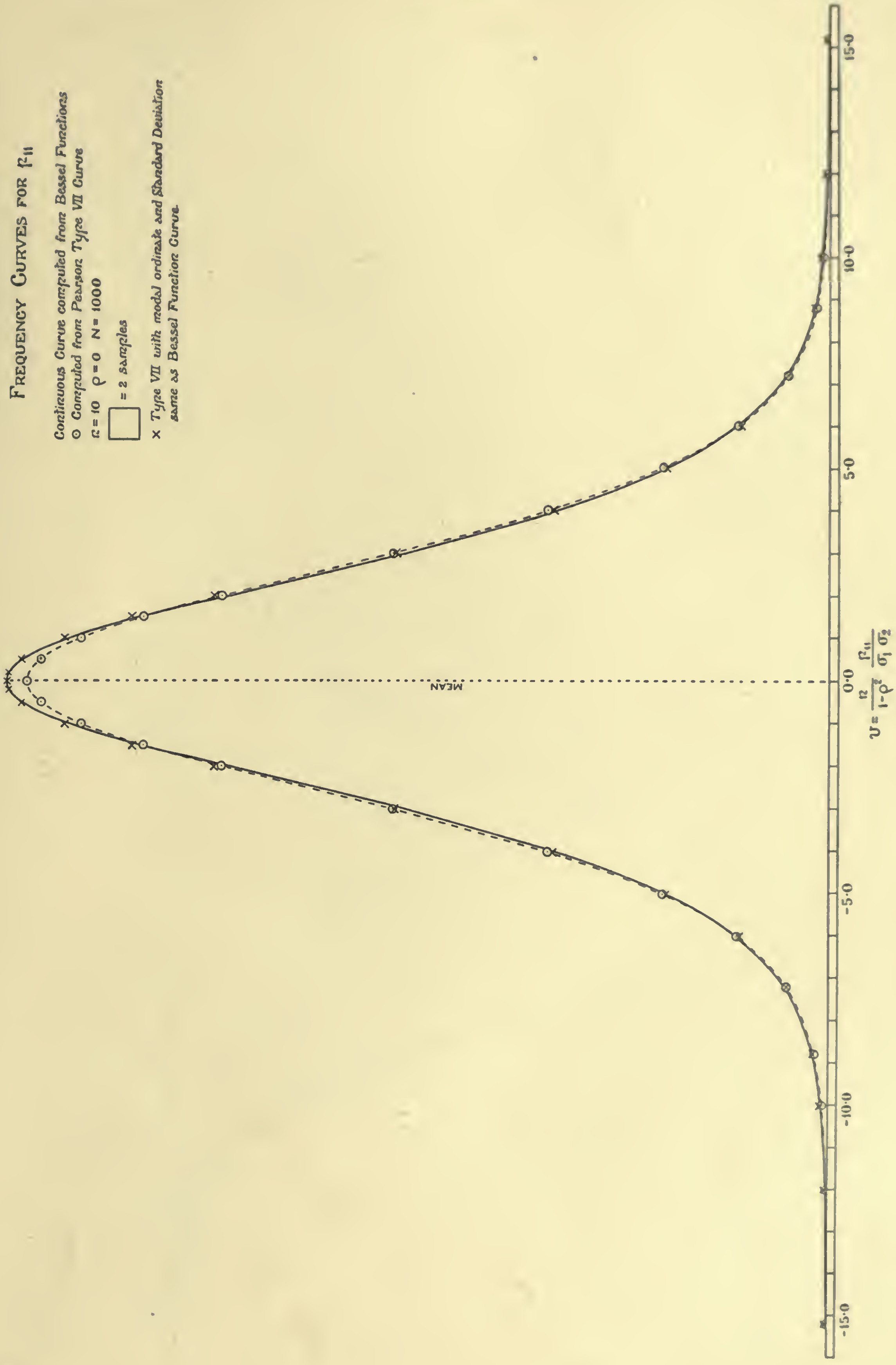

FREQUENCY CURVES FOR r_{11}
Continuous Curve computed from Bessel Functions
⊙ Computed from Pearson Type VII Curve
$n = 10$ $\rho = 0$ $N = 1000$
= 2 samples
× Type VII with modal ordinate and Standard Deviation same as Bessel Function Curve.
MEAN
15·0
10·0
5·0
0·0
-5·0
-10·0
-15·0
$v = \frac{n}{1-\rho^2}\,\frac{r_{11}}{\sigma_1\sigma_2}$

Fig. (iii).

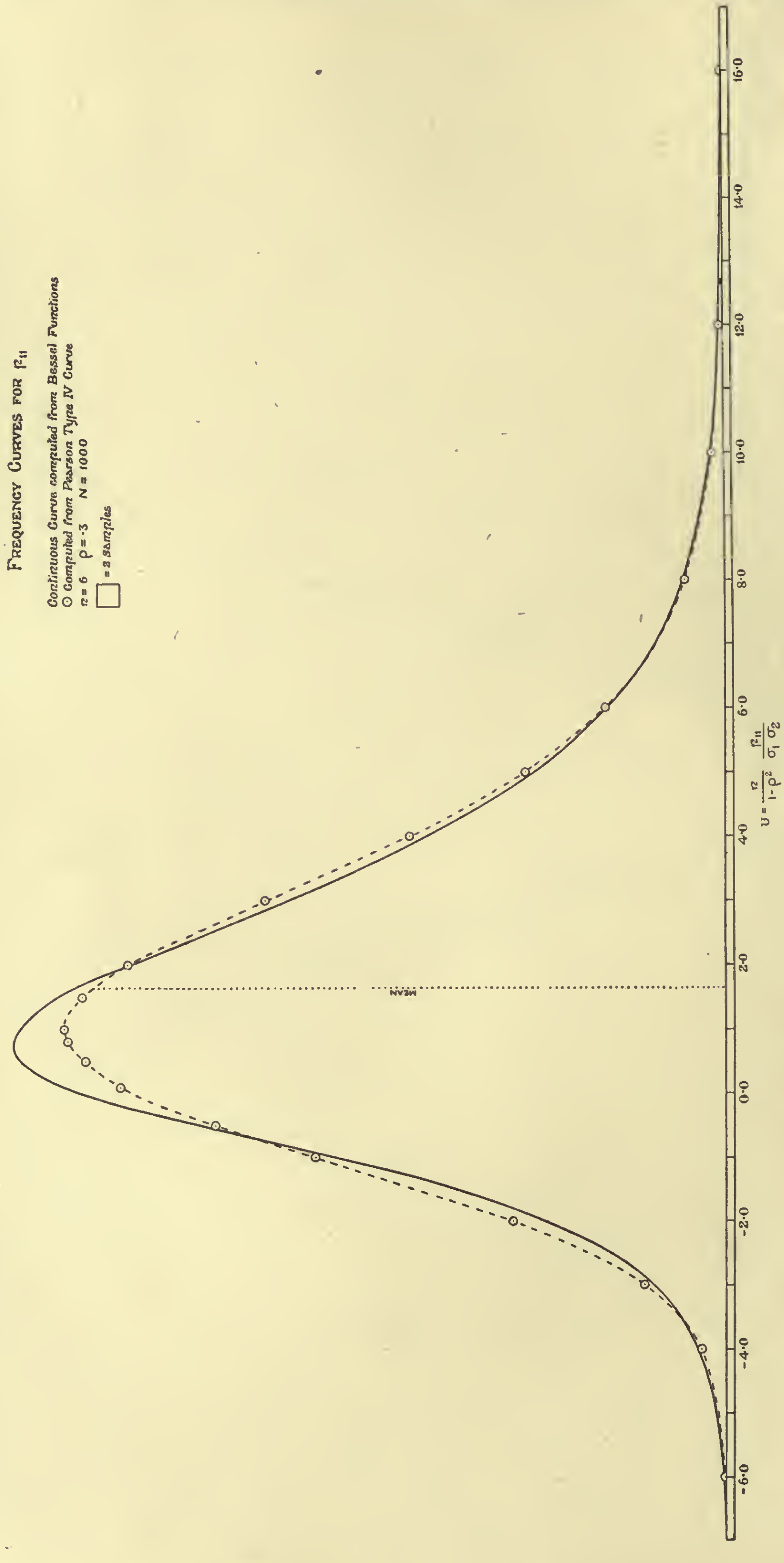
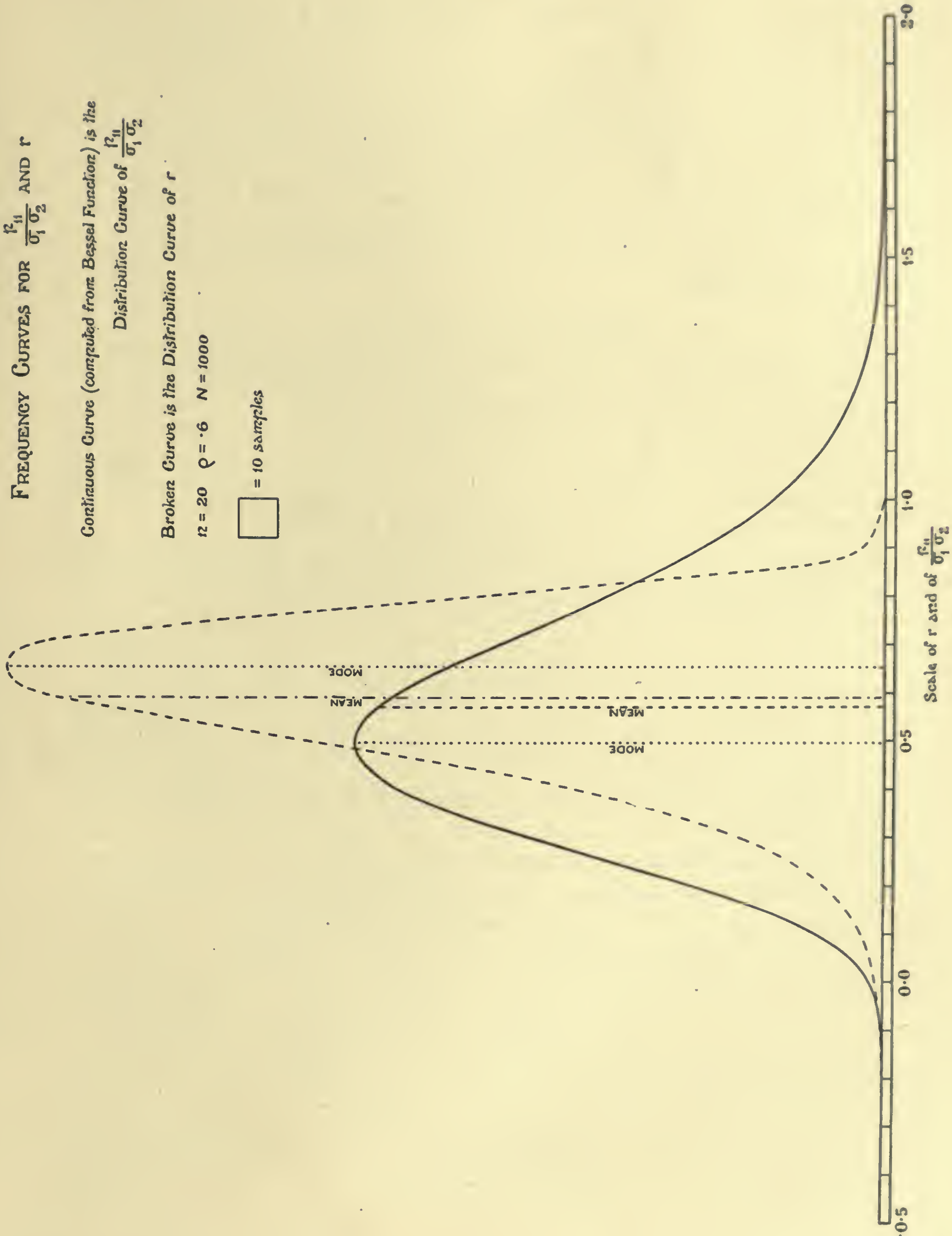

FREQUENCY CURVES FOR r_{11}
Continuous Curve computed from Bessel Functions
⊙ Computed from Pearson Type IV Curve
$n = 6$ $\rho = \cdot 3$ $N = 1000$
= 2 samples
MEAN
-6·0
-4·0
-2·0
0·0
2·0
4·0
6·0
8·0
10·0
12·0
14·0
16·0
$U = \frac{n}{1-\rho^2}\ \frac{r_{11}}{\sigma_1\ \sigma_2}$

Fig. (iv).



FREQUENCY CURVES FOR $\frac{r_{11}}{\sigma_1\sigma_2}$ AND r
Continuous Curve (computed from Bessel Function) is the Distribution Curve of $\frac{r_{11}}{\sigma_1\sigma_2}$
Broken Curve is the Distribution Curve of r
n = 20 ρ = ·6 N = 1000
= 10 samples
MODE
MEAN
MEAN
MODE
-0·5
0·0
0·5
1·0
1·5
2·0
Scale of r and of $\frac{r_{11}}{\sigma_1\sigma_2}$

Fig. (v).

(*b*) To draw the curve for $m = \frac{1}{2}n - 1$, we have to plot y for each value of v in (vi). In the first place $N(1-\rho^2)^{\frac{1}{2}(n-1)}$ is a numerical factor which does not vary with v; $T_{\frac{1}{2}n-1}(v)$ is given in the first column of each subsection of our Table X The value of $e^{\rho v}$ may be found from Newman and Glaisher's Tables of e^x and e^{-x} in the *Cambridge Philosophical Transactions* (Vol. XIII. 1883, pp. 145—272). Thus the work can be carried out without the use of logarithms on the arithmometer. But this process involves interpolating into the above tables for $x = \rho v$. The alternative process is to use logarithms and take

$$\log y_v = \log N + (m + \tfrac{1}{2}) \log (1 - \rho^2) + (\cdot 434{,}2945\rho)\, v + \log T_m(v) \quad \ldots\text{(vii)},$$

so that for the given ρ

$$\log y = C_0 + C_1 v + \log T_m(v),$$

where C_0 and C_1 are constants. For this method $\log T_m(v)$ is provided in the second column of each subsection of Table X. The labour here lies in finding the anti-logarithms. In this application the two methods are of about equal length, when we do not use more decimal places than are needful for practical statistical work.

A most important point must be kept in mind: we have to plot y for v negative as well as positive. $e^{\rho v}$ changes from $e^{\rho v}$ to $e^{-\rho v}$ with change in sign of v, but $T_m(v)$ does *not* change sign with v; we have always $T_m(-v) = T_m(v)$.

A matter of interest as well as of practical value in the plotting of the curve lies in the determination of the position of the mode $\breve{v}$. It may be shown that the equation to determine the modal abscissa $\breve{v}$ is

$$\rho = \frac{\breve{v}}{2m-1} \frac{T_{m-1}(\breve{v})}{T_m(\breve{v})} \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(viii)}.$$

It is not feasible to solve this equation and find $\breve{v}$ directly. But if the right-hand side be tabled for each value of $m\, (= \frac{1}{2}n - 1)$ and each value of v, we obtain a series of values of ρ, for which, with the given value of m, v would be the modal value $\breve{v}$ of that sampling series. These values of ρ are given in the third column of each subsection of the table.

Illustration (i). In samples of 20 from a parent population of correlation $\rho = 0{\cdot}6$, find the modal, i.e. most probable value of p_{11}, the product moment coefficient.

Here we look under the subsection $n = 20$ ($m = 9{\cdot}0$) and find for

$$v = 15{\cdot}5,\quad \rho = {\cdot}59990,\quad \text{and}\quad v = 16{\cdot}0,\quad \rho = {\cdot}60864.$$

Hence for $\rho = {\cdot}60000$, we have by linear interpolation,

$$v = 15{\cdot}5 + \frac{{\cdot}00010}{{\cdot}00874} \times 0{\cdot}5 = 15{\cdot}505721.$$

This is accordingly the required value of $\breve{v}$, the mode. But

$$v = \frac{n}{1-\rho^2} \frac{p_{11}}{\sigma_1 \sigma_2} = \frac{n}{1-\rho^2} Q_{11}.$$

Thus $$\breve{Q}_{11} = \frac{(1-\rho^2)}{n} \breve{v} = {\cdot}496{,}183,$$

and the modal value of the product moment coefficient is

$$\breve{p}_{11} = \cdot 496{,}183 \times \sigma_1\sigma_2$$

and its mean value is

$$\bar{p}_{11} = \left(1 - \frac{1}{n}\right)\rho\sigma_1\sigma_2 = \cdot 57000 \times \sigma_1\sigma_2.$$

The actual value p_{11} for the parental population is

$$p_{11} = 0{\cdot}6\,\sigma_1\sigma_2.$$

This indicates that the most probable value of p_{11} in samples of twenty taken from a population with correlation 0·6 is about $\frac{1}{6}$ less than the parental value.

Illustration (ii). Find the modal value in samples of 5 drawn from a parent population of correlation $\rho = 0{\cdot}9$.

In the subsection of Table X for $n = 5$, the first entry in the third column for $v = 9{\cdot}0$ is $\rho = \cdot 90000$. It follows therefore that $\breve{v} = \cdot 90000$, and accordingly

$$\breve{p}_{11} = \frac{1-\rho^2}{n}\breve{v}\sigma_1\sigma_2 = \cdot 342 \times \sigma_1\sigma_2.$$

Further $$\bar{p}_{11} = \left(1 - \frac{1}{n}\right)\rho\sigma_1\sigma_2 = \cdot 720 \times \sigma_1\sigma_2,$$

while for the parent population

$$p_{11} = \rho\sigma_1\sigma_2 = \cdot 9000 \times \sigma_1\sigma_2.$$

Thus the value of p_{11} most likely to arise in the sampling is 62 °/₀ less than the value in the sampled population, while the mean value in sampling is 20 °/₀ less than that in the parent population.

These illustrations will suffice to indicate how cautious one must be in accepting a value of p_{11} found from a small sample as approaching in value that of the parent population.

Two remarks may be made here as to the plotting of frequency curves of v or of $p_{11}/\sigma_1\sigma_2 = Q_{11}$.

In the first place the numbers standing in brackets in the first column, that for T_m, in each subsection indicate the number of zeros between the decimal place and the first figure recorded. These values, though so small, are of much importance as the factor $e^{\rho v}$ can become very great when ρ and v are considerable. Thus for $n = 22$, $\rho = 0{\cdot}9$, to draw the frequency curve for v we must go as far as $v = 240{\cdot}0$, i.e. beyond the limits of our table which goes only to $v = 120{\cdot}0$; but in such cases of high ρ and $n > 20$, a Pearson curve fits well and we have accordingly only published our table as far as $v = 120{\cdot}0$.

The second remark to be made here is that the reader must settle before he draws his diagram whether he wishes to plot a curve of the frequency distribution of $Q_{11} = p_{11}/\sigma_1\sigma_2$, or of $v = \frac{n}{1-\rho^2}Q_{11}$. It is of little importance which is selected, but of great importance to see that the scales are appropriate. In Figs. (i)—(iv) above the frequency distributions are for v, and we use equation (vi) above in plotting y_v to v.

If we want to plot a frequency distribution for Q_{11}, we must remember that the frequency elements are the same for Q_{11} and v, or

$$y_{Q_{11}} dQ_{11} = y_v dv,$$

but

$$dv = \frac{n}{1-\rho^2} dQ_{11}.$$

Hence

$$y_{Q_{11}} = \frac{n}{1-\rho^2} y_v \quad \text{.................................(ix)},$$

and accordingly

$$y_{Q_{11}} = Nn(1-\rho^2)^{\frac{1}{2}(n-3)} e^{\rho v} T_{\frac{1}{2}n-1}(v)$$
$$= Nn(1-\rho^2)^{m-\frac{1}{2}} e^{\rho v} T_m(v).$$

We must therefore plot the antilogarithm of

$$\log y_{Q_{11}} = \log Nn + (m - \tfrac{1}{2}) \log(1-\rho^2) + (\cdot 434{,}2945\rho) v + \log T_m(v) \quad \text{...(x)}$$

to $Q_{11} = \dfrac{1-\rho^2}{n} v$, in order to get a curve of the frequency distribution of Q_{11} in the proper scale.

Fig. (v) has been drawn in this way. It has not been thought needful to give here the numerical value of the ordinates of the curves for v or $p_{11}/\sigma_1\sigma_2$ illustrated in this section. The student, however, will learn a good deal if he plots a frequency curve for r, against a frequency curve for $p_{11}/\sigma_1\sigma_2$ for a small sample.

A note may be added here as to the frequency distribution of v when $\rho = 0$. In this case

$$\sigma_v^2 = n-1, \quad {}_v\beta_1 = 0, \quad {}_v\beta_2 = 3 + \frac{6}{n-1}.$$

The resulting Pearson curve is

$$y_v = \frac{N}{\sqrt{\pi(n^2-1)}} \frac{\Gamma(\frac{1}{2}(n+4))}{\Gamma(\frac{1}{2}(n+3))} \frac{1}{\left(1 + \dfrac{v^2}{n^2-1}\right)^{\frac{1}{2}(n+4)}} \quad \text{............(xi)},$$

while the true curve of frequency is

$$y_v = NT_m(v) \quad \text{.................................(xii)}.$$

There is for practical purposes no daylight between these curves when $n > 25$, so that either (xi) or (xii) may be used to compute the frequency.

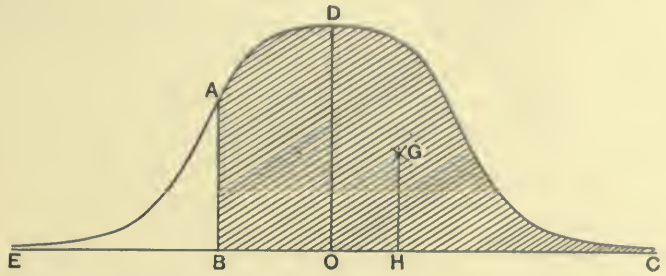
Table XII.

Constants of Normal Curve from moments of "Tail" about its stump, when the "Tail" is larger than the Body. (*Gaussian Tail Functions.*) (Alice Lee, *Biometrika*, Vol. x. pp. 208—214.)

In Part I of this work* functions are provided for determining the constants of a normal curve when all we know is the "tail" of the curve—that tail having an area less than half of the required curve. Table XII is an extension of the table in Part I to cases in which the known area of the tail exceeds the half area of the curve.

* Pp. xxviii—xxxi, Table XI, p. 25.

Let the figure represent a Gaussian curve of total area N, and standard deviation σ. Let AB be the ordinate at which it is truncated and let $OB = h = h'\sigma$*.



Then N, h', and σ fully define the required normal curve; they must be found from constants of the shaded portion $BADCB$. Let G be the centroid at abscissa OH of this portion, and suppose $BH = d$, n = area of shaded portion and Σ = standard deviation of this portion about GH, the centroid vertical. Then n, d, Σ are known or can be found from the observed data. We have three "Gaussian tail functions," $\psi_1 = \Sigma^2/d^2$, $\psi_2 = \sigma/d$, and $\psi_3 = N/n$. Σ and d being known from the data, we know ψ_1. Table XII then gives us h', which enables us to find ψ_2 and ψ_3; the former gives us σ and the latter N. A knowledge of h' and σ gives us h or OB, which determines the mean of the required normal curve. Thus the problem is completely solved.

Illustration. The following frequency distribution† consists of the measurements of the diameter of the head of the femur in 279 bones, without regard to sex:

Diameter of head in mm.	36	37	38	39	40	41	42	43	44	45	46
Frequency	1	1	—	4	10	18	16	24	13	23	13

Diameter of head in mm.	47	48	49	50	51	52	53	54	55	Total
Frequency	33	18	38	20	18	12	6	8	3	279

Now Dwight‡ terms any femur with head less than 45 mm., female, and any femur with head greater than 47 mm., male. Measurements on the head of the femur for a single sex distribute themselves very nearly normally. Dwight and

* h and h' are actually of *opposite* sign to those in Part I.

† *Journal of Anatomy and Physiology*, Vol. XLVIII. pp. 238—267.

‡ *American Journal of Anatomy*, Vol. IV. p. 19.

Parsons proceed to distribute the femora of 45, 46 and 47 mm. by other characteristics between the sexes. There are serious objections to this method of sexing, and Parsons obtains distributions which in the female case tail off far too rapidly on the side of the larger bones, and in the male case far too rapidly on the side of the smaller bones.

While Dwight's limits are arbitrary and only roughly approximate, we may still use them in illustration of the present method.

We have for the truncated female distribution:

Diameter of head in mm.	36	37	38	39	40	41	42	43	44	Total
Frequency	1	1	—	4	10	18	16	24	13	87

and for the truncated male distribution:

Diameter of head in mm.	48	49	50	51	52	53	54	55	Total
Frequency	18	38	20	18	12	6	8	3	123

44·5 and 47·5 will be our dichotomic values, and remembering this we find

For females:

$$d = 2{\cdot}62644, \qquad \Sigma^2 = 2{\cdot}639{,}192,$$

whence $\psi_1 = {\cdot}3826,$

and Table XII gives us $h' = {\cdot}9863,$

$$\psi_2 = {\cdot}7823, \qquad \psi_3 = 1{\cdot}1941.$$

Thus by the relations on the previous page

$$\sigma = 2{\cdot}0547 \text{ mm.}, \qquad N = 103{\cdot}9,$$

$$OB = 2{\cdot}0266 \text{ mm.}, \qquad \text{Mean} = 44{\cdot}5 - OB = 42{\cdot}47 \text{ mm.}$$

For males:

$$d = 2{\cdot}76829, \qquad \Sigma^2 = 3{\cdot}448{,}345,$$

whence $\psi_1 = {\cdot}4500,$

and Table XII gives us $h' = {\cdot}6400,$

$$\psi_2 = {\cdot}9260, \qquad \psi_3 = 1{\cdot}3544.$$

Thus we obtain

$$\sigma = 2{\cdot}5634 \text{ mm.}, \qquad N = 166{\cdot}6,$$

$$OB = 1{\cdot}6406 \text{ mm.}, \qquad \text{Mean} = 47{\cdot}5 + OB = 49{\cdot}14 \text{ mm.}$$

Parsons sexes 105 bones as female, and from his measurements I find

Mean = 42·47 mm., Standard Deviation = 1·996 mm.

He has 174 bones which he sexes as male, and for these I find

Mean = 49·22 mm., Standard Deviation = 2·530 mm.

It is clear that the present process gives means and standard deviations for both sexes exceedingly close to the results that may be deduced from Parsons' anatomical sexing. But the total number of femora is 8·5 short, i.e. 103·9 + 166·6 = 270·5 instead of 279. This is sufficient to indicate that taking all femora with diameter of head under 44·5 as female and all with diameter over 47·5 as male, is not very satisfactory.

If we treat the total frequency of 279 femora by the method of *Phil. Trans.* Vol. 185, A, p. 64, and break it up into two normal curves, we find the following results:

	Male	*Female*
Mean	49·83 mm.	43·72 mm.
Standard Deviation	2·231 „	2·662 „
Frequency	133·25	145·75

This suggests that the female distribution extends much further into the region beyond 47·5 than Dwight's rule permits, thus raising both the male and female means, and increasing the female standard deviation while lessening that of the male.

The chief weakness of the method represented by Table XII—beyond the often quite legitimate assumption of a normal distribution—lies in the absence, as yet, of the values of the probable errors, which values, especially in the case of N, must be very considerable for slender data such as those used in our illustration.

Table XIII.

The 11*th and* 12*th Incomplete Normal Moment Functions.* (E. M. Elderton and J. Wishart.)

This table carries to the 11th and 12th orders the table of Incomplete Normal Moment Functions to be found in Part I of this work (Table IX, pp. 22—23). The normal moment functions are useful for a variety of purposes. Chief among these may be noted the determination of the area of the curves

$$y = y_0 e^{-px/a} (a - x)^q \quad \text{and} \quad y = y_0 x^p (1 - x)^q$$

for ranges round the mode not exceeding a distance from the mode of 1 to 1·5 times the standard deviation.

Illustration of the use for m_{12} will be found in the section of this Introduction dealing with the evaluation of the Incomplete B-Function for high powers.

Table XIV.

Values of β_3, β_4, β_5 *and* β_6 *in terms of* β_1 *and* β_2, *on the assumption that the Frequency falls into one or other of Pearson's Types.* (Kazutaro Yasukawa, *Biometrika*, Vol. XVIII. pp. 268—275.)

This table is a much extended form of that provided by Rhind and reissued as Table XLII of Part I of this work. For more exact work it should be used in preference to that table. The purpose of both tables is to obtain approximate values of the higher β's and thus of the higher moments and so to avoid the very tedious computation of the latter. They are based on the assumption that, if the sample be of considerable size, it can be adequately described by one of Pearson's Types, and accordingly the higher moments may be deduced from the first four. The fundamental equations are

$$\beta_{2s} = \mu_{2s+2}/\mu_2^{s+1}, \quad \beta_{2s+1} = \mu_{2s+3}\,\mu_3/\mu_2^{s+3},$$

and, if

$$\alpha = (2\beta_2 - 3\beta_1 - 6)/(\beta_2 + 3),$$

$$\left.\begin{aligned} \beta_{2s} &= (2s+1)\left\{\tfrac{1}{2}\beta_{2s-1} + (1+\tfrac{1}{2}\alpha)\,\beta_{2s-2}\right\}/\left\{1-\tfrac{1}{2}(2s-1)\,\alpha\right\} \\ \beta_{2s+1} &= (2s+2)\left\{\tfrac{1}{2}\beta_1\beta_{2s} + (1+\tfrac{1}{2}\alpha)\,\beta_{2s-1}\right\}/\left\{1-\tfrac{1}{2}(2s)\,\alpha\right\} \end{aligned}\right\} \quad \text{.........(i).}$$

It will be seen that the table for β_3, β_4, β_5 and β_6 is a laborious one to compute, and as each successive β depends upon two earlier ones errors are cumulative. Some errors in Yasukawa's original table have been discovered in the use of it and are here corrected, and the Editor will be glad to receive any further emendations. The table cannot be trusted to the last decimal place, as the computer has reduced his proper fractions to decimals before the final stage, and the last decimal in β_3, β_4 or β_5 may be in error, and in β_6 the last two decimals. Thus for $\beta_1 = 1$, $\beta_2 = 6$, Yasukawa has

$$\beta_3 = 25, \quad \beta_4 = 195, \quad \beta_5 = 2279{\cdot}99999, \quad \beta_6 = 57434{\cdot}99984,$$

instead of

$$\beta_3 = 25, \quad \beta_4 = 195, \quad \beta_5 = 2280, \quad \beta_6 = 57435.$$

This is not a matter of much importance because (i) we rarely need β's to more than five significant figures, (ii) the higher moments and therefore the β's are subject to large probable errors, and (iii) for very many distributions relatively large changes in the higher β's appear to have small influence on the shape of the frequency curve.

Yasukawa has provided values of the higher β's for $\beta_2 - \beta_1 < 1$; it is not at present obvious that any use can be made of these values in practical statistics, but those in the neighbourhood of $\beta_2 - \beta_1 - 1 = 0$ are of service for purposes of interpolation. The chief value of the table is to obtain approximate values of the probable errors (or standard errors) in *large* samples, such as those used in social investigations or in anthropometric work.

The following formulae for large samples are well known*:

$$\sigma^2_{\mu_p} = \frac{1}{N}\left(\mu_{2p} - \mu^2_p + p^2\mu_2\mu^2_{p-1} - 2p\mu_{p-1}\mu_{p+1}\right) \quad \text{.....................(ii),}$$

$$\sigma^2_{\beta_1} = \frac{1}{N}\beta_1\left(4\beta_4 - 12\beta_3 - 24\beta_2 + 9\beta_1\beta_2 + 35\beta_1 + 36\right) \quad \text{............(iii),}$$

$$\sigma^2_{\beta_2} = \frac{1}{N}\left(\beta_6 - 4\beta_2\beta_4 - 8\beta_3 + 4\beta_2^3 - \beta_2^2 + 16\beta_1\beta_2 + 16\beta_1\right) \quad \text{......(iv).}$$

* *Phil. Trans.* Vol. 198, A, pp. 274—279; *Biometrika*, Vol. II. pp. 276—277; and *ibid.* Vol. VII. pp. 127—147.

In particular from (ii) we have

$$\left.\begin{aligned}\sigma^2_{\mu_2} = \frac{1}{N}(\mu_4 - \mu_2^2), \qquad \sigma^2_{\mu_3} = \frac{1}{N}(\mu_6 - \mu_3^2 + 9\mu_2^3 - 6\mu_2\mu_4)\\ \sigma^2_{\mu_4} = \frac{1}{N}(\mu_8 - \mu_4^2 + 16\mu_2\mu_3^2 - 8\mu_3\mu_5)\end{aligned}\right\} \text{......(v).}$$

Here σ_{μ_p}, σ_{β_1} and σ_{β_2} are "standard errors," i.e. the standard deviations of μ_p, β_1 and β_2 in long series of large samples of size N, where we must write the sample values of μ_p and the β's in our ignorance of the parent population values.

The samples must be very considerable for the μ's and β's to be normally distributed even with rough approximation. When they are such we may use "probable errors" and equations (v) may be written

$$\left.\begin{aligned}\text{P.E. of } \mu_2 &= \frac{\cdot 67449}{\sqrt{N}}\mu_2\sqrt{\beta_2 - 1}\\ \text{P.E. of } \mu_3 &= \frac{\cdot 67449}{\sqrt{N}}\mu_2^{\frac{3}{2}}\sqrt{\beta_4 - 6\beta_2 - \beta_1 + 9}\\ \text{P.E. of } \mu_4 &= \frac{\cdot 67449}{\sqrt{N}}\mu_2^2\sqrt{\beta_6 - 8\beta_3 - \beta_2^2 + 16\beta_1}\end{aligned}\right\} \text{...............(vi).}$$

Equations (vi) should certainly not be used for samples under 50, and the inferences from them should be guarded, even when the sample runs up to several hundreds. They are limiting expressions "when $N \to \infty$."

Illustration. The following table gives the distribution of Enteric Fever in 8689 cases*:

Age	Frequency	Age	Frequency	Age	Frequency
0—1	15	15—20	1955	50—55	40
1—2	22	20—25	1319	55—60	14
2—3	50	25—30	857	60—65	8
3—4	82	30—35	503	65—70	4
4—5	97	35—40	299	70—75	1
5—10	1143	40—45	163		
10—15	2019	45—50	98	Total	8689

The following moments were obtained using abruptness corrections†:

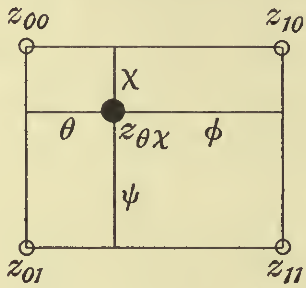
$$\mu_2 = 3{\cdot}821{,}776, \quad \mu_3 = 7{\cdot}595{,}118, \quad \mu_4 = 63{\cdot}51882,$$

$$\beta_1 = 1{\cdot}033{,}412, \quad \beta_2 = 4{\cdot}348{,}825.$$

* See *Phil. Trans.* Vol 186, A, pp. 390—392, and *Biometrika*, Vol. XVIII. pp. 288—289.

† *Biometrika*, Vol. XII. pp. 231—258.

(*a*) Let us find β_3, β_4, β_5 and β_6 from Table XIV. It is not needful to find the β's with extreme accuracy and therefore the hyperbolic interpolation equation will suffice.



$$z_{\theta\chi} = \phi\psi z_{00} + \phi\chi z_{01} + \theta\psi z_{10} + \theta\chi z_{11}.$$

$$\theta = \cdot 33412, \quad \phi = \cdot 66588, \quad \chi = \cdot 48825, \quad \psi = \cdot 51175,$$

$$\phi\psi = \cdot 340{,}764, \quad \phi\chi = \cdot 325{,}116, \quad \theta\psi = \cdot 170{,}986, \quad \theta\chi = \cdot 163{,}134.$$

For β_3

$$z_{00} = 11\cdot 84156, \quad z_{01} = 12\cdot 41053, \quad z_{10} = 12\cdot 45475, \quad z_{11} = 13\cdot 04962,$$

hence $$\beta_3 = z_{\theta\chi} = 12\cdot 328{,}464.$$

The exact value calculated from equation (i) is 12·333,049, but the difference is of little importance, when the β's are to be substituted in probable error formulae.

For β_4

$$z_{00} = 46\cdot 67828, \quad z_{01} = 50\cdot 67464, \quad z_{10} = 45\cdot 11667, \quad z_{11} = 48\cdot 92245,$$

hence $$\beta_4 = z_{\theta\chi} = 48\cdot 076{,}648.$$

For β_5

$$z_{00} = 188\cdot 48207, \quad z_{01} = 213\cdot 91770, \quad z_{10} = 184\cdot 62341, \quad z_{11} = 208\cdot 87083,$$

hence $$\beta_5 = 199\cdot 417{,}923.$$

For β_6

$$z_{00} = 859\cdot 71417, \quad z_{01} = 1029\cdot 10666, \quad z_{10} = 763\cdot 76288, \quad z_{11} = 908\cdot 47666,$$

hence $$\beta_6 = 906\cdot 334{,}872.$$

We can compare the values to two decimal places of results obtained by hyperbolic interpolation from Table XIV with the exact values from equations (i).

	From Table	*From Equations*
β_3	12·33	12·33
β_4	48·08	48·03
β_5	199·42	199·08
β_6	906·33	900·47

Second differences of the β's are at this point of the Table considerable, and the accordance between the values from Table and Equations would have been closer, had they been used. At the same time the agreement is adequate for most statistical purposes.

(*b*) We will consider now the probable errors of μ_2, μ_3, and μ_4, remembering that

$$\mu_2 = 3\cdot821{,}776 \quad \text{and} \quad N = 8689.$$

$$\text{P.E. of } \mu_2 = \frac{\cdot67449}{\sqrt{8689}}\, 3\cdot821{,}776\, \sqrt{4\cdot348{,}825 - 1}$$

$$= \cdot007{,}236 \times 3\cdot821{,}776 \times 1\cdot829{,}980$$

$$= \cdot0506^*,$$

$$\text{P.E. of } \mu_3 = \frac{\cdot67449}{\sqrt{8689}}\, (3\cdot821{,}776)^{\frac{3}{2}} \times \sqrt{48\cdot076{,}648 - 26\cdot092{,}950 - 1\cdot033{,}412 + 9}$$

$$= \cdot2959,$$

$$\text{P.E. of } \mu_4 = \frac{\cdot67449}{\sqrt{8689}}\, (3\cdot821{,}776)^2 \times \sqrt{906\cdot334{,}872 - 98\cdot627{,}712 - 18\cdot912{,}279 + 16\cdot534{,}592}$$

$$= 2\cdot9993.$$

If, instead of using the hyperbolic formula and table, we use the exact values of the β's†, we find

$$\text{P.E. of } \mu_3 = \cdot2957, \qquad \text{P.E. of } \mu_4 = 2\cdot9883\,;$$

the differences are of no importance for the purposes to which probable errors are applied. It would seem therefore as if the hyperbolic formula—or double linear interpolation into Table XIV—is adequate to determine the probable errors of the moment coefficients of *large* samples.

Table XV.

Ratio of Standard Error of Mode to that of Mean. On the Probable Error of the Mode. (K. Yasukawa, *Biometrika*, Vol. XVIII. pp. 265—292.)

The probable error of the mean is $\cdot67449\sigma/\sqrt{N}$, where σ is the standard deviation of the population and N the size of the sample.

The distance d between the mode and the mean in the case of a Pearson type curve is given by

$$d = \frac{\sigma\sqrt{\beta_1}\,(\beta_2 + 3)}{2\,(5\beta_2 - 6\beta_1 - 9)}.$$

Hence, knowing the mean we can find the position of the mode, as soon as the values of β_1 and β_2 have been determined.

Table XV gives the probable error of the *position* of the mode in terms of the probable error of the position of the mean, i.e. it is not the probable error of d, but of the absolute position of the mode, that the table provides.

* Had we used the formula corresponding to P.E. of $\sigma = \frac{\cdot67449\sigma}{\sqrt{2N}}$, i.e. $\sigma_{\mu_2} = \frac{\cdot67449}{\sqrt{2N}}\, 2\mu_2$, we should have found P.E. of $\mu_2 = \cdot0391$, not a very good approximation.

† $\beta_3 = 12\cdot333{,}049$, $\beta_4 = 48\cdot034{,}051$, $\beta_5 = 199\cdot076{,}421$ and $\beta_6 = 900\cdot471{,}809$.

As a rule the probable error of the mode is greater than that of the mean, and can, as we approach J-shaped curves, become very great. On the other hand in the case of U-shaped curves, the probable error of the mode, in this case an "anti-mode," can be less than that of the mean.

Notwithstanding the labour involved in the preparation of Table XV, first difference interpolation is for the most part inadequate and higher difference formulae must be used.

Illustration (i). For the distribution of 4018 observations of the barometric height at Laudale the following constants were found by Yasukawa*:

$$\text{Mean} = 29''\cdot85699, \quad \sigma = 0''\cdot3845285,$$

$$\beta_1 = \cdot203{,}9448, \quad \beta_2 = 3\cdot200{,}5312.$$

The midpanel central difference formula was used. The interpolate divides the square formed by the four nearest interpolants in the x-ratio θ, $\phi\,(=1-\theta)$ and the y-ratio χ, $\psi\,(=1-\chi)$. (See diagram on p. xviii of this Part II.) The required formula is

$$\begin{aligned} z_{\theta,\chi} = {} & \phi\psi z_{0,0} + \phi\chi z_{0,1} + \theta\psi z_{1,0} + \theta\chi z_{1,1} \\ & - \tfrac{1}{6}\theta\phi\,\{(1+\phi)(\psi\delta^2 z_{0,0} + \chi\delta^2 z_{0,1}) + (1+\theta)(\psi\delta^2 z_{1,0} + \chi\delta^2 z_{1,1})\} \\ & - \tfrac{1}{6}\chi\psi\,\{(1+\psi)(\phi\delta'^2 z_{0,0} + \theta\delta'^2 z_{1,0}) + (1+\chi)(\phi\delta'^2 z_{0,1} + \theta\delta'^2 z_{1,1})\}. \end{aligned}$$

Whence from the table we have

		β_2			
		3·1	*3·2*	*3·3*	*3·4*
	·1		1·5578 $z_{0,-1}$	1·5337 $z_{1,-1}$	
	·2	1·7093 $z_{-1,0}$	1·6455 $z_{0,0}$	1·5977 $z_{1,0}$	1·5625 $z_{2,0}$
β_1	*·3*	1·9340 $z_{-1,1}$	1·8238 $z_{0,1}$	1·7417 $z_{1,1}$	1·6806 $z_{2,1}$
	·4		2·1187 $z_{0,2}$	1·9797 $z_{1,2}$	

and for the differences we get

$$\delta^2 z_{0,0} = \cdot0160, \qquad \delta'^2 z_{0,0} = \cdot0906,$$

$$\delta^2 z_{1,0} = \cdot0281, \qquad \delta'^2 z_{1,0} = \cdot1166,$$

$$\delta^2 z_{0,1} = \cdot0126, \qquad \delta'^2 z_{0,1} = \cdot0800,$$

$$\delta^2 z_{1,1} = \cdot0210, \qquad \delta'^2 z_{1,1} = \cdot0940.$$

* Data from *Phil. Trans.* Vol. 190, A (1897), p. 429; *Biometrika*, Vol. XVIII. pp. 283—285.

But from the observed values of β_1 and β_2 we have

$$\theta = \cdot 005312, \qquad \phi = \cdot 994688,$$
$$\chi = \cdot 039448, \qquad \psi = \cdot 960552.$$

Hence by substitution in the above equation

$$z_{\theta, \chi} = 1 \cdot 6503,$$

and this is the ratio of the probable error of the mode to that of the mean.

Now the probable error of the mean $= \cdot 67449\sigma/\sqrt{N} = \cdot 004092$.

Thus the probable error of the mode

$$= \cdot 00409 \times 1 \cdot 6503 = \cdot 00675^{+},$$

and we should write our results as

$$\text{Mean} = 29 \cdot 8570 \pm \cdot 0041,$$
$$\text{Mode} = 29 \cdot 9502 \pm \cdot 0068.$$

In the accompanying diagram, the ranges of *likely* variation of mean and mode are represented by belts of 2·5 times the probable error plotted on either side of the mean and the mode.

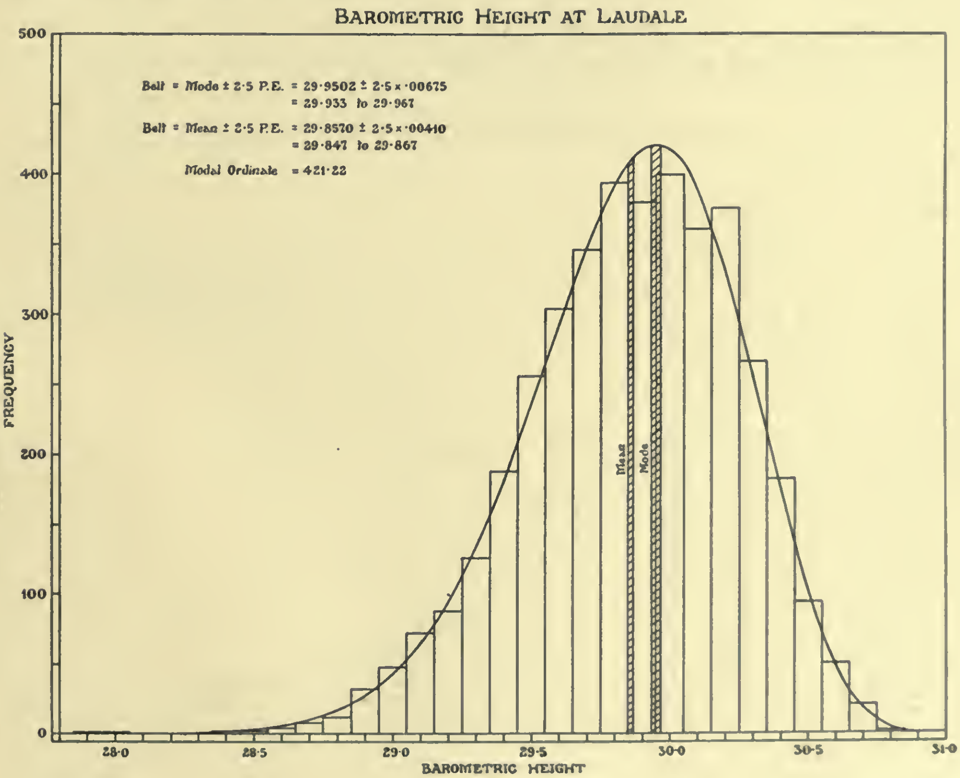


Illustration (ii). Considering the data for the Incidence of Enteric Fever on p. xciii above, we had, for the distribution constants,

$$\text{Mean} = 18{\cdot}9680 \text{ yrs.,} \quad \text{Mode} = 13{\cdot}3884 \text{ yrs.,}$$
$$\mu_2 = 3{\cdot}821{,}776^*, \qquad \sigma = 1{\cdot}954{,}936^*,$$
$$\beta_1 = 1{\cdot}033{,}412, \qquad \beta_2 = 4{\cdot}348{,}825.$$
$$\text{Probable Error of Mean} = 1{\cdot}954{,}936 \times 5 \times {\cdot}67449/\sqrt{8689}$$
$$= {\cdot}070728 \text{ yrs.}$$

Proceeding exactly as in the previous illustration we find the ratio of the probable error of the mode to that of the mean $= 2{\cdot}9825$.

Hence $$\text{Probable Error of Mode} = {\cdot}070728 \times 2{\cdot}9825$$
$$= {\cdot}2109 \text{ yrs.,}$$

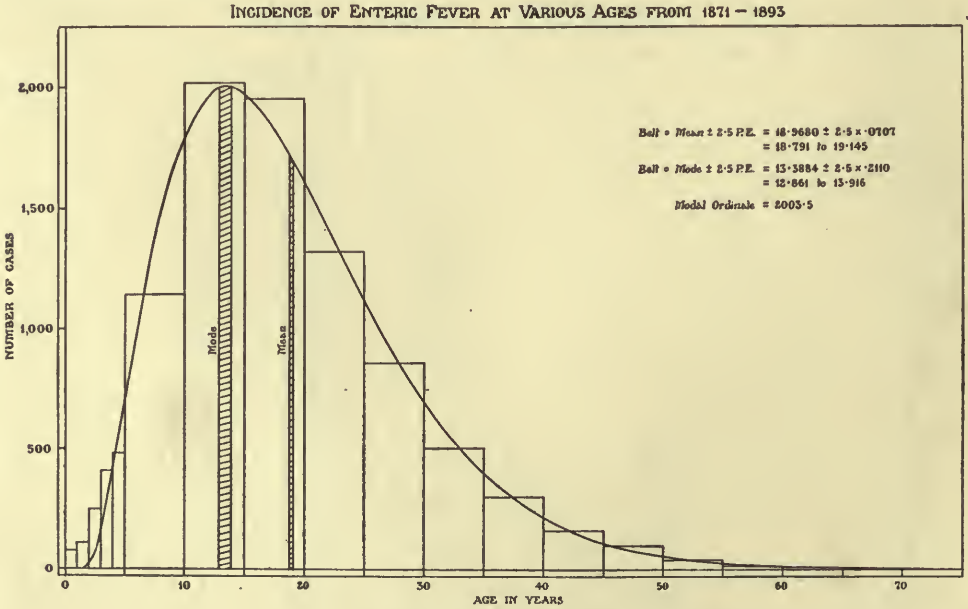
and our results would be stated as

$$\text{Mean} = 18{\cdot}9680 \pm {\cdot}0707,$$
$$\text{Mode} = 13{\cdot}3884 \pm {\cdot}2109,$$

both in years.

Although the "belt" for the mode is three times that for the mean, the accompanying diagram shows that it still gives valuable information as to the likely error in placing the position of maximum incidence. We are unlikely to be in error when we say that the maximum incidence of enteric occurs in the 14th year.

INCIDENCE OF ENTERIC FEVER AT VARIOUS AGES FROM 1871 – 1893



* In working units of five years.

Illustration (iii). We will now take a case in which the probable error of the mode is less than that of the mean, namely 3653 observations on the degree of cloudiness at Breslau*; here 0 represents a clear sky and 10 one wholly covered with cloud. The data run:

Degrees of Cloudiness at Breslau.

Degrees	0	1	2	3	4	5	6	7	8	9	10	Totals
Frequency (in days)	751	179	107	69	46	9	21	71	194	117	2089	3653

We have

$$\text{Mean} = 6{\cdot}829{,}181, \quad \text{Antimode} = 4{\cdot}827{,}034,$$
$$\mu_2 = 18{\cdot}29987, \quad \sigma = 4{\cdot}277{,}834,$$
$$\beta_1 = {\cdot}611{,}2252, \quad \beta_2 = 1{\cdot}741{,}445.$$

Seeking these values in Table XV we find that the value for β_2 lies just outside the Table. But it is perfectly easy to complete the Table here. The value of the ratio for $\beta_1 = {\cdot}7$, $\beta_2 = 1{\cdot}7$ is clearly zero. To obtain that for $\beta_2 = 1{\cdot}7$, $\beta_1 = {\cdot}6$, all we need do is to consider the differences along the diagonal below the zeros. Thus:

$$\left\{\begin{array}{lll} 2366 & & \\ & 53 & \\ 2313 & & 3 \\ & 56 & \\ 2257 & & 2 \\ & 58 & \\ 2199 & & 4 \\ & 62 & \\ 2137 & & 3 \\ & 65 & \\ 2072 & & [3] \\ & [68] & \\ [2004] & & \end{array}\right\}$$

Here the quantities in square brackets are extrapolated, and we see that ·2004 is the value we require at $\beta_1 = {\cdot}6$, $\beta_2 = 1{\cdot}7$.

Thus we have $z_{00} = {\cdot}2004$, $z_{10} = 0$, $z_{01} = {\cdot}4193$, $z_{11} = {\cdot}2072$,

which with $\theta = {\cdot}11225$, $\phi = {\cdot}88775$, $\chi = {\cdot}41445$, $\psi = {\cdot}58555$,

give us, using the Hyperbolic Interpolation formula (α),

$$z_{\theta\chi} = {\cdot}88775 \times {\cdot}58555 \times {\cdot}2004 + {\cdot}11225 \times {\cdot}58555 + {\cdot}0000$$
$$+ {\cdot}11225 \times {\cdot}41445 \times {\cdot}2072 + {\cdot}41445 \times {\cdot}88775 \times {\cdot}4193$$
$$= {\cdot}25844.$$

$$\text{Probable Error of Mean} = \frac{{\cdot}67449 \times 4{\cdot}277{,}834}{\sqrt{3653}} = {\cdot}04774.$$

Hence

$$\text{Probable Error of Mode} = {\cdot}25844 \times {\cdot}04774 = {\cdot}01234.$$

We have therefore

$$\text{Mean} = 6{\cdot}8292 \pm {\cdot}0477,$$
$$\text{Antimode} = 4{\cdot}8270 \pm {\cdot}0123.$$

* *Proc. R. S.* Vol. XII. pp. 287—290. Data taken from Hugo Meyer's *Anleitung zur Bearbeitung meteorologischer Beobachtungen für die Klimatologie*, Berlin, 1891, S. 108. There is clearly some error about grade 8; no such "lump" occurs in similar Greenwich observations.

If the ratio be found from the fundamental equation (Yasukawa, *loc. cit.*, p. 266), it is ·25974, giving

$$\text{Antimode} = 4{\cdot}8270 \pm {\cdot}0124,$$

i.e. no significant difference. The diagram shows how much more reliable the mode in this case is than the mean.

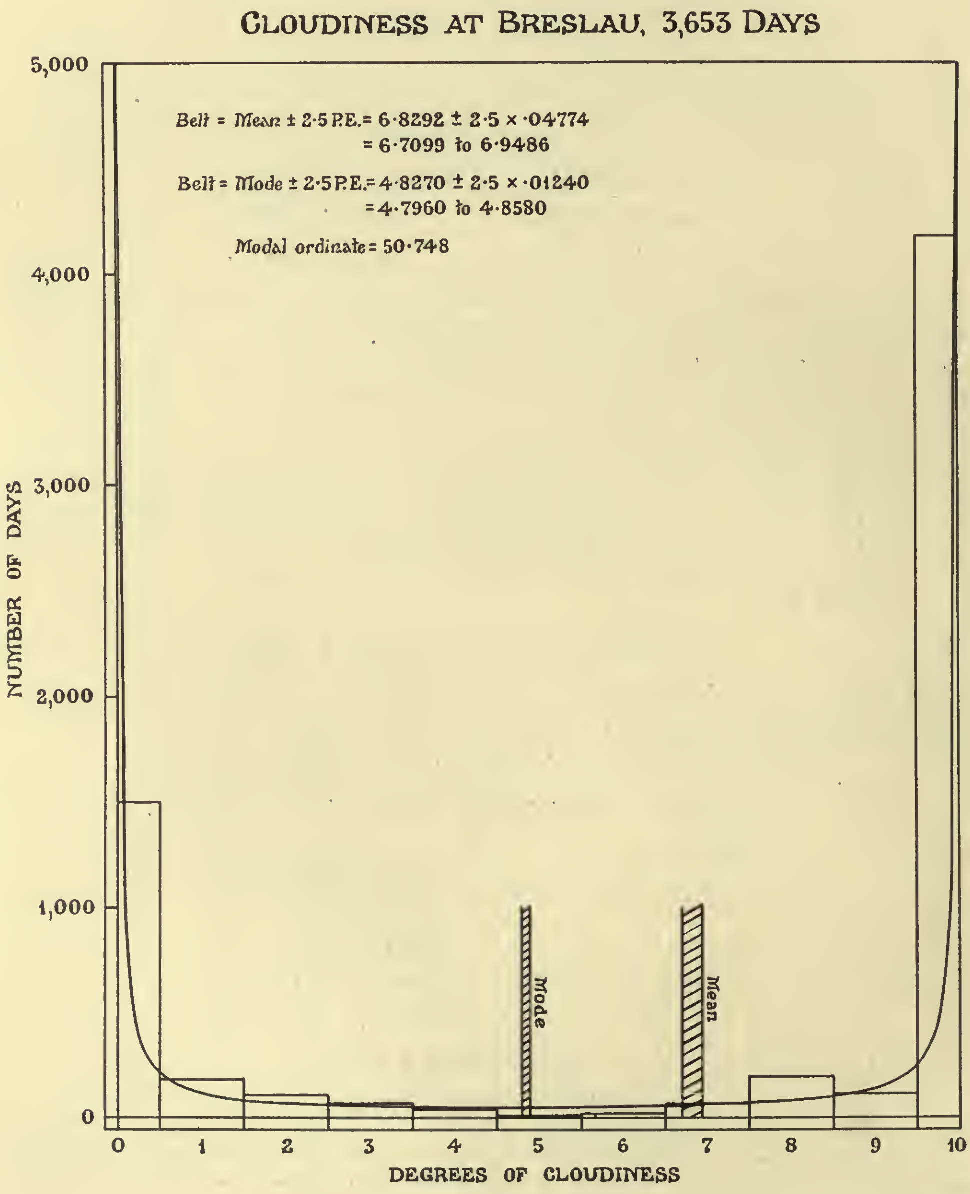


TABLE XVI.

To determine the Probable Error of the Biserial Expression for the Correlation Coefficient. (H. E. Soper, *Biometrika*, Vol. x. pp. 384—390.)

If one variate y be given quantitatively and the other x by alternative categories thus:

Frequencies of y.

x A	n_{11}	n_{12}	n_{13}	......	n_{1s}	......	$n_{1\cdot}=\frac{1}{2}N(1+\alpha)$
x not A	n_{21}	n_{22}	n_{23}	......	n_{2s}	......	$n_{2\cdot}=\frac{1}{2}N(1-\alpha)$
	$n_{\cdot 1}$	$n_{\cdot 2}$	$n_{\cdot 3}$	......	$n_{\cdot s}$	......	N

then, if the distribution be normal, the correlation is given by

$$r = \frac{\bar{y}_z - \bar{y}}{\sigma_y} \times \frac{\frac{1}{2}(1-\alpha)}{z},$$

where $\bar{y}$ and σ_y are the mean and standard deviation of the y-variate, $\bar{y}_z$ is the mean of the second or lesser series $n_2.(=\frac{1}{2}N(1-\alpha))$ and z is the reduced ordinate corresponding to the $\frac{1}{2}(1+\alpha)$ of Table II of Part I.

If r be the correlation in the parent population, Soper shows that the mean $r\,(=\bar{r})$, and the standard deviation of r (σ_r), in samples of size n, are given approximately by

$$\bar{r} = r\left\{1 + \frac{1}{n}(\lambda_1 + \tfrac{1}{2}r^2)\right\} \quad \text{..............................(i)},$$

$$\sigma_r = \frac{1}{\sqrt{n}}\{\lambda_2^2 - \lambda_3 r^2 + r^4\}^{\frac{1}{2}} \quad \text{............................(ii)}.$$

Table XVI gives λ_1, λ_2^2 and λ_3.

Now we do not know r in the population sampled, nor the distribution of the correlation coefficient in samples, but when the size of the sample n is reasonably large, say $n \geqslant 50$, and r is not extremely high, then $\bar{r}$ will not differ very widely from the modal value, i.e. the value we are more likely to get than any other single value. Hence

$$r = \bar{r}\Big/\left\{1 + \frac{1}{n}(\lambda_1 + \tfrac{1}{2}r^2)\right\}$$

$$= \bar{r}\Big/\left\{1 + \frac{1}{n}(\lambda_1 + \tfrac{1}{2}\bar{r}^2)\right\}, \text{ approximately} \quad \text{...............(iii)},$$

$$\sigma_r = \frac{1}{\sqrt{n}}\{\lambda_2^2 - \lambda_3\bar{r}^2 + \bar{r}^4\}^{\frac{1}{2}}, \text{ approximately} \quad \text{..................(iv)},$$

where for $\bar{r}$ we insert the value observed in the sample.

Illustration. The following table provides data of the health of male year-old babies arranged in two categories only, "Satisfactory" and "Unsatisfactory," in relation to their weight*:

Health of Year-old Male Baby.

Weight in lbs. (Central Values).

	10·5	*11·5*	*12·5*	*13·5*	*14·5*	*15·5*	*16·5*	*17·5*	*18·5*	*19·5*
Satisfactory	—	—	3	7	7	13	27	43	59	62
Unsatisfactory	4	8	6	10	14	21	19	31	20	21
Totals	4	8	9	17	21	34	46	74	79	83

	20·5	*21·5*	*22·5*	*23·5*	*24·5*	*25·5*	*26·5*	*27·5*	*28·5*	Totals
Satisfactory	57	46	24	20	10	9	2	2	1	392
Unsatisfactory	14	11	3	—	—	—	—	—	—	182
Totals	71	57	27	20	10	9	2	2	1	574

We have the following constants for this biserial table:

$$\tfrac{1}{2}(1-\alpha) = 182/574 = \cdot 317{,}073,$$

hence $$\alpha = \cdot 365{,}854.$$

Interpolating by aid of Table III, Part I, and using the forward difference formula to second differences, we find $z = \cdot 356{,}2291$. Thus

$$\tfrac{1}{2}(1-\alpha)/z = \cdot 890{,}0825.$$

Table II of this Part gives by first differences

$$\tfrac{1}{2}(1-\alpha)/z = \cdot 89008.$$

The mean weight and standard deviation of the entire population are given by

$$\bar{y} = 18\cdot 834{,}495 \text{ lbs.}, \quad \sigma_y = 3\cdot 006{,}365 \text{ lbs.},$$

where Sheppard's adjustment has been used.

* See Karn and Pearson, "Study of the Data provided by a Baby Clinic in a large Manufacturing Town," p. 114, *Drapers' Company Research Memoirs, Studies in National Deterioration*, No. X, Cambridge University Press.

The mean weight of the "Unsatisfactory" health class is

$$\bar{y}_z = 17{\cdot}027{,}473 \text{ lbs.}$$

Accordingly

$$\frac{\bar{y}_z - \bar{y}}{\sigma_y} = {\cdot}601{,}0654,$$

and, if r_b be the biserial coefficient of correlation,

$$r_b = \frac{\bar{y}_z - \bar{y}}{\sigma_y} \times \frac{\frac{1}{2}(1-\alpha)}{z} = {\cdot}601{,}0654 \times {\cdot}890{,}0825$$
$$= {\cdot}5350.$$

We now turn to Table XVI and interpolate for $\frac{1}{2}(1-\alpha) = {\cdot}317{,}073$—linearly will suffice—in order to find λ_1, λ_2^2 and λ_3. We obtain:

$$\lambda_1 = {\cdot}0008, \quad \lambda_2^2 = 1{\cdot}7065, \quad \lambda_3 = 2{\cdot}6024.$$

Applying first formula (iii) to correct r_b we have

$$r_b = {\cdot}5350/(1 + \tfrac{1}{574}({\cdot}0008 + {\cdot}1431))$$
$$= {\cdot}5349,$$

or, we see that the correction is not in this case worth making, the total of 574 observations rendering it insignificant.

Next the probable error of r_b is given by (iv), or:

$$\text{P.E. of } r_b = \frac{{\cdot}67449}{\sqrt{574}}\{1{\cdot}7065 - 2{\cdot}6024\,({\cdot}5350)^2 + ({\cdot}5350)^4\}^{\frac{1}{2}}$$
$$= {\cdot}02815 \times 1{\cdot}021{,}544 = {\cdot}0288,$$

so that our answer is

$$r_b = {\cdot}5349 \pm {\cdot}0288.$$

The probable error of a correlation coefficient of intensity ·5349, obtained from a full table by the product-moment method, would be ·0204, so that there is an increase in inaccuracy of about 41 °/₀, which would be greater if $\frac{1}{2}(1-\alpha)$ were smaller.

TABLE XVII.

Distribution of Standard Deviations of Small Samples drawn from an Univariate Normal Population. (*Biometrika*, Vol. X. pp. 522—529, and Vol. XI. pp. 277—280.)

Let σ be the standard deviation in the sampled or parent population, n the size of the samples, and Σ the standard deviation in any one sample. Then we consider the curve of frequency of Σ in M samples

$$y = \frac{M}{2^{n-2}\Gamma\left(\frac{n-1}{2}\right)} \frac{1}{\sigma/\sqrt{2n}} \left(\frac{\Sigma}{\sigma/\sqrt{2n}}\right)^{n-2} e^{-\frac{1}{2}\left(\frac{\Sigma}{\sigma/\sqrt{2n}}\right)^2} \quad \text{............(i)},$$

Σ taking values from 0 to ∞.

This is a skew curve, only approaching a normal distribution as n increases indefinitely. It is desirable to know the deviations from normality in the distributions of Σ for small samples. Let $\bar{\Sigma}$ equal the mean, $\tilde{\Sigma}$ the modal Σ, σ_Σ the standard deviation of Σ. Then it is very usual to make use of the limiting values ($n \to \infty$)

of $\bar{\Sigma} = \sigma$ and $\sigma_{\Sigma} = \sigma/\sqrt{2n}$. Table XVII indicates the degree of exactness involved in such usage in the case of small samples. It is clear that in small samples, we may err considerably in judging the accuracy of a standard deviation by the 'probable error' $\cdot 67449\sigma/\sqrt{2n}$, although by the time we reach samples of 50, there will not be much error in assuming for most practical purposes a normal distribution for Σ.

Illustration. In a sample of 16, what is the probability that we shall have a standard deviation twenty per cent. *greater* than that of the parent population? The mean from Table XVII is $\cdot 9523\sigma$, and we require the probability of a value as great as, or greater than $1{\cdot}2\sigma$. By Table XVII the standard deviation is $\cdot 1752\sigma$. Hence, if we were to work this by the normal curve theory we should take

$$(1{\cdot}2\sigma - \cdot 9523\sigma)/\cdot 1752\sigma = 1{\cdot}4138,$$

which corresponds to a probability integral (Part I, Table II) of

$$\tfrac{1}{2}(1+\alpha) = \cdot 9213, \text{ or } \tfrac{1}{2}(1-\alpha) = \cdot 0787,$$

thus the odds against such a sample standard deviation would be about 12 to 1. Actually, however, the curve of standard deviations for samples of 16 is not normal but has a skewness of $\cdot 0961$ (Table XVII), and it is reasonable to doubt whether the above approximation is legitimate. We proceed therefore to find the true probability integral. This is given by equation (i) above for any value $\lambda\sigma$ as

$$P_{\lambda\sigma} = \int_{\lambda\sigma}^{\infty} y\frac{d\Sigma}{M} = \int_{\lambda\sigma}^{\infty} \frac{1}{2^{n-2}\Gamma\left(\frac{n-1}{2}\right)} \left(\frac{\Sigma}{\sigma/\sqrt{2n}}\right)^{n-2} e^{-\frac{1}{4}\left(\frac{\Sigma}{\sigma/\sqrt{2n}}\right)^2} d\left(\frac{\Sigma}{\sigma/\sqrt{2n}}\right).$$

Put $v = \frac{1}{2}n\Sigma^2/\sigma^2$ and we have

$$P_{\lambda\sigma} = \frac{1}{\Gamma\left(\frac{n-1}{2}\right)}\int_{\frac{1}{2}n\lambda^2}^{\infty} v^{\frac{1}{2}(n-3)} e^{-v}\, dv = \frac{\Gamma_{\frac{1}{2}n\lambda^2}\left(\frac{n-1}{2}\right)}{\Gamma\left(\frac{n-1}{2}\right)} \quad \text{............(ii)},$$

where $\Gamma_x\left(\frac{n-1}{2}\right)$ denotes as usual the incomplete Γ-function, and $P_{\lambda\sigma}$ is the probability integral of the Type III curve. The easiest method to evaluate this is to look it up in the *Tables of the Incomplete Γ-Function**.

For our special case, $n = 16$, $\lambda = 1{\cdot}2$, we have

$$P_{1\cdot 2\sigma} = \frac{\Gamma_{11\cdot 52}(7{\cdot}5)}{\Gamma(7{\cdot}5)} = 1 - I(u, 6{\cdot}5),$$

where $u = 11{\cdot}52/\sqrt{7{\cdot}5} = 4{\cdot}206{,}509$, and on interpolation we have

$$P_{1\cdot 2\sigma} = 1 - \cdot 91671 = \cdot 08329,$$

or the odds against such an occurrence are about 917 to 83, say 11 to 1.

For a small sample of 16, the ordinary theory is likely to be about 10 °/。 in error in computing the odds. For many purposes, however, this would not make a serious difference in our conclusions.

* Published by H.M. Stationery Office, Kingsway, London.

TABLES XVIII—XX.

Criteria for Rejection of Outlying Observations. (Probability Integral, Chauvenet's and Irwin's Methods.)

These provide convenient methods of discovering whether outlying observations may reasonably be rejected. Most of the criteria for rejection assume the distribution of the measured quantities to be approximately normal. This assumption is reasonable, however, for many series of observational errors and also of anthropometric measurements. There are three methods of investigating rejection in current use, the applicabilities of which depend to some extent on the number of observations we have to deal with. In the case of short series the standard deviation of the series may differ very considerably from that of the parent population and attention must be paid to this. For all but the shortest series, say under 15 cases, it will be ample to consider what the changes in the standard deviation would be with 2·5 times the probable error found from the approximate formula $\cdot 67449\sigma/\sqrt{2n}$ added and subtracted from it.

The methods we have to consider are:

(α) The mean and standard deviation having been determined from the sample, we find from Table II of Part I the probability of an individual with as great or greater deviation occurring. For this purpose it is desirable to compute the mean and standard deviation with and without the outlier, or outliers.

(β) The probability of an error (or observation) greater than $k\sigma$

$$= \frac{1}{\sqrt{2\pi}\,\sigma}\int_{k\sigma}^{\infty} e^{-\frac{1}{2}x^2/\sigma^2}\,dx,$$

and accordingly of a deviation greater on either side the mean

$$= \frac{2}{\sqrt{2\pi}}\int_{k}^{\infty} e^{-\frac{1}{2}x^2}\,dx = 1 - \alpha_k,$$

in our usual notation. If in a sample of size n this be less than a half, then the individual with a deviation exceeding $k\sigma$ is to be rejected.

This gives us

$$n(1 - \alpha_k) < \tfrac{1}{2},$$

$$\alpha_k > \frac{2n-1}{2n}.$$

This is Chauvenet's criterion*. We determine k from the above relation, and reject observations lying outside $k\sigma$. If we have rejected an observation by this criterion, we recalculate σ, reduce n by unity and proceed to find another k and consider whether another observation is to be rejected. It will be seen that the choice of half an individual is somewhat arbitrary and Chauvenet's criterion appears from considerable experience to reject too readily.

(γ) The distribution of the differences between the first and second and the second and third observations in samples from a normal frequency has been

* W. Chauvenet, *A Manual of Practical and Spherical Astronomy*, Fourth Edition, Vol. II. p. 565.

discussed by Irwin, and the probability of differences $P_1(\lambda)$ and $P_2(\lambda)$, as great or greater than $\lambda\sigma$ computed by him*. These are given in Tables XIX and XX for samples ranging from 2 and 3 respectively, to 1000. Table XVIII provides the constants of the curves used by Irwin to describe the frequency distributions of the first and second intervals. The frequency distribution of the differences between the pth and $(p+1)$th individuals ($p=1$ and $p=2$) is given closely by:

$$y = y_0 e^{-\frac{1}{2}\frac{(x+h)^2-h^2}{\Sigma^2}}$$

from $x=0$ to $x=\infty$. The table gives the values of h and Σ in terms of σ, the standard deviation of the data.

Illustrations. (i) Chauvenet gives the following fifteen observations of the vertical diameter of Venus as deviations from their mean made by Lieut. Herndon †:

$$\left.\begin{array}{cccccccc} & -1''{\cdot}40, & -0''{\cdot}44, & -0''{\cdot}30, & -0''{\cdot}24, & -0''{\cdot}22, & -0''{\cdot}13, & -0''{\cdot}05, \\ +1''{\cdot}01, & +0''{\cdot}63, & +0''{\cdot}48, & +0''{\cdot}39, & +0''{\cdot}20, & +0''{\cdot}18, & +0''{\cdot}10, & +0''{\cdot}06. \end{array}\right\}$$

Are the outliers $-1''{\cdot}40$ and $1''{\cdot}01$ to be rejected or not?

The standard deviation ‡ of the 15 observations is $\sigma = 0''{\cdot}5326$, with a probable error calculated by the ordinary formula of $\chi_2\sigma$ § $= 0''{\cdot}0656$. Thus the actual standard deviation of the parent population would roughly be as likely to lie outside as inside the limits $0''{\cdot}47$ and $0''{\cdot}60$.

(α) We ask first, what is the chance that in 15 observations one individual would lie outside the limits $\pm 1''{\cdot}01$?

$1{\cdot}01/{\cdot}5326 = 1{\cdot}8964$, and $\frac{1}{2}(1+\alpha) =$ nearly ·97 ‖. Thus the chance would be ·03 or outside both limits ·06. This is the chance at a single draw, and in fifteen trials, we should expect $15 \times {\cdot}06$ individuals or ·90 individuals beyond 1·01, actually there is one. This certainly would not justify its rejection. Let us consider the matter further. How many individuals ought we to expect beyond $1''{\cdot}39$?

Here $1{\cdot}39/{\cdot}5326 = 2{\cdot}61$ nearly; hence $\frac{1}{2}(1+\alpha) = {\cdot}9955$, or the chance $= {\cdot}0045$, and for the double limits ·009. We should therefore be prepared for 0·135 individuals outside $1''{\cdot}39$ in 15 observations, and we find one. We therefore decide that the $-1''{\cdot}40$ should probably be rejected. A like result follows if we increase the standard deviation to $0''{\cdot}60$. If we reject the $-1''{\cdot}40$ observation, we shall alter our mean and standard deviation. We find the mean $= +0''{\cdot}1193$ and the standard deviation $= 0''{\cdot}3869$ ¶. After $+1''{\cdot}01$ the next highest observation is $0''{\cdot}63$, and we may ask how many individuals we ought to expect over $0''{\cdot}70$, say

$$\frac{0{\cdot}70 - 0{\cdot}119}{0{\cdot}3869} = 1{\cdot}50 \text{ and } \tfrac{1}{2}(1+\alpha) = 0{\cdot}933,$$

* *Biometrika*, Vol. XVII. pp. 238—250.

† *Loc. cit.* Vol. II. p. 562.

‡ The actual mean of Herndon's observations as they stand is *not* zero, as it should be, but $+0''{\cdot}018$. He probably found his mean to more decimals than his observations, and then cut down the deviations to two decimals. I have treated his mean as zero for present purposes.

§ Part I, Table V.

‖ Part I, Table II.

¶ The value given in *Biometrika*, Vol. XVII. p. 245, appears to have been obtained by neglecting the change in mean.

or ·067 is the chance of an individual over $0''{\cdot}70$; taking both limits the chance is ·13, and we expect 1·82 individuals. Thus we cannot reject the observation at $1''{\cdot}01$.

The conclusions to be drawn from method (α) are that $-1''{\cdot}40$ should be rejected, but it is doubtful if rejection of $+1''{\cdot}01$ is justifiable.

(β) We now turn to Chauvenet's criterion, and find

$$\alpha_k = \frac{29}{30}, \text{ or } \tfrac{1}{2}(1+\alpha_k) = 0{\cdot}9833.$$

Hence $k\sigma = 2{\cdot}13\sigma$ nearly (by Part I, Table II), and accordingly all values $> \pm 1''{\cdot}13$ (for $\sigma = 0''{\cdot}5326$) are to be rejected. Thus $-1''{\cdot}40$ is thrown out as anomalous.

In the next place we have to consider the observation $+1''{\cdot}01$. We have now $n=14$, and $\alpha_k = \frac{27}{28}$, or $\frac{1}{2}(1+\alpha_k) = {\cdot}9821$. This leads to

$$k\sigma = 2{\cdot}10\sigma = 2{\cdot}10 \times 0''{\cdot}3869 = 0''{\cdot}8125,$$

or the observation $+1''{\cdot}01$ must, by Chauvenet's criterion, be rejected.

We have now thirteen observations left, and we find anew their mean and standard deviation as $+0''{\cdot}0346$ and $0''{\cdot}3110$,

$$\alpha_k = \frac{25}{26}, \text{ or } \tfrac{1}{2}(1+\alpha_k) = 0{\cdot}9808.$$

Thus $$k\sigma = 2{\cdot}07 \times 0''{\cdot}3110 = 0''{\cdot}6438.$$

According to Chauvenet's criterion, since the next observation is $0''{\cdot}63$, we are on the borderland of rejection, but should not reject. Chauvenet's criterion here, as elsewhere, seems to reject too easily.

(γ) We now turn to Irwin's criterion. The difference arithmetically between the first negative $-1''{\cdot}40$ and the second $-0''{\cdot}44 = 0''{\cdot}96$ arithmetically. Hence

$$\lambda = 0''{\cdot}96/0''{\cdot}5326 = 1{\cdot}802.$$

Hence, from Table XIX, $$P_\lambda = {\cdot}015.$$

The occurrence therefore of such a difference between the first and second has odds of about 66 to 1 against it, and we should feel strongly inclined to reject $-1''{\cdot}40$ as an anomalous observation.

On the positive side the difference is $1''{\cdot}01 - 0''{\cdot}63 = 0''{\cdot}38$, or in terms of $\sigma = 0''{\cdot}3869$ for the fourteen observations $= 0''{\cdot}38/0''{\cdot}3869 = {\cdot}9822$. Our Table XIX does not admit of very exact bivariate interpolation, but we see that for this value of λ, P_λ for $n=14$ is roughly of the order ·145, or the odds are only about 6 to 1 against such a value as $1''{\cdot}01$ occurring; we should hesitate therefore to reject it.

If rejecting $-1''{\cdot}40$ we consider the difference between the negative first and second observations, i.e. $\lambda = (0''{\cdot}44 - 0''{\cdot}30)/0''{\cdot}3869 = {\cdot}3619$, our Table XIX indicates a probability of the order ·5, and there is no suggestion of further rejection. For the positive measures the difference between the *second* and *third* gives us

$$\lambda = (0''{\cdot}63 - 0''{\cdot}48)/0''{\cdot}3869 = {\cdot}3877,$$

and we find from Table XX for $n = 14$ a probability $P_2(\lambda)$ well over ·25. There appears therefore to be no reason to suspect the existence of further anomalous observations.

(ii) Consider the following capacities in cubic centimetres of 17 Moriori skulls:

1230, 1260, 1318, 1348, 1360, 1364, 1378, 1380, 1380,

1410, 1410, 1420, 1445, 1470, 1540, 1545, 1630.

We may ask: Is the capacity of 1630 so anomalous that it should be rejected? The mean is 1405·18 and the standard deviation 97·83.

(α) In applying this method we have usually to consider two points: (a) whether one value should exist beyond the last but one, and (b) whether it exists too far away from the last. To test briefly the two points at once it is often adequate to take a value approximating to the last one. In this case, say 1600, we have

$$(1600 - 1405{\cdot}18)/97{\cdot}83 = 1{\cdot}99,$$

which leads to $\frac{1}{2}(1 + \alpha) = {\cdot}9767$ and the chance of an individual outside the limits $\pm 1600 = {\cdot}0466$; and accordingly in 17 trials we should expect ·792 individuals, or we have no reason for rejecting the 1630 value.

(β) Chauvenet's criterion gives

$$\alpha_k = \frac{33}{34}, \text{ or } \tfrac{1}{2}(1 + \alpha_k) = {\cdot}9853.$$

Thus $k\sigma = 2{\cdot}18 \times 97{\cdot}83 = 213{\cdot}27$, denoting limits 1191·91 to 1618·45.

Thus, according to Chauvenet, this skull 1630 is anomalous and should be rejected. Again this test shows too easy rejection.

(γ) If we apply Irwin's test we have $(1630 - 1545)/97{\cdot}83 = {\cdot}869$ for λ, which gives us, from Table XIX, $P_1(\lambda)$ for $n = 17$ in the neighbourhood of ·134. Thus the odds are only 6 or 7 to 1 against its occurrence. We are not justified in rejecting it.

As a matter of fact the skull in question is undoubtedly large, but nevertheless has the typical Moriori characteristics, and one has no hesitation in saying that it belonged to a member of that race.

N.B. Our Tables XIX and XX are worked out only for the differences between the first and second, and the second and third individuals; we do not know the distribution of differences between the third and fourth, or any other pair of neighbours. But we do know that such differences are less on the average than those between the second and third, if we take care that the pair under consideration are on the same side of the mean as our first and second pair. Hence $P_2(\lambda)$ will give us an upper limit for the probability of a difference between such pairs. This fact enables us readily to test whether outlying groups of observations are possibly anomalous.

Illustration. The following markedly anomalous series of observations were made by Dr R. A. Houston on the Colour-Vision of Male Students, the Rayleigh test being used*.

Ratio	Frequency	Ratio	Frequency	Ratio	Frequency
−2·93†	1	−·58	5	+·12	1
—	—	−·53	2	+·17	1
—	—	−·48	4	—	—
−1·78	1	−·43	—	—	—
—	—	−·38	2	+·62	1
−1·68	1	−·33	9	—	—
−1·63	1	−·28	37	+·87	1
—	—	−·23	77	—	—
−1·38	1	−·18	112	—	—
—	—	−·13	94	+1·07	1
—	—	−·08	38		
−·73	3	−·03	14		
−·68	3	+·02	8	Total	423
−·63	3	+·07	2		

In the first column is given the central value of the Logarithm of Ratio Red to Green, in the second the Frequency.

The mean $= -0{\cdot}20305$ and the standard deviation $= {\cdot}24357$.

(α) We ask first what frequency to expect below $-1{\cdot}30$.

$$(1{\cdot}30 - {\cdot}20305)/{\cdot}24357 = 4{\cdot}50,$$

and $$\tfrac{1}{2}(1+\alpha) = {\cdot}9999966, \quad \text{or} \quad \tfrac{1}{2}(1-\alpha) = {\cdot}0000034$$

is the chance of a single individual occurring below $-1{\cdot}30$. Thus we should expect only ·001,438 individuals in 423 trials, or the negative tail beyond $-1{\cdot}30$ is wholly anomalous.

We now turn to the three individuals at the positive end of the scale, and ask how many individuals it is reasonable to expect beyond say $+{\cdot}55$. Having removed five cases from the negative end of the range we now recalculate mean and standard deviation of the remaining 418 individuals, and find:

$$\text{Mean} = -{\cdot}18299 \text{ and standard deviation} = {\cdot}14999.$$

From these values we have:

$$({\cdot}55 + {\cdot}18299)/{\cdot}14999 = 4{\cdot}887, \quad \text{whence} \quad \tfrac{1}{2}(1+\alpha) = {\cdot}999{,}9995;$$

or, the chance of one person beyond $+{\cdot}55$ is ·000,0005; we should therefore expect ·0002 individuals, not three, in 418 trials. We must therefore exclude the cases at ·62, ·87 and 1·07.

(β) Here we have

$$\alpha_k = 845/846 = {\cdot}99882,$$

or $$\tfrac{1}{2}(1+\alpha_k) = {\cdot}99941,$$

$$k\sigma = 3{\cdot}245 \times {\cdot}24357 = {\cdot}79038.$$

* *Proc. R. S.* Vol. 102, A, p. 353, 1923.

† I.e. 2·905 to 2·955.

This gives a range of + ·587 to − ·993. Chauvenet's test would throw out the five negative and the three positive extreme individuals as anomalous, although + ·587 is near to + ·62, and again really gives the + ·62 as doubtful.

(γ) Proceeding lastly to Irwin's test we take first the gap between − ·73 and − 1·38, and find $\lambda = \cdot 65/\cdot 24357 = 2\cdot 67$ nearly. If such a gap had been between the second and third the chance of its occurrence would be < ·001, and our chance between fifth and sixth must be far less than this. This leads to rejection. Now take the positive end. Here we have

$$\lambda = \cdot 45/\cdot 24357 = 1\cdot 85,$$

and we find that the chance must be less than ·001, of such a gap occurring. Hence according to Irwin's test the doubtful observation ·62 as well as the two beyond it should be rejected. These results only mean that the causes which are producing the colour-vision of the centre or normal part of the frequency differ widely from those at the tails. The individuals at the tails have anomalous colour-vision.

It must be remembered of course that all three criteria are based on the assumption that the parent population is approximately of normal type.

Tables XXI, XXI *bis* and XXII.

The Distribution of the Extreme Individuals and of the Range in Samples from a Normal Population. (L. H. C. Tippett, *Biometrika*, Vol. XVII. pp. 364—387; E. S. Pearson, *Biometrika*, Vol. XVIII. pp. 173—194; "Student," *Biometrika*, Vol. XIX. pp. 151—164.)

1. Suppose that a sample of n is drawn from a univariate normal distribution and that the character is measured from the population mean in terms of the population standard deviation as unit. Let u and v be the largest and smallest values of the character found in the sample, so that the sample range is given by $w = u - v$. Then if the distribution of u in repeated samples be $y = f(u)$, the probability integral of this curve is

$$\int_{-\infty}^{u} f(u)\, du = \{\tfrac{1}{2}(1 + \alpha_u)\}^n \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1),$$

where $\frac{1}{2}(1 + \alpha_u)$ is found by entering Sheppard's tables of the normal curve with $x = u$. The distribution for v is the same but reversed.

Table XXI, which was calculated by Tippett, gives the expression (1) for various values of n and u. Diagram 1 shows those values of the extreme variate, u (or v), the chances of exceeding which in random sampling are (a) ·05 and (b) ·01.

2. Table XXI *bis* (first published here) is an extension by E. S. Pearson of one given by Tippett*. It shows the deviation from the population mean, measured in terms of the population standard deviation as unit, which will only be exceeded by the extreme variate in (1) 10 °/₀, (2) 5 °/₀, (3) 1 °/₀ and (4) 0·5 °/₀ of random

* *Biometrika*, Vol. XVII. p. 267.

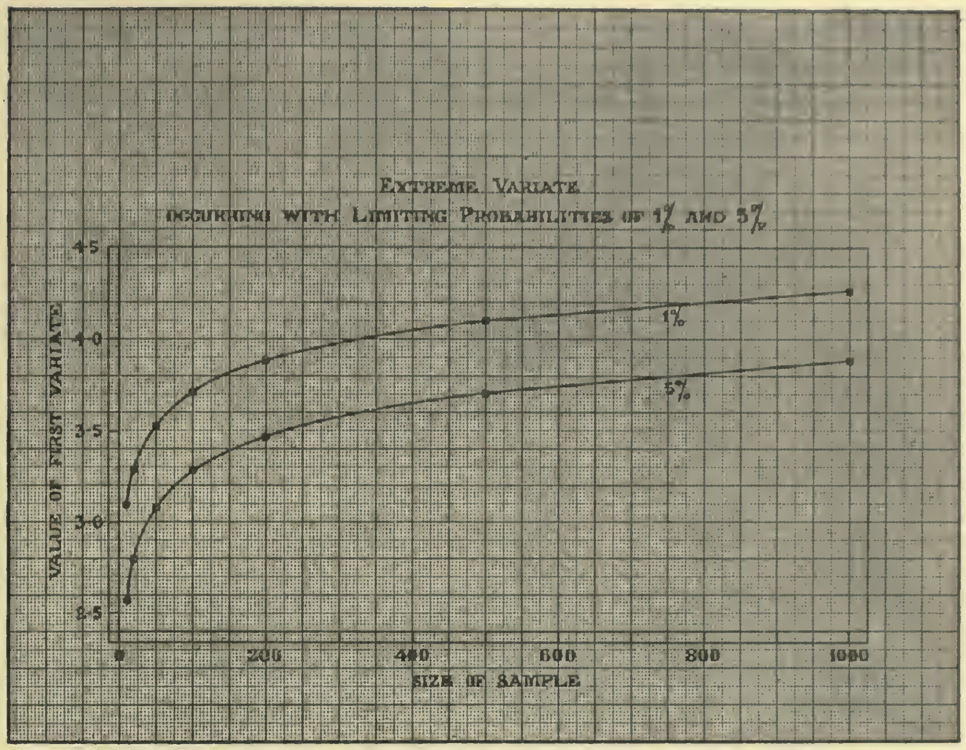


Diagram 1.

samples. The deviations are tabled for all sizes of sample up to 25; at intervals of 10 from $n = 30$ to 150; and at intervals of 100 from $n = 200$ to 1000. For almost the whole of the table linear interpolation will be adequate if accuracy to two decimal places only be required. For three decimal place accuracy the simple central difference formula*

$$z_\theta = \phi z_0 + \theta z_1 - \tfrac{1}{6}\phi\theta\,\{(1+\phi)\,\delta^2 y_0 + (1+\theta)\,\delta^2 y_1\} \qquad (\phi = 1 - \theta)$$

will be always sufficient.

Illustration. In the mass production of a certain article a firm aim at an average breaking strength of 176 lbs. and a variability in strength which should not exceed a value measured by a standard deviation of 12 lbs. In order to ensure that the production is kept under control, tests of breaking strength are applied at intervals to samples of 20 articles, and a simple check rule is required to be given to the foreman in charge of these tests. There is reason to believe that the distribution of breaking strength of this product when the manufacture is properly controlled is approximately normal.

* It may be noted that the coefficients $\epsilon_\phi = \frac{1}{6}\phi\theta(1+\phi)$ and $\epsilon_\theta = \frac{1}{6}\phi\theta(1+\theta)$ have been tabled by A. J. Thompson, *Tracts for Computers*, No. v. Cambridge University Press.

The following rule is suggested:

The foreman should report when

(*a*) the sum of the breaking strength of the 20 articles in the sample is less than 3395 lbs.;

or when (*b*) the lowest breaking strength is less than 136 lbs.

This rule has the following basis:

The standard error of the mean of samples of 20 is $12/\sqrt{20} = 2{\cdot}6833$ lbs. The table shows that the deviation to the 1 °/₀ point is 2·326 in samples of 1 and 3·289 in samples of 20. Hence the mean in a random sample of 20 should only once in a hundred times be less than $176 - 2{\cdot}326 \times 2{\cdot}6833 = 169{\cdot}76$ lbs., and the sum of the 20 breaking strengths should not be less than $20 \times 169{\cdot}76 = 3395{\cdot}2$ lbs. Again the lowest value in the sample should only be less than $176 - 3{\cdot}289 \times 12 = 136{\cdot}53$ lbs. in 1 °/₀ of samples. Of course the strengths of the mean and of the weakest individual are correlated, and a more exhaustive test might be applied, based on the mean and standard deviation of the sample. But if one of the main purposes in controlling variability is to prevent articles appearing below a certain level of strength, the use of the lower limit seems to be suitable. The test is also much simpler in application than one involving the calculation of the standard deviation of the sample.

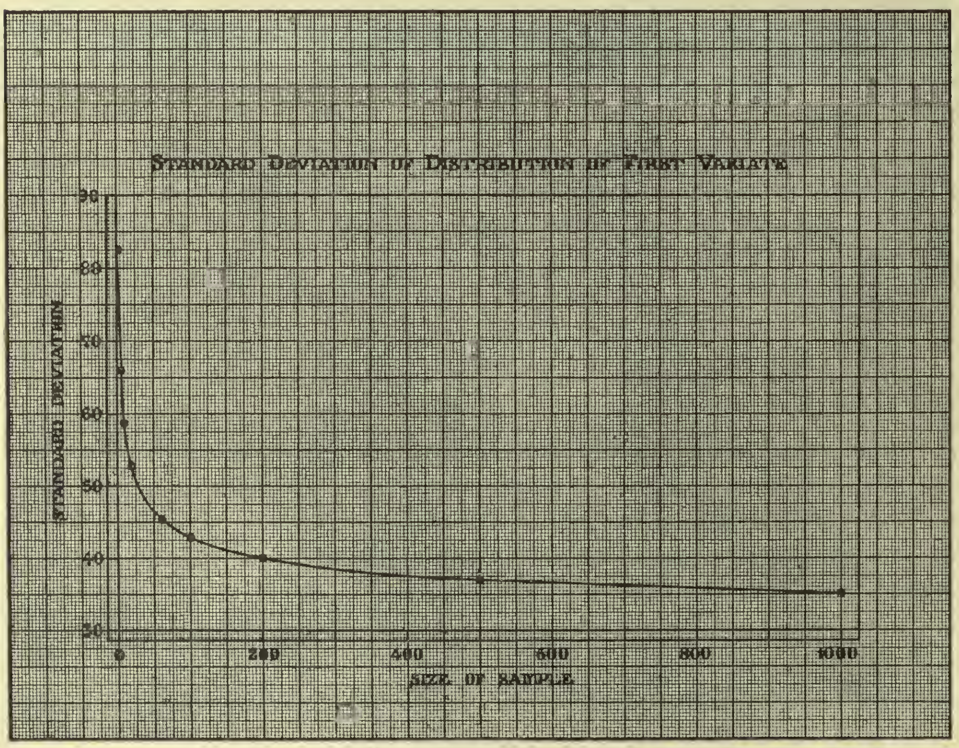


Diagram 2.

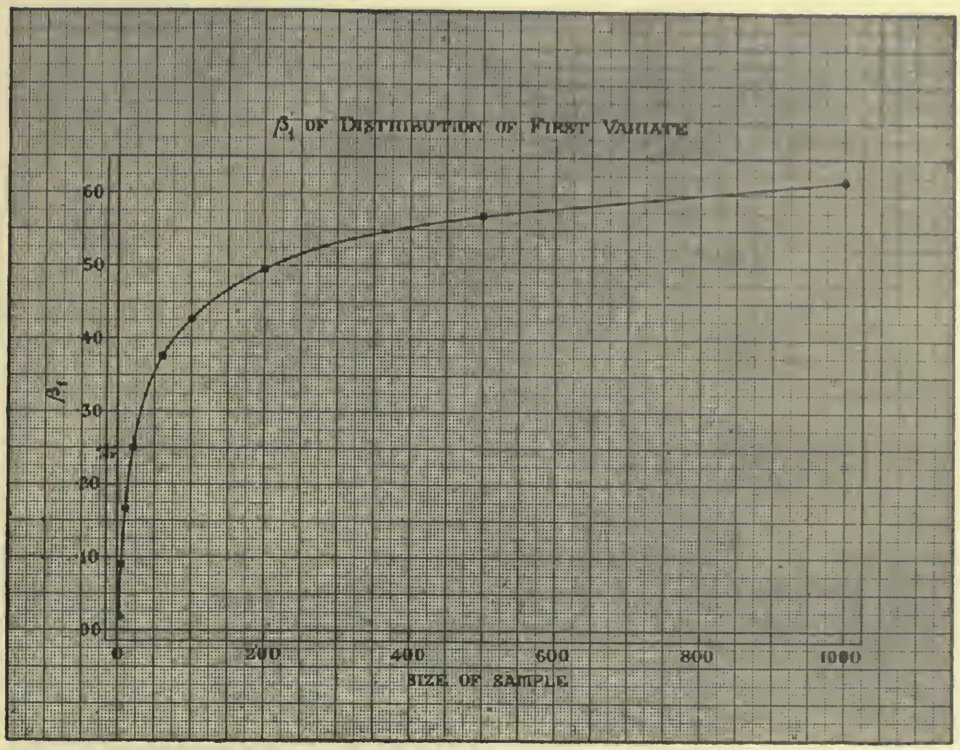


Diagram 3.

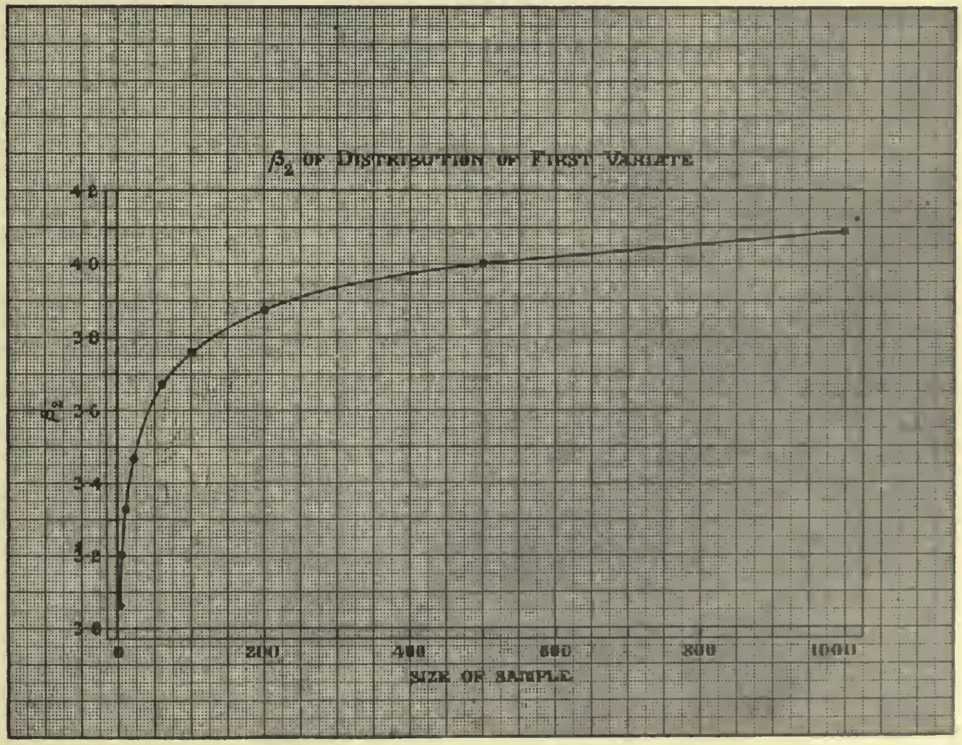


Diagram 4.

The constants of the frequency distribution of u (or v), as determined by equation (1) on p. cx, are provided in the following table, absolute values being in terms of the standard deviation of the sampled population as unit.

Constants of the Distribution of the Largest Individual in Samples from a Normal Population.

Size of sample	Mean	Standard Deviation	β_1	β_2
2	·56419	·8257	·019	3·062
5	1·16297	·6690	·092	3·202
10	1·53875	·5868	·168	3·331
20	1·86747	·5251	·251	3·469
60	2·31928	·4545	·376	3·677
100	2·50759	·4294	·429	3·765
200	2·74604	·4009	·495	3·875
500	3·03670	·3704	·570	4·003
1000	3·24144	·3514	·618	4·088

It is interesting to note that we have here an example of a statistical variate the distribution of which diverges more from normality as the sample increases in size. The accompanying Diagrams 2, 3 and 4 (pp. cxii—cxiii) will enable the student to estimate roughly, in the case of a sample not appearing in the above table, the values of the standard deviation, β_1 and β_2.

From $\beta_1 = 0$ to $\beta_1 = {}$·326 (or $\beta_2 = 3$ to 3·594) the approximate curve of distribution is a Type IV curve. That is to say, the largest or smallest individual frequency extends indefinitely in both directions. When $\beta_1 = {}$·326, $\beta_2 = 3$·594—or with samples of about 36—the frequency is represented by a Type V curve, passing into a Type VI. Thus in these cases the frequency is limited, or the chance that the largest individual will be one showing a large negative deviation is vanishingly small as we increase the size of our samples to 36 or more individuals. This is the physical interpretation of our passing to curves which have *theoretically* a finite limit to the frequency. The accompanying Diagram 5 in conjunction with the table indicates the type of curve which may be selected to represent the frequencies of samples of various sizes.

Illustration. The table on p. cxvi gives the distribution of stature among 398 men, aged 36·0—39·0, measured at Galton's Anthropometric Laboratory at South Kensington in 1884*. It will be seen that there is one exceptional individual with a stature of about 4 ft. 7 ins. The distribution of stature (for adults) is known to be approximately represented by the normal curve, and in fact if we omit the exceptional case the remaining 397 individuals give

$$\beta_1 = \cdot0009, \qquad \beta_2 = 3\cdot0947,$$

* The figures have been extracted from Table I of the paper by Ruger and Stoessiger, *Annals of Eugenics*, Vol. II. 1927, p. 91.

DIAGRAM OF CURVE GIVING THE β_1, β_2 RELATION OF CURVES OF GREATEST OR LEAST VARIATES

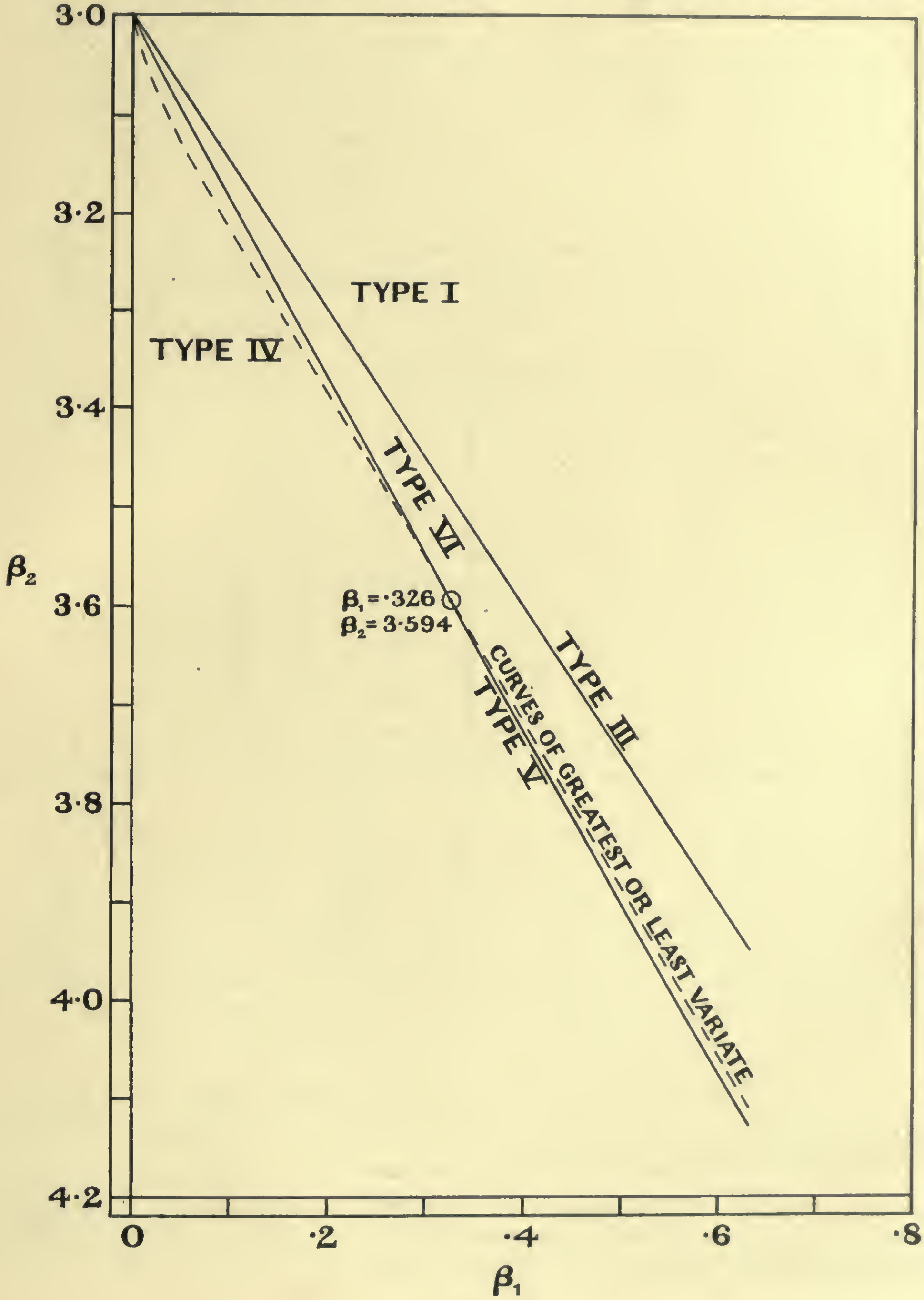


Diagram 5.

quantities differing from 0 and 3 by considerably less than their standard errors. If x represent stature, we have two sets of values for the mean and standard deviation,

(1) for the 398 men, $\bar{x} = 67 \cdot 4698$, $\sigma_x = 2 \cdot 6096$;

(2) for the 397 men, $\bar{x}' = 67 \cdot 5000$, $\sigma_x' = 2 \cdot 5428$.

Hence for the extreme individual, who may be supposed to have had the mid-group value of 55·5 inches, we find

$$(1) \quad v = (55 \cdot 5 - \bar{x})/\sigma_x = -4 \cdot 59;$$

$$(2) \quad v' = (55 \cdot 5 - \bar{x}')/\sigma_x' = -4 \cdot 72.$$

We may now enter Table XXI with these ratios, and, using the column $n = 400$ as sufficiently accurate, find on interpolation that the chance of drawing a sample in

Stature in inches	Frequency	Stature in inches	Frequency
55—56	1	66—	70
56—	—	67—	55
57—	—	68—	48
58—	—	69—	45
59—	2	70—	35
60—	1	71—	19
61—	2	72—	10
62—	10	73—	2
63—	15	74—	2
64—	28	75—	1
65—	52		
		Total	398

which the extreme individual is as far as or farther from the mean than this is, for

Case (1) $1 - \cdot 9991 = \cdot 0009$, and Case (2) $1 - \cdot 9995 = \cdot 0005$.

It is clear that here it makes little difference whether we do or do not include the extreme in calculating the mean and standard deviation, for in both cases the result is very exceptional, that is to say we should hesitate to consider the extreme individual a random one from a "normal" population. Having discarded the individual with $x = 55 \cdot 5$ inches, the extremes now lie at 59·5 and 75·5, giving

$$v = (59 \cdot 5 - \bar{x}')/\sigma_x' = -3 \cdot 15, \qquad u = (75 \cdot 5 - \bar{x}')/\sigma_x' = +3 \cdot 15,$$

values which the table shows (for $n = 400$) are exceeded in about 28 °/$_0$ of samples. By the removal of the individual with $x = 55 \cdot 5$ inches, the sample from being exceptional has become quite ordinary.

This is as far as statistical analysis can take us; whether or no we class the man as a pathological abnormality or search for an error of record in the measurements is beyond the province of statistical method.

Theoretical values of the moment coefficients of the sampling distribution of the range, w, have been given by Tippett, but lengthy computation is required to put these results into numbers; Tippett however carried through the following work:

(1) Computed the mean range, $\bar{w}$, in terms of the population standard deviation as unit for samples of sizes 2 to 1000. This is given in Table XXII.

(2) Calculated the values of the standard deviation of range, σ_w, for samples of a few selected sizes.

(3) Gave approximations to the moment constants β_1 and β_2 for certain larger samples.

The problem of smaller samples was considered later more fully by E. S. Pearson who obtained the numerical values for the first four moment coefficients of the distribution of range for $n = 2, 3, 4, 5$ and 6, and suggested a method of approximating to β_1 and β_2 between $n = 6$ and $n = 100$. A summary of these combined results is given below; the values of $\bar{w}$ are given more fully in the main table, XXII. Intermediate values for σ_w, β_1 and β_2 for $n > 10$ may be found with reasonable accuracy by

Moment Constants of the Distribution of Range, w.

Size of sample	Population S.D. as unit		β_1	β_2
	$\bar{w}$	σ_w		
2	1·128	·853	·991	3·87
3	1·693	·888	·417	3·29
4	2·059	·880	·273	3·19
5	2·326	·864	·217	3·17
6	2·534	·848	·189	3·17
7	2·704	·833	·171	3·18
8	2·847	·820	·162	3·20
9	2·970	·808	·157	3·21
10	3·078	·797	·156	3·22
15	3·472	·755	·157	3·24
20	3·735	·729	·161	3·26
60	4·639	·639	·201	3·35
100	5·015	·605	·223	3·39
200	5·492	·566	·247	3·44
500	6·073	·524	·285	3·50
1000	6·483	·497	·309	3·54

graphical interpolation. Using these values for the moment constants "Student has calculated Pearson curves to represent the distribution of range in the cases $n = 2, 3, 4, 5, 6, 10, 20$ and 60. The equations of these curves referred to their modes as origin are given on p. 163 of his paper referred to above. Partly from these curves and partly from interpolation he obtained the following table, in which W_n is the limit at which, for a sample of n, the chance of obtaining a range greater than W_n (measured in terms of the population standard deviation as unit) is p ($p = \cdot10$, $\cdot05$ and $\cdot02$).

	$p=\cdot10$	$p=\cdot05$	$p=\cdot02$
W_2	2·3	2·9	3·3
W_3	2·9	3·4	3·8
W_4	3·2	3·6	4·1
W_5	3·4	3·8	4·3
W_6	3·7	4·0	4·5
W_7	3·7	4·1	4·5
W_8	3·8	4·2	4·6
W_9	3·9	4·3	4·7
W_{10}	4·1	4·5	4·9

Illustration. In the paper referred to "Student" has discussed some of the problems involved in routine analysis, and has suggested criteria for determining whether a given observation should be discarded and repetitions undertaken. The reader who wishes to use this method must refer to the original paper, but the following example will illustrate the use of the tables in the simplest form.

In the ordinary course of business a firm needs repeatedly to undertake a certain form of analysis, let us suppose to measure the moisture in a sample of grain. Five analyses are made of the same material, giving values

$$22{\cdot}8,\quad 23{\cdot}9,\quad 25{\cdot}5,\quad 26{\cdot}0,\quad 26{\cdot}6.$$

Far the greater part of the variation between these values will be due to errors of analysis, and it is advisable in taking the mean values to discard any particularly erratic observation. Previous work has shown that the standard error of analyses of normal accuracy undertaken at the same time upon the same sample of grain is 0·675. In the present case the range in terms of this standard error is

$$w_5 = (26{\cdot}6 - 22{\cdot}8)/(\cdot675) = 5{\cdot}63.$$

If it be assumed that the distribution of repeated analyses follows approximately a normal curve*, then the tables show that in samples of 5 the distribution of w has the following constants:

$$\overline{w} = 2{\cdot}326,\quad \sigma_w = \cdot864,\quad \beta_1 = \cdot217,\quad \beta_2 = 3{\cdot}17.$$

From the small table above (based on the Pearson curve with these moments) it is seen that W_5 corresponding to $p = \cdot02$ is only 4·3; that is to say a sample with w as large as 4·3 will only be expected to occur in two random samples out of 100,

* That is to say the distribution of normal or reliable analyses. Experimental work by E. S. Pearson and Adyanthaya, *Biometrika*, Vol. xx^A. pp. 357—358; "Sophister," *ibid.* pp. 394—395, and other unpublished results suggest that while $\overline{w}$ in sampling remains very constant whatever the population may be, σ_w and β_1 and β_2 alter considerably with changes in population form.

whereas the observed value is 5·63. This suggests that the analysis giving 22·8 is of doubtful value; if it be discarded

$$w_4 = (26{\cdot}6 - 23{\cdot}9)/({\cdot}675) = 4{\cdot}00.$$

It will be seen that W_4 for $p = {\cdot}02$ is 4·1, so that the chance is slightly more than ·02 that a range as great as that observed would be found in a sample of 4. In this case it would probably be felt desirable to make one or more further analyses.

Tables XXIII—XXIV.

Tables of the Distribution of Range, Median and Mid-point between Extreme Observations ("Centre") in Small Samples. (E. S. Pearson and N. K. Adyanthaya, *Biometrika*, Vol. xx^{A}. pp. 359—360.)

(i) *The Range.* The frequency distributions of range upon which Tables XXIII—XXIV were based are those appropriate for samples from a Normal Population ($\beta_1 = 0, \beta_2 = 3$). In certain problems the statistician may have clear evidence that his population is of this form, but it may also happen that he is faced with one or other of the following situations: (*a*) He has not sufficient data available to determine the form of his population but is reasonably confident that no very great deviation from normality exists. (*b*) He knows the form of his population distribution and this is definitely not normal. In the first case he needs evidence that the distributions of range upon which the preceding tables have been based are not too sensitive to changes in population form; in the second case he needs information about the distribution of range in samples from populations of other forms. An exact equation to the range curve has only been obtained in the case of the so-called Rectangular Population* ($\beta_1 = 0$, $\beta_2 = 1{\cdot}8$), but certain results of experimental sampling throw some light on the position.

Random samples of 2, 5, 10 and 20 were drawn from populations whose law of distribution followed Pearson-type curves:

Population			Samples drawn			
(1) Type II	$\beta_1 = 0{\cdot}00$	$\beta_2 = 2{\cdot}50$	1000 of 2,	500 of 5,	500 of 10,	500 of 20.
(2) Type VII	$\beta_1 = 0{\cdot}00$	$\beta_2 = 4{\cdot}12$	1000 of 2,	500 of 5,	500 of 10,	500 of 20.
(3) Type VII	$\beta_1 = 0{\cdot}00$	$\beta_2 = 7{\cdot}07$	1000 of 2,	1000 of 5,	500 of 10,	500 of 20.
(4) Type III	$\beta_1 = 0{\cdot}50$	$\beta_2 = 3{\cdot}73$	1000 of 2,	1000 of 5,	500 of 10,	1000 of 20.

Table XXIII shows the frequency constants of the distributions of range observed among these samples; the means and standard errors (S.E.) are given in terms of the population standard deviation. Considering first the symmetrical populations ($\beta_1 = 0$), it will be seen that the mean range changes very little with the population β_2 for samples of 10 or less, but that at 20 there is a somewhat greater change. The standard error of range changes however very considerably

* That is to say a population in which individuals of each character value exist in equal numbers. Very few populations in Nature are of this type; it is a theoretical limit to very platykurtic symmetrical frequency distributions, before their transition into antimodal types, i.e. U-curves.

with β_2, increasing steadily as the population becomes more leptokurtic. In the case of the skew Type III population the mean range is in close agreement with "normal theory" but the standard error is for all sizes of sample somewhat larger.

These results show that while Tippett's Table XXII may be used in a fairly wide area of populations for estimating the population standard deviation from the sample range when the samples are small, the reliability of this method of estimation depends very much on the population form. In particular the method is of little value if the population be leptokurtic.

For some practical purposes it is necessary to know the chance of drawing a sample with a range greater than certain multiples of the population standard deviation. The results given in Table XXIV give some idea of the position; here the permilles for the experimental sampling groups have been found by rough smoothing of the data. The very considerable deviations of the β_1 and β_2 of the range curves for leptokurtic parent systems ($\beta_2 > 3$) are obvious in Table XXIII, and should warn the student to be cautious in assuming that results deduced theoretically from a normal curve will in every case apply to small samples where we do not know the parent population. This is still more strikingly illustrated in Table XXIV, which is a rough probability integral of the range distribution curves. "The great length of the tails of the range curves obtained in sampling from leptokurtic populations will be seen at a glance. This is of considerable importance. 'Student' has found for example that leptokurtic error systems are common in routine analysis* and a value of $\beta_2 = 7{\cdot}0$ is probably not unduly exceptional. The analyst must decide therefore whether he should reject extreme observations as excessively improbable deviations on 'normal theory' or accept them as perhaps rare but perfectly genuine variants in a leptokurtic system†."

For example, from a symmetrical population of $\beta_2 = 5{\cdot}6$, we should anticipate that 8 out of 1000 samples of 10 would have a range greater than seven times the parent population's standard deviation, or about 1 °/₀. In the case of a normal parent population, only one individual range in 1000 samples may be expected to exceed six times the parental standard deviation and less than 0·5 per 1000 seven times that quantity. Skewness appears (see Table XXIV, lower half) to cause greater deviations from normality for lesser values of β_2. Thus, for $\beta_1 = 0{\cdot}50$ and $\beta_2 = 3{\cdot}73$, we find only 5·5 °/₀ of samples of 20 give a range greater than 5σ in a normal parent population, but 7·7 °/₀ in the skew population. Such results indicate the amount of caution needful in applying results deduced from the normal curve to small samples.

(ii) *The Median.* The median in the population is that value of the variable which divides the frequency curve into two equal portions. If the observations in a sample of n be arranged in order of magnitude the median may be defined as the $\frac{1}{2}(n+1)$th observation if n be odd, and as the mid-point between the $\frac{1}{2}n$th and the

* *Biometrika*, Vol. xix. pp. 151—164.

† *Ibid.* Vol. xx^A. p. 358.

$(\frac{1}{2}n+1)$th if n be even. In dealing with samples from symmetrical populations the median determined in this manner from the sample may be used as an estimate of the population mean. If the population be normal the standard error of the median tends to the value of $1{\cdot}253 \times$ standard error of the mean, or $1{\cdot}253\sigma/\sqrt{n}$, where σ is the population standard deviation. This value is not however exact for very small samples, nor is it applicable to non-normal populations. Table XXIII, which combines theoretical with experimental results, shows the value of this standard error as a multiple of $\sigma/\sqrt{n}$, the standard error of the mean. It must be remembered that as the definition of the median differs in the two cases, the values of the ratio corresponding to odd and even samples will converge separately on the limiting value.

It will be seen from the table that as the β_2 of the population increases the median improves as an estimate of the population mean, and the results suggest that for $\beta_2 > 7{\cdot}0$ it is probably a better central estimate than the sample mean; but of course the evidence is only for samples of 20 or less.

In skew distributions the median and mean do not coincide, and the value of the former in the sample would only be of use to estimate the population median.

(iii) *The Mid-point between Extremes.* If u be the highest and v the lowest value of the variates in a sample of n, then $\frac{1}{2}(u+v)$ may be termed the mid-point between extremes, or briefly the "centre" of the sample. In dealing with symmetrical populations the centre calculated from the sample is another form of estimate of the population mean. Table XXIII contains certain theoretical and experimental values of the standard error of the centre expressed as a multiple of $\sigma/\sqrt{n}$, the standard error of the mean. It will be seen that this estimate increases in reliability as the β_2 of the population decreases, but it is not until the rectangular population is approached ($\beta_1 = 0$, $\beta_2 = 1{\cdot}8$) that it becomes more reliable than the mean.

In sampling from skew populations the sample centre is not likely to be of much value, for its mean position will change with the sample size and not correspond to any fixed value in the population. Its use can only therefore be recommended when the samples are very small and the parent population is known to be symmetrical and with $\beta_2 \leqslant 3$. In such cases it will give a rapid and not too crude measure of the position of the population mean, which may be of some practical value.

Table XXV.

Table of the Probability Integral for Symmetrical Curves. $\beta_1 = 0$, $\beta_2 = 1$ *to* 3 *and* 3 *onwards.* (K. Pearson and B. Stoessiger, *Biometrika*, Vol. XXII. pp. 253—283.)

1. The symmetrical curves to be considered are those for which $\beta_1 = 0$ and β_2 takes any value from 1 to ∞. The curves are supposed completely determined by their β_2's and their standard deviations.

Their differential equation will be

$$\frac{1}{y}\frac{dy}{dx'} = \frac{2mx'}{c_0 + x'^2},$$

leading to $$y = y_0 (c_0 + x'^2)^m,$$

where $$c_0 = \frac{2\beta_2}{\beta_2 - 3}\sigma^2, \text{ and } m = \frac{1}{2}\frac{9 - 5\beta_2}{\beta_2 - 3}.$$

We can throw them into the following forms:

(i) $\beta_2 = 1$ to $1{\cdot}8$ ($m_1 = 1$ to 0),

$$y = y_0 \frac{1}{\left(1 - \frac{x'^2}{a_1^2}\right)^{m_1}} \quad \text{..............................(i),}$$

where $$a_1^2 = \frac{2\beta_2}{3 - \beta_2}\sigma^2, \text{ and } m_1 = \frac{1}{2}\frac{9 - 5\beta_2}{3 - \beta_2}.$$

This symmetrical curve passes from two equal lumps through U-curves to a rectangle.

(ii) $\beta_2 = 1{\cdot}8$ to 3 ($m_2 = 0$ to ∞),

$$y = y_0 \left(1 - \frac{x'^2}{a_2^2}\right)^{m_2} \quad \text{..............................(ii),}$$

where $$a_2^2 = \frac{2\beta_2}{3 - \beta_2}\sigma^2, \text{ and } m_2 = \frac{5\beta_2 - 9}{2(3 - \beta_2)}.$$

This type of curve passes from a rectangle through limited range curves to the normal curve ($\beta_2 = 3$).

(iii) $\beta_2 = 3$ to ∞ ($m_3 = \infty$ to $\frac{5}{2}$),

$$y = y_0 \frac{1}{\left(1 + \frac{x'^2}{a_3^2}\right)^{m_3}} \quad \text{..............................(iii),}$$

where $$a_3^2 = \frac{2\beta_2}{\beta_2 - 3}\sigma^2, \text{ and } m_3 = \frac{1}{2}\frac{5\beta_2 - 9}{\beta_2 - 3}.$$

The limit $\beta \rightarrow \infty$ occurs when $m_3 = \frac{5}{2}$ and $a_3^2 = 2\sigma^2$. This curve passes from the normal curve through all grades of leptokurtosis. The limits of range in (i) are from $-a_1$ to $+a_1$, in (ii) from $-a_2$ to $+a_2$, and in (iii) from $-\infty$ to $+\infty$.

We will now proceed to the probability integral of these three curves.

For (i) we have

$$_1P_x = \tfrac{1}{2} + \frac{\int_0^{x'} y\,dx'}{2\int_0^{a_1} y\,dx'} = \tfrac{1}{2}\left\{1 + \frac{B_x(\tfrac{1}{2}, (1 - m_1))}{B(\tfrac{1}{2}, (1 - m_1))}\right\}$$

$$= \tfrac{1}{2}\{1 + I_x(\tfrac{1}{2}, (1 - m_1))\},$$

where $B_x(p, q)$ is the incomplete and $B(p, q)$ the complete B-function, and $I_x(p, q)$ their ratio.

The required transformation is

$$x = x'^2/a_1^2, \text{ or } = \frac{x'^2}{\sigma^2}\frac{3-\beta_2}{2\beta_2}.$$

Now m_1 lies between 0 and 1, and accordingly to obtain the probability integral of the curve (i) we have only to add unity to the B-function ratio $I_x(\frac{1}{2}, (1-m_1))$ and divide by two.

Since m_1 can lie only between 0 and 1, this involves the tabulation of $I_x(\frac{1}{2}, (1-m_1))$ for small ranges of m_1; but this range of the B-function has not yet been adequately computed, and we cannot at present provide a table of the probability integral of the symmetrical curve (i).

Meanwhile, until the required table be provided, a good method to determine $I_x(\frac{1}{2}, (1-m_1))$ is to use the formula provided by Soper* for the integral

$$\int_0^{x'} x'^{p-1}(1-x')^{q-1}dx',$$

when p and q are small.

We shall not consider further the probability integral of the curve (i).

For (ii) we have to make the same transformation,

$$x = \left(\frac{x'}{a_2}\right)^2 = \frac{x'^2}{\sigma^2}\frac{3-\beta_2}{2\beta_2},$$

and have

$$_2P_x = \tfrac{1}{2}\{1 + I_x(\tfrac{1}{2}, (1+m_2))\}.$$

Table XXV gives the value of

$$\tfrac{1}{2}\{1 + I_x(\tfrac{1}{2}, \tfrac{1}{2}(n-1))\},$$

and accordingly we must take $n = 2m_2 + 3$; it runs from $m_2 = -\frac{1}{2}$ to $m_2 = 14$.

When $m_2 = 14$, $\beta_2 = 2{\cdot}818{,}182$, and we are not yet close enough to the normal curve ($\beta_2 = 3$) to use its probability integral as anything but a rough approximation.

For (iii) the requisite transformation is

$$\frac{x'^2}{a_3^2} = \frac{x}{1-x}, \text{ or } x = \frac{x'^2}{x'^2 + a_3^2},$$

and we have

$$_3P_{x'} = \tfrac{1}{2}\{1 + I_x(\tfrac{1}{2}, (m_3 - \tfrac{1}{2}))\};$$

our table will accordingly give $_3P_{x'}$ from $m_3 = 15{\cdot}5$ to $m_3 = 2{\cdot}5$, or from $\beta_2 = 3{\cdot}230{,}769$ to $\beta_2 = \infty$. The former value of β_2 is still too far from $\beta_2 = 3$ to allow anything but a rough approximation to be obtained from the normal curve.

If we choose our curve to be $y = \dfrac{y_0}{(1 + x''^2)^{n/2}}$

as is frequently done, then $n = 2m_3$, and

$$a = \sqrt{\frac{2\beta_2}{\beta_2 - 3}}\,\sigma = \sqrt{2m_3 - 3}\,\sigma = \sqrt{n-3}\,\sigma,$$

or

$$\sigma = \frac{1}{\sqrt{n-3}} \text{ if we take } a = 1.$$

* *Tracts for Computers*, No. VII. pp. 21—22, Cambridge University Press. See also the present work under Table XLVIII (*Introduction*).

Accordingly at the end of Table XXV we have placed the probability integral of the normal curve with a standard deviation $\frac{1}{\sqrt{n-3}}$, where $n=31$, for comparison with that of the curve

$$y=\frac{y_0}{(1+x''^2)^{15\cdot 5}}.$$

The result confirms the inference drawn from the value of β_2, i.e. that the normal curve will only give a rough approximation to the exact probability integral at $n=31$. At the top of the table we may be in error in two to three units in the third place of decimals*.

2. We will now describe the two tables here provided.

Table XXV gives the value of

$$\tfrac{1}{2}\{1+I_x(\tfrac{1}{2},\tfrac{1}{2}(n-1))\},$$

where the argument x increases by ·01.

We need to know the relations between m and n, and x and x'.

Curve (i). m_1 lies between 0 and 1, and the only values available in our table are for $n=2$ and 3, or $m_1=0\cdot 5$ and 0, while x is determined by $x=\frac{x'^2}{a_1^2}$.

Curve (ii). m_2 ranges from 0 to ∞, but the table only supplies values from 0 to 14, since $m_2=\frac{1}{2}(n-3)$. x is found from $x=\frac{x'^2}{a_2^2}$.

Curve (iii). m_3 ranges from 2·5 to ∞, or our table will supply the probability integrals of this curve from 2·5 to 15·5. The x is to be found from $x=\frac{x'^2}{x'^2+a_3^2}$.

When the curve is written in the form

$$y=\frac{y_0}{(1+z^2)^{\frac{1}{2}n}},$$

the table will supply the probability integrals for $n=5$ to 31. If we choose to neglect the infinity of the fourth moment we can proceed to $n=2$.

In the last form of this curve $x=\frac{z^2}{1+z^2}$, or $z^2=x/(1-x)$. The value of z^2 is given to five decimal places in the second column of each sheet of the table. This enables the user to ascertain rapidly whereabouts he is in the x-variate for a given value of z or z^2.

3. We need two kinds of interpolation into Table XXV: (*a*) we need to interpolate between the tabulated values of n, and (*b*) we need to interpolate between the tabulated values of x. Both these interpolations give rise to difficulties, which require some consideration.

* Actually the unpublished tables of the B-function carry us up to $n=101$, $m_3=50\cdot 5$, a value which gives a much closer approximation to a normal curve.

(*a*) After $n=8$, interpolations for n lying between tabled values are successful, if we use δ^2 and occasionally δ^4. Neither Table XXV, nor the supplementary Table XXV *bis*, will give satisfactory results with brief interpolations for n less than 8. It may even be doubted, if the argument n were tabled by 0·1 instead of 1·0, whether satisfactory brief interpolation could be achieved. Although the graphs of the function for constant x give very simple smooth curves, after many trials no short interpolation process has been yet discovered. Luckily the chief use of the present tables is their application to small samples, and in such cases n is a whole number. For interpolation by the forward difference formulae, see the Note appended to this section (pp. cxl—cxliii).

(*b*) With regard to direct interpolation for x, this is feasible for $x = {}$·11 onward throughout the table using δ^2, or occasionally if greater accuracy be required δ^2 and δ^4. But from $x = {}$·00 to ·10, ordinary interpolation formulae cannot be applied, owing to the infinite differential coefficients appearing with the factor $x^{-\frac{1}{2}}$ in the integral. Accordingly an auxiliary table—Table XXV *bis*—has been formed which gives the function

$$\mathscr{P}_x(n) = \frac{P_x(n) - 0{\cdot}5}{\sqrt{x}},$$

and also its δ^2*. This will suffice to ascertain $\mathscr{P}_x(n)$ for any value of x from ·00 to ·10, and then

$$P_x(n) = \mathscr{P}_x(n)\sqrt{x} + 0{\cdot}5.$$

The user of Table XXV *bis* must therefore find the square root of the argument† with which he enters it, as the multiplier for $\mathscr{P}_x(n)$.

4. Illustrations of the use of the Tables.

Illustration (i). The frequency curve for the distribution of the correlation coefficient r in samples of size p taken from a parent population in which the correlation is zero is given by the curve

$$y = y_0(1 - r^2)^{\frac{1}{2}(p-4)},$$

where the mean, $\bar{r}$, $= 0$, and since $a_2 = 1$, $\sigma = \dfrac{1}{\sqrt{p-1}}$. What is the chance that in a sample of 20,

(*a*) r will lie outside twice its standard deviation?

(*b*) r will lie outside the limits $\pm$·50?

The above curve is our Type (ii), and therefore $m_2 = \frac{1}{2}(p-4) = 8$ for this special case. Now $m_2 = \frac{1}{2}(n-3) = 8$, and accordingly $n = 19$. The proper transformation is $r^2 = x$. We have $\sigma = \dfrac{1}{\sqrt{19}} = {}$·229,4157.

* Determined from the nine-figure B-function Table. For $\delta^2\mathscr{P}_0(n)$ we used the formula

$$\delta_0^2 = 4\delta_1^2 - 6\delta_2^2 + 4\delta_3^2 - \delta_4^2.$$

† x will not generally exceed four decimals, so that any table of square roots will provide what is required.

If $r = 2\sigma = \cdot458{,}8314$, then $x = r^2 = \cdot210526$. If $r = \cdot50$, $x = \cdot25$.

We have accordingly to find from Table XXV, for $n = 19$, the value of the function tabled for $x = \cdot210526$ and $x = \cdot25$.

The latter comes without interpolation at once as $\frac{1}{2}(1 + \alpha_2) = \cdot987{,}6152$, or $\frac{1}{2}\alpha_2 = \cdot487{,}6152$, hence doubling, we find the chance is $\cdot975{,}2304$, or the odds are about 975 to 25, or 39 to 1, that in taking a sample of 20 individuals from a normal population two characters of zero correlation will not show a correlation in the sample exceeding numerically $\pm \cdot50$.

In the first we have to interpolate between the values for x of $\cdot21$ and $\cdot22$, i.e.

$$u_0 = \cdot978{,}9245, \qquad u_1 = \cdot981{,}5217,$$
$$\delta^2 u_0 = -3461, \qquad \delta^2 u_1 = -3059.$$

Fourth differences are here unnecessary.

$$\theta = \cdot0526, \quad \phi = \cdot9474, \quad \tfrac{1}{6}\theta\phi = \cdot0083{,}0554,$$
$$u_\theta = \cdot9790{,}6111 + \cdot0000{,}0827 = \cdot979{,}0694.$$

The chance therefore of r falling within the range $\pm 2\sigma$ is $\cdot958{,}1388$. Had we assumed the distribution of r to be a normal curve, the chance of r falling within the range $\pm 2\sigma$ would be $\cdot954{,}4998$.

Illustration (ii). In a sample of 12, the correlation coefficient is found to be $\cdot3$. What is the chance that in the original population there was no correlation?

In this case $p = 12$ and $m_2 = \frac{1}{2}(p-4) = 4 = \frac{1}{2}(n-3)$,

or
$$n = 11, \quad x = r^2 = \cdot09.$$

Our table under $n = 11$ gives for $x = \cdot09$ the value $\cdot828{,}2807$. The chance accordingly, of r exceeding $\pm \cdot30$, if the correlation were zero, would be

$$2(1 - \cdot828{,}2807),$$

or, if the population sampled had no correlation between the variants considered, a correlation of numerical intensity $\cdot30$ or more would occur in 343 out of 1000 samples, i.e. in more than one sample in three. We cannot therefore assert that the correlation found in the sample marks a significant correlation in the parent population.

Even if the observed correlation in the sample were $\cdot50$, there would still be 98 samples in 1000 with a correlation of $\pm \cdot50$ or more if the parent population had no correlation. Indeed correlation coefficients found from very small samples are of small service in indicating significant correlation in the parent population unless the correlation in the sample be very high. For example, if the correlation in the sample of 12 were $\cdot80$, samples from an uncorrelated population would only give rise to such a value once in 500 trials.

Illustration (iii). What is the chance in a sample of 31 that the regression coefficient will not differ from that of the parent population, supposed normal, by more than twice its standard deviation?

If ρ be the correlation, Σ_1, Σ_2 the standard deviations in the parent population and R_1 the regression coefficient in the sample, the distribution of R_1 is given by

$$y = \frac{y_0}{\left\{(n-3)\,\sigma_{R_1}{}^2 + \left(R_1 - \rho\,\frac{\Sigma_1}{\Sigma_2}\right)^2\right\}^{\frac{1}{2}n}}$$

$$= \frac{y_0'}{\left\{1 + \frac{x'^2}{n-3}\right\}^{\frac{1}{2}n}},$$

where $\bar{R}_1 = \text{Mean } R_1 = \rho\,\frac{\Sigma_1}{\Sigma_2}$, the value of the regression in the parent population,

$$\sigma_{R_1}{}^2 = \frac{1}{n-3}\,\frac{\Sigma_1{}^2}{\Sigma_2{}^2}(1-\rho^2),$$

and
$$x' = \frac{\text{Deviation of } R_1 \text{ from } \bar{R}_1}{\text{Standard Deviation of } R_1},$$

n being the size of the sample.

The requisite transformation is

$$x'^2/(n-3) = x/(1-x) \quad \text{or} \quad \frac{x'^2}{x'^2 + a_3{}^2} = x.$$

Thus if $x' = 2$, we have

$$x = \frac{4}{4+n-3} = \frac{4}{n+1} = \text{in our case } \tfrac{1}{8} = {\cdot}125.$$

We have accordingly to compute

$${}_3P_{x'} = \tfrac{1}{2}\left\{1 + I_{\cdot 125}\left(\tfrac{1}{2}, \tfrac{1}{2}(n-1)\right)\right\}.$$

The value will be found in the column for $n = 31$, or $\frac{1}{2}(n-1) = 15$, between the values of ·12 and ·13 of x. We have

$$u_0 = {\cdot}973{,}9461, \quad \delta^2 u_0 = -\,10529, \quad \delta^4 u_0 = -\,517,$$

$$u_1 = {\cdot}978{,}6801, \quad \delta^2 u_1 = -\;\;8559, \quad \delta^4 u_1 = -\,396.$$

We are therefore at a part of the table where it is requisite to use δ^4's as well as δ^2's, if we desire an accurate value of $P_{x'}$. Now

$$\theta = {\cdot}5, \quad \phi = {\cdot}5, \quad \tfrac{1}{6}\theta\phi = {\cdot}041{,}6667,$$

and
$$\begin{aligned} u_\theta &= \tfrac{1}{2}({\cdot}973{,}9461 + {\cdot}978{,}6801) + {\cdot}041{,}6667 \times 1{\cdot}5\,({\cdot}001{,}9088) \\ &\quad - {\cdot}041{,}6667 \times {\cdot}1125 \times 2{\cdot}5\,({\cdot}000{,}0913) \\ &= {\cdot}976{,}3131 + {\cdot}000{,}1193 - {\cdot}000{,}0011 \\ &= {\cdot}976{,}4313. \end{aligned}$$

Hence ·952,8626 is the chance that the regression coefficient will lie within ± twice its standard deviation from the true value in the parent population.

Illustration (iv). In a long series of observations on Fathers and Sons the correlation coefficient for span was found to be ·454, and the standard deviations were 3″·14 and 3″·11 respectively. The regression R_1 of Son on Father for span = ·44966. The standard deviation of R_1 in samples is

$$\sigma_{R_1}{}^2 = \frac{1}{n-3}\frac{(3''\cdot 11)^2}{(3''\cdot 14)^2}(1-(\cdot 454)^2),$$

or

$$\sigma_{R_1} = \frac{1}{\sqrt{n-3}} \times \cdot 882{,}489.$$

Hence, if we can take the parent population for span to be approximately normal, let us ask whether a sample of 19 pairs of Father and Son giving a correlation of ·390 and standard deviations for span: Fathers 3″·19 and Sons 2″·98, may be reasonably supposed to have been drawn from this parent population.

Now R_1 for the sample = ·36432 and $\sigma_{R_1} = \cdot 221{,}1222$.

Thus $$x' = \frac{\cdot 36432 - \cdot 44966}{\cdot 221{,}1222} = -\cdot 385{,}940.$$

Accordingly $$x'^2 = \cdot 1489{,}4999,$$

and $$x = \frac{\cdot 1489{,}4999}{\cdot 1489{,}4999 + 16} = \cdot 0922{,}3509.$$

This clearly lies within the first part of Table XXV where the differences are unsatisfactory. We therefore use the auxiliary Table XXV *bis*. For $n = 19$, we have

$$u_0 = 1\cdot 335{,}4038, \quad \delta^2 u_0 = 12631,$$
$$u_1 = 1\cdot 305{,}4459, \quad \delta^2 u_1 = 12083.$$

Here δ^4's will be unnecessary.

$$\theta = \cdot 223{,}509, \quad \phi = \cdot 776{,}491, \quad \tfrac{1}{6}\theta\phi = \cdot 028{,}9255,$$
$$u_\theta = 1\cdot 328{,}7079 - \cdot 000{,}1077$$
$$= 1\cdot 328{,}6002 = \mathscr{P}_x(19).$$

But $$P_x(19) = \cdot 5 + \mathscr{P}_x(19)\sqrt{x},$$
$$P_x(19) = \cdot 5 + \cdot 304{,}8770 \times 1\cdot 328{,}6002 = \cdot 905{,}060,$$

or the chance, if this sample were really drawn from the above parent population, that its regression coefficient would differ as much as or more than it does from the regression in the parent population = ·189,880.

We see therefore that in about 19 in 100 samples the deviation of the regression would be greater than that observed.

Let us, however, look at this problem in another way, which will illustrate a further application of our present table.

Illustration (v). In the sample of the previous illustration the first product moment coefficient $= p_{11} = \cdot 390 \times 2\cdot 98 \times 3\cdot 19 = 3\cdot 707{,}4180$. What is the chance that a sample of 19 with this p_{11} could have been extracted at random from a parent population with no correlation, but with standard deviations 3″·14 and 3″·11 ?

We compute v:
$$v = n\frac{p_{11}}{3{\cdot}14\times 3{\cdot}11} = \frac{19\,(3{\cdot}707{,}4180)}{9{\cdot}7654}$$
$$= 7{\cdot}213{,}3187,$$

then the problem reduces to determining the chance that values of v will differ from zero by an amount as great as or greater than this. The distribution of v is given by

$$y_v = \frac{N}{\sqrt{\pi\,(n^2-1)}}\,\frac{\Gamma\left(\frac{1}{2}(n+4)\right)}{\Gamma\left(\frac{1}{2}(n+3)\right)}\,\frac{1}{\left(1+\dfrac{v^2}{n^2-1}\right)^{\frac{1}{2}(n+4)}},$$

where
$$v = n\frac{p_{11}}{\sigma_1\sigma_2},$$

and σ_1, σ_2 are the standard deviations in the parent population. The curve falls under our Type (iii) above.

We write
$$y = y_0\frac{1}{\left(1+\dfrac{v^2}{n^2-1}\right)^{\frac{1}{2}(n+4)}}$$
$$= y_0\left(1+\frac{v^2}{360}\right)^{-11{\cdot}5}.$$

We have accordingly to take $m_3 = 11{\cdot}5$, and $a_3^2 = 360$, which gives*

$$n = 23,$$
$$x = \frac{52{\cdot}031{,}967}{360+52{\cdot}031{,}967} = {\cdot}1262{,}8138.$$

Hence from column for $n = 23$ of Table XXV we find

$$u_0 = {\cdot}951{,}3679,\quad \delta^2 u_0 = -11583,\quad \delta^4 u_0 = -407,$$
$$u_1 = {\cdot}958{,}2584,\quad \delta^2 u_1 = -\ \ 9804,\quad \delta^4 u_1 = -310,$$
$$\theta = {\cdot}628{,}138,\quad \phi = {\cdot}371{,}862,\quad \tfrac{1}{6}\theta\phi = {\cdot}038{,}9301,$$
$$u_\theta = {\cdot}955{,}6961 + {\cdot}000{,}1240 - {\cdot}000{,}0008$$
$$= {\cdot}955{,}8193.$$

Thus in 884 out of 10,000 samples a v and therefore a p_{11} *numerically* as large as or larger than the observed product moment coefficient could have arisen from a parent population without correlation. The odds are therefore only about 116 to 10 that p_{11} did not arise from a population without correlation. It would occur about once in 11 trials. We cannot therefore assert significance in the observed

$$p_{11} = 3{\cdot}707{,}4180.$$

It is well accordingly to investigate the significance of the observed correlation.

* This n is that of the Tables, and not the n above which is the size of the sample, the former n = the latter $n+4$.

The correlation is ·390 and the size of the sample 19. The distribution curve will then be

$$y = y_0 (1 - r^2)^{7\cdot 5},$$

and

$$m_2 = 7\cdot 5 = \tfrac{1}{2}(n-3), \quad \text{or} \quad n = 18,$$

$$x = r^2 = \cdot 1521.$$

Turning to our Table XXV:

$$u_0 = \cdot 949{,}3160, \quad \delta^2 u_0 = -7531,$$

$$u_1 = \cdot 955{,}1406, \quad \delta^2 u_1 = -6616,$$

$$\theta = \cdot 21, \quad \phi = \cdot 79, \quad \tfrac{1}{6}\theta\phi = \cdot 02765,$$

and the use of δ^4 is unnecessary. Accordingly

$$u_\theta = \cdot 950{,}5392 + \cdot 000{,}0594$$

$$= \cdot 950{,}5986.$$

The chance is therefore $1 - 2(\cdot 950{,}5986 - \cdot 5) = \cdot 098{,}8028$ that a sample of 19 from a population of zero correlation would show a correlation *numerically* greater than ·390. Thus such a correlation will occur in samples of this size about once in 10 trials.

It will be clear from the results in this illustration:

(*a*) That the introduction of the observed standard deviations into the sample (i.e. using $p_{11} = r\sigma_1\sigma_2$ instead of r) lessens the probability of the parent population being one of zero correlation.

(*b*) That very little of definite value can be learnt as to correlation from small samples, i.e. in the above illustrations the sample might have been easily obtained from a parent population of correlation = ·00 or ·45 *.

Illustration (vi). In the long series of observations referred to in Illustration (iv) the mean spans of Fathers and of Sons were 68″·67 and 69″·94 respectively. Hence the regression line of Son's span on Father's span is

$$\tilde{y} = 39''\cdot 06 + 0''\cdot 44966x.$$

If $\tilde{y}_x$ be the value of $\tilde{y}$ found in a particular sample from the regression line of that sample, the standard deviation of $\tilde{y}_x$'s for numerous samples is

$$\sigma^2_{\tilde{y}_x} = \frac{\Sigma_2^2(1-\rho^2)}{n-3}\left\{1 - \frac{2}{n} + \left(\frac{x - m_1}{\Sigma_1}\right)^2\right\}$$

$$= \frac{(3\cdot 11)^2(1 - (\cdot 454)^2)}{n-3}\left\{1 - \frac{2}{n} + \frac{(x - m_1)^2}{(3\cdot 14)^2}\right\}$$

$$= \frac{7\cdot 678{,}5254}{n-3}\left\{1 - \frac{2}{n} + \frac{(x - 68''\cdot 67)^2}{9\cdot 8596}\right\}.$$

* Inferences like these in character may easily be drawn by looking at Table XXV for $n = 19$ and examining the entries above $+\cdot 39$ and below $-\cdot 39$ in the column with $\rho = 0$, ·4 and ·5.

Now suppose we fix our attention on Fathers with spans between 66″ and 67″, i.e. put $x = 66''\cdot 5$, and let us suppose samples taken of size 19. Then

$$\sigma^2_{\tilde{y}_x} = \cdot 4799{,}0784\,\{1 - \cdot 1052{,}6316 + \cdot 4775{,}9544\}$$
$$= \cdot 6585{,}9302,$$

and $$\sigma_{\tilde{y}_x} = \cdot 811{,}5374.$$

For $x = 66''\cdot 5$, we have $$\tilde{y} = 68''\cdot 96$$
from the regression line.

Now we will suppose the regression line for the sample of 19 (!) has been found and gives for the mean span of Sons of Fathers of 66″ to 67″ span the value $\tilde{y}_x = 68''\cdot 26$. The parent population gives 68″·96. Is this a reasonable difference?

The distribution of $\tilde{y}_x - \tilde{y}$ will be given by the curve

$$y = \frac{y_0}{\left\{1 + \dfrac{1}{n-3}\left(\dfrac{\tilde{y}_x - \tilde{y}}{\sigma_{\tilde{y}_x}}\right)^2\right\}^{\frac{1}{2}n}},$$

and we have $$x' = \frac{\tilde{y}_x - \tilde{y}}{\sigma_{\tilde{y}_x}} = \frac{\cdot 70}{\cdot 811{,}5374},$$

or $$x'^2 = \cdot 74401.$$

Thus $$x = \frac{x'^2}{x'^2 + a_3{}^2} = \frac{\cdot 74401}{16\cdot 74401} = \cdot 04443.$$

We have accordingly to interpolate from our tables for $x = \cdot 04443$ in the column $n = 19$. This for accuracy must be done by aid of Table XXV *bis*.

We have $$u_0 = 1\cdot 505{,}3176, \quad \delta^2 u_0 = 15731, \quad \delta^4 u_0 = 27,$$
$$u_1 = 1\cdot 468{,}4491, \quad \delta^2 u_1 = 15060, \quad \delta^4 u_1 = 27.$$

Clearly we need not use δ^4's.

$$\theta = \cdot 443, \quad \phi = \cdot 557, \quad \tfrac{1}{6}\theta\phi = \cdot 041{,}1252,$$
$$u_\theta = 1\cdot 488{,}98485^+ - \cdot 000{,}19010 = 1\cdot 488{,}7948.$$

Thus $$\mathscr{P}_x = 1\cdot 488{,}7948,$$

and $$P_x = \cdot 5 + \sqrt{\cdot 04443} \times 1\cdot 488{,}7948$$
$$= \cdot 813{,}8145.$$

Hence assuming the sample to lie within the range $\pm\, 0''\cdot 7$ from the value 68″·96 for Sons of Fathers having spans of 66″ to 67″ in the sampled population, the chance of a deviation *numerically* as large as or larger than this $= 2\,(1 - P_x) = \cdot 372{,}3710$, or we might expect 37·2 °/ₒ of samples of 19 to give a worse disagreement with the value in the sampled population.

N.B. The reader will note that we are *not* comparing the mean of actual isolated individuals in the sample with Fathers having spans between 66″ and 67″, but we are comparing the mean of the Sons of this array of Fathers *found from the regression line of the sample* with the value of the same mean as given by the parent population.

We can use our tables as applied to the third type of curve to test whether a sample of which we know the mean and standard deviation comes from a parent population of which we know the mean.

Let the size of the sample be n, the mean and standard deviation of the sample be m and s, and the mean of the parent population be M. Then, if

$$x' = (m - M)/s,$$

the distribution of x' in samples of size n is given by*

$$y = \frac{y_0}{(1 + x'^2)^{\frac{1}{2}n}},$$

provided the parent population be normally distributed. E. S. Pearson has shown the extent to which this result may still be applied in a certain range of non-normal distributions†.

It is difficult to imagine a practical case in which we know M so accurately that its probable error relative to that of m is negligible, and yet do not know Σ the standard deviation of the parent population with corresponding accuracy. If we know both M and Σ we have two *independent* variables m and s to compare with them, and the writer of this *Introduction* personally much prefers in all such cases the double test to the single test which involves both characters.

Illustration (vii). Among samples of 10 from a normal population of mean variate zero and standard deviation 10, a sample occurred with mean 7·0 and standard deviation 14·64‡. What is the probability of such a sample occurring *at a single draw* as judged by the present test?

$$x' = \frac{7{\cdot}0}{14{\cdot}64} = {\cdot}4781, \text{ and } x'^2 = {\cdot}2286.$$

The distribution curve of x' is

$$y = y_0 \frac{1}{(1 + x'^2)^{\frac{1}{2}n}},$$

and the proper transformation $x = \dfrac{x'^2}{1 + x'^2} = {\cdot}1861.$

Turning to Table XXV under $n = 10$ and $x = {\cdot}1861$, we have

$$u_0 = {\cdot}903{,}2890, \quad \delta^2 u_0 = -4832,$$
$$u_1 = {\cdot}909{,}9040, \quad \delta^2 u_1 = -4443,$$
$$\theta = {\cdot}61, \quad \phi = {\cdot}39, \quad \tfrac{1}{6}\theta\phi = {\cdot}03965,$$
$$u_\theta = {\cdot}907{,}3241{,}5 + {\cdot}000{,}0549{,}9$$
$$= {\cdot}907{,}3791.$$

* This is the case really proved by "Student," *Biometrika*, Vol. v. pp. 7—8; however, the actual examples he gives do not belong to this case, but indicate that he proposed a wider application of it.

† *Biometrika*, Vol. XXI. pp. 259 *et seq.*

‡ Such a sample was one of a set of 700 samples actually drawn from a normal population.

Thus the chance that a value of x' should occur as large as or larger than this is $\cdot185{,}2418$, taking positive and negative excesses in x' together. The odds are only about 4·5 to 1 against such occurrence.

Now let us consider the two characters m and s which have been combined in "Student's" test separately.

The means in the samples are distributed normally with standard deviation of $\Sigma/\sqrt{n}=$ in our case 3·1623, or the ratio of the observed deviation in the sample mean to the standard deviation of sample means is 2·2136.

From Table II of Part I of these *Tables for Statisticians*:

$$u_0 = \cdot986{,}4474, \quad \delta^2 u_0 = -77,$$
$$u_1 = \cdot986{,}7906, \quad \delta^2 u_1 = -75,$$
$$\theta = \cdot36, \quad \phi = \cdot64, \quad \tfrac{1}{6}\theta\phi = \cdot0384.$$

Accordingly
$$u_\theta = \cdot986{,}5709{,}5 + \cdot000{,}0008{,}8$$
$$= \cdot986{,}5718.$$

Thus the chance of a mean as great as or greater than this occurring $= \cdot013{,}4282$, or taking both positive and negative excesses $= \cdot026{,}8564$. Thus the odds against such a mean occurring in a single sample are of the order 36 to 1, while those as judged by "Student's" test are about 4·5 to 1.

Now turn to the standard deviation, which is 14·64 against the 10 of the parent population.

If we judged roughly, assuming the distribution of standard deviations to be approximately normal with a standard deviation $\dfrac{\Sigma}{\sqrt{2n}} = 2\cdot2361$ about a mean of $\Sigma = 10$, the deviation $14\cdot64 - 10 = 4\cdot64$ would be 2·075 times the standard deviations, or deviations as great as or greater than this would only occur about 38 times in 1000 trials, or the odds are of the order 25 to 1 against such an occurrence.

For a more accurate appreciation of the odds, we must note that the curve of distribution of s in samples from a normal population is

$$y = y_0 x'^{\,n-2} e^{-\frac{1}{2}x'^2},$$

where $x' = s/(\Sigma/\sqrt{2n})$ in our present notation. But this curve has not yet had its probability integral tabled for various values of n and x'.

If, however, we write $z = \frac{1}{2}x'^2$, the probability integral becomes

$$P(z, n) = \frac{\displaystyle\int_0^z z^{\frac{n-3}{2}} e^{-z} dz}{\displaystyle\int_0^\infty z^{\frac{n-3}{2}} e^{-z} dz}$$

= Probability Integral of a Type III curve as tabled in the *Tables of the Incomplete Γ-Function**.

* Published by H.M. Stationery Office, 1922.

The integral there given is

$$I(u, p) = \frac{\int_0^{u\sqrt{p+1}} z^p e^{-z} dz}{\int_0^{\infty} z^p e^{-z} dz}.$$

In our case $p = \frac{1}{2}(n-3) = 3{\cdot}5,$

$$u = \frac{1}{\sqrt{4{\cdot}5}} z = \frac{1}{4\sqrt{4{\cdot}5}} \left(\frac{s}{\Sigma/\sqrt{2n}}\right)^2 = 5{\cdot}0516.$$

For interpolation in excess of mean we have from the above tables, under $p = 3{\cdot}5$:

Argument	Entry	δ^2	δ^4
5·0	·988,2633	− 2497	Negligible
5·1	·989,8982	− 2185	"

$$\theta = {\cdot}516, \quad \phi = {\cdot}484, \quad \tfrac{1}{6}\theta\phi = {\cdot}041{,}624.$$

Required value = ·989,1069,1 + ·000,0292,1

= ·989,1361,

or the chance of values of s as great as or greater than 14·64 = ·010,8639.

If on the side of defect we take as limit 14·64 − 10 = 4·64, we find $u = {\cdot}5074$. Our tables give:

Argument	Entry	δ^2	δ^4
0·50	·010,5995	+ 37648	− 2442
0·60	·020,3677	+ 43857	− 2855

$$\theta = {\cdot}074, \quad \phi = {\cdot}926, \quad \tfrac{1}{6}\theta\phi = {\cdot}011{,}4207, \quad \tfrac{1}{20}(1+\theta)(1+\phi) = {\cdot}103{,}4202.$$

Required value = ·011,3223,5 − ·000,1366,1 − ·000,0015,4

= ·011,1842.

Accordingly the probability that s will differ from the population value by as much as or more than 4·64

= ·010,8639 + ·011,1842

= ·022,0481,

or the odds are about 44 to 1 against the occurrence of such a deviation from the population standard deviation. Now it would appear that these two sets of odds—36 to 1 against such an excess in the mean and 44 to 1 against such an excess in the standard deviation—especially when we remember that by our hypothesis as to the parent population these two results are independent—are entirely screened when we apply "Student's" test, with its odds of only 4·5 to 1. The fact is that when the two characters, on the ratio of which "Student's" test is based, deviate in the same direction, this test may be very misleading, when we use it as an indication of the rarity of a particular sample; it is the measurement of the rarity of a particular ratio connected with the sample, but may be dangerous if interpreted as a measure of the rarity of the sample itself*.

That "Student" himself has not laid too great emphasis on his test is, I think, clear, but the emphasis used by others must lead us to be cautious in its application.

While "Student's" analysis follows the lines indicated above of the probability of his ratio in the case of a sample drawn from a normal parent population, he uses it in the examples he gives for a somewhat different purpose, where its application needs some consideration.

Let u and v be two variates, each of which follows the normal law, then their difference $u-v$ will also follow a normal curve with mean $\bar{u}-\bar{v}$ and standard deviation $\sqrt{\sigma_1^2+\sigma_2^2-2\rho\sigma_1\sigma_2}$, which latter is the standard deviation of the difference, σ_{u-v}, if ρ be the correlation coefficient of u and v.

Accordingly if we take samples from these populations with means m_u, m_v and standard deviations s_u, s_v and correlation r, then

$$m_u - m_v \text{ and } s_{u-v} = \sqrt{s_u^2 + s_v^2 - 2rs_u s_v}$$

will follow in their frequencies the two curves used by "Student" to obtain his ratio distribution, and if we write

$$x' = \frac{m_u - m_v - (\bar{u} - \bar{v})}{s_{u-v}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (\epsilon),$$

then x' will follow the law of distribution in samples of n given by

$$y = \frac{y_0}{(1+x'^2)^{\frac{1}{2}n}}.$$

"Student" tacitly takes $\bar{u}=\bar{v}$, or he assumes the mean difference of the population from which he is sampling to be zero. He is therefore measuring the probability of the ratio x' on the assumption that u and v are taken at random† from the *same* parent population. If the ratio x' gives a very small chance of occurrence, he assumes that on his hypothesis u and v are not drawn from the same parent population. But with "Student" u and v are not *independent* samples of necessity as in the test (ϵ') for two samples (see pp. cxxxvii *et seq.*).

* A cephalic index among Englishmen of 80·0 is not uncommon, but if we say it has arisen from a skull length of 210 mm. and a skull breadth of 168 mm. we recognise that we are dealing with a very exceptional case on two counts. That is the non-rarity of a ratio is not sufficient to justify us in considering the individual whom it characterises as of common occurrence.

† Actually, however, this is not so, in for example his Illustration I; his two populations are linked by a high correlation due to individual reaction to soporifics. If he gets a high m_u, he will get a high m_v, and if he gets a low m_u he will have a low m_v. According to the test, if $\bar{u}=\bar{v}$, the most probable value of m_v is m_u; but if v and u are correlated, this is not so; it will be $\bar{u}+\rho\sigma_v(m_u-\bar{u})/\sigma_u$, for the means in samples follow the regression line of the parent population.

Take the following series of values from "Student's" original paper:

Additional Hours of Sleep gained by the use of hyoscyamine hydrobromide.

Patient	1 (Dextro-)	2 (Laevo-)	Difference (2 − 1)
1	+0·7	+1·9	+1·2
2	−1·6	+0·8	+2·4
3	−0·2	+1·1	+1·3
4	−1·2	+0·1	+1·3
5	−0·1	−0·1	0·0
6	+3·4	+4·4	+1·0
7	+3·7	+5·5	+1·8
8	+0·8	+1·6	+0·8
9	+0·0	+4·6	+4·6
10	+2·0	+3·4	+1·4
Mean	+0·75	+2·33	+1·58
S.D.	1·70	1·90	1·17

Now it is clear that $s_{u-v} = 1·17$ is much less than $\sqrt{(1·70)^2 + (1·90)^2}$, which it should be, were u and v independent. Actually worked out on these ten cases the correlation is over ·79. Is it likely even on ten cases that the correlation would exceed numerically ·79, if it were really zero in the parent population?

The curve of distribution is (see p. cxxv)

$$y = y_0 (1 - r^2)^3.$$

We have therefore to enter our table with $x = r^2 = ·6241$, and as $\frac{1}{2}(n-3) = 3$ with $n = 9$, we find that the chance of such a correlation coefficient from a population of zero correlation lying outside the limits $\pm$ ·79 is between ·006 and ·007. There is small doubt therefore that u and v in the sampled population are correlated, probably highly correlated, as the influence of any sleeping draught whatever is a characteristic of the individual. "Student," in applying his test to the difference, has noted this fact as accounting for the low value of the probable error of the difference.

But what, I think, it is desirable to emphasise is that this correlation may exist in most of the examples to which "Student" applies his test, either owing to the influence of the same individual, or of the same year, etc. Accordingly the denominator of "Student's" ratio will be subject to large variation owing to the presence of this correlation in s_{u-v}, the correlation itself being subject to large variation in small samples of such sizes as 10. Meanwhile the most probable value of the numerator $m_u - m_v$ will *not* be zero owing to the influence of this correlation.

Now "Student" takes $x' = 1·58/1·17 = 1·35$, $x'^2 = 1·8225$, and accordingly the transformed $x = x'^2/(1 + x'^2) = ·6457$, while $n = 10$.

Entering our Table XXV with $n=10$, we have:

x	Function	δ^2	δ^4
·64	·998,4448	−215	Negligible
·65	·998,6380	−196	,,

$$\theta = \cdot 57, \quad \phi = \cdot 43, \quad \tfrac{1}{6}\theta\phi = \cdot 04085.$$

$$\text{Required value} = \cdot 998{,}5549 + \cdot 000{,}0025$$
$$= \cdot 998{,}5574.$$

"Student" gives the value ·9985, quite in keeping.

The chance therefore that x' will not lie between the limits $\pm 1\cdot 35$

$$= 2 \times \cdot 00144 = \cdot 0029 \text{ nearly,}$$

or the odds are 9971 to 29 against it or 344 to 1 against it.

Now let us suppose the 10 patients who had dextro-hyoscyamine hydrobromide were not identical with those who had the laevo- form, and that the standard deviations remained the same. Then there is no doubt about the application of formula (ϵ). If we suppose them to be independent samples of the same population $r=0$, and $\bar{u}=\bar{v}$. In this case $m_u - m_v = 2\cdot 33 - 0\cdot 75 = 1\cdot 58$, and

$$s_{u-v} = \sqrt{s_u^2 + s_v^2} = \sqrt{(1\cdot 70)^2 + (1\cdot 90)^2}$$
$$= 2\cdot 5495.$$

Thus $$x' = 1\cdot 58/2\cdot 5495 = \cdot 6197, \quad x'^2 = \cdot 3840,$$

and $$x = \frac{x'^2}{1+x'^2} = \cdot 2775, \text{ and } n = 10.$$

We have from Table XXV:

x	Function	δ^2	δ^4
27	·949,3108	−2475	Negligible
28	·952,9130	−2318	,,

$$\theta = \cdot 75, \quad \phi = \cdot 25, \quad \tfrac{1}{6}\theta\phi = \cdot 0336.$$

$$\text{Required value} = \cdot 952{,}0124 + \cdot 000{,}0224 = \cdot 952{,}0348,$$

or the odds are about 9·4 to 1 that x' does not lie in the range $\pm \cdot 6197$.

These odds are by no means great.

A further test which has been provided* to determine whether two samples, of which the means are m_1, m_2 and the standard deviations s_1 and s_2, have been drawn from the *same* normal population, has been further discussed recently by J. Neyman and E. S. Pearson†.

We take
$$x' = \frac{m_u - m_v}{\sqrt{n_1 s_1^2 + n_2 s_2^2}} \sqrt{\frac{n_1 n_2}{n_1 + n_2}},$$
and its distribution curve is
$$y = \frac{y_0}{(1+x'^2)^{\frac{1}{2}(n_1+n_2-1)}} \cdot \qquad \ldots\ldots\ldots\ldots\ldots\ldots (\epsilon').$$

* R. A. Fisher, *Metron*, Vol. v. p. 7. † *Biometrika*, Vol. xx^A. pp. 175 *et seq.*

In the above case of "Student" $n_1 = n_2 = 10$, and $s_1 = 1{\cdot}70$, $s_2 = 1{\cdot}90$, $m_1 = 0{\cdot}75$, $m_2 = 2{\cdot}33$.

Accordingly $x' = \dfrac{1{\cdot}58}{2{\cdot}5495\sqrt{2}} = {\cdot}4382$, and $x'^2 = {\cdot}1920$,

while $$x = \frac{x'^2}{1 + x'^2} = {\cdot}1611,$$

and we must look up the column for $n = 19$ in Table XXV. We have:

x	Function	δ^2	
·16	·959,7231	− 6554	δ^4 may be neglected
·17	·964,5820	− 5745	for present purposes.

$$\theta = {\cdot}11, \quad \phi = {\cdot}89, \quad \tfrac{1}{6}\theta\phi = {\cdot}016{,}3167.$$

$$\text{Required result} = {\cdot}960{,}2576 + {\cdot}000{,}0306$$
$$= {\cdot}960{,}2882.$$

The chance accordingly of x' exceeding the limits $\pm\,{\cdot}1611$ is ·0794, or the odds against this are about 11·6 to 1.

This is roughly in keeping with the previous determination. Or, we conclude that there is some, but far from overwhelming, evidence that a population treated with the laevo- form of the soporific would have longer hours of sleep than another sample of the same population treated with the dextro- form. On the other hand, if we can trust the application of formula (ϵ) to the case where the samples are not independent, then the odds are 344 to 1 that the *same* individual gets longer hours of sleep from the laevo- than from the dextro- form.

The difference lies and can lie only in the correlation in the individual between hours of sleep due to the two forms. What real trust, however, can be put upon a correlation due to 10 pairs? We need, further, some more definite demonstration of how (ϵ) applies to this case with $\bar{u} - \bar{v} = 0$, which seems to involve the assumption that u and v are drawn *at random from the same population.*

Now it is most important that the worker should understand what "Student" is really supposing in this special illustration and in others like it. His first hypothesis is that $\bar{u} = \bar{v}$, and he then seeks to find out whether $m_u = m_v$. Thus the question he is asking is this: What is the probability that dextro- and laevo-hyoscyamine hydrobromide will produce different soporific effects on the *same* individuals provided they produce the same effect on different individuals from the same population? Not unnaturally he finds a high improbability, because it is excessively unlikely that the two drugs should produce identical effects on the population at large. He is measuring that improbability as well as the improbability of their producing the same effect on the same individuals. How much of the improbability is due to one or other source cannot be ascertained without duplicating the experiment, i.e. by first experimenting on different individuals from the same population to ascertain whether it is reasonable to put $\bar{u} = \bar{v}$, or if not, to get some idea of the value of $\bar{u}-\bar{v}$, and then proceeding to deal with the same or highly correlated individuals.

It may be of interest in regard to problems of this sort to exhibit a further example of the use of the (ϵ') test as given by Neyman and Pearson on p. 206 of their paper cited above.

Illustration. A piece of work is carried out by one set of 30 workmen according to Method I, and by a *second* set of 40 workmen according to Method II. The two sets of workmen are supposed of like ability. The resulting frequencies were:

Time in seconds	50	51	52	53	54	55	56	57	58	59	60	Totals
Method I	1	3	5	4	7	5	3	1	1	—	—	$30=n_1$
Method II	—	1	2	5	8	9	6	3	3	1	2	$40=n_2$

Here for I, $m_u = 53{\cdot}700$ secs., $s_1 = 1{\cdot}882$ secs.

„ II, $m_v = 55{\cdot}175$ secs., $s_2 = 2{\cdot}072$ secs.

Now according to the test we take

$$x' = \frac{m_u - m_v}{\sqrt{n_1 s_1^2 + n_2 s_2^2}}\sqrt{\frac{n_1 n_2}{n_1+n_2}} = -\,{\cdot}3663,$$

$$x'^2 = {\cdot}1342 \quad\text{and}\quad x = \frac{{\cdot}1342}{1{\cdot}1342} = {\cdot}11832,$$

$$n = n_1 + n_2 - 1 = 69.$$

This lies outside our Table XXV for n, but the probability integral is

$$\tfrac{1}{2}\left(1 + I_x\left(\tfrac{1}{2}, 34\right)\right),$$

and found from the Tables of the Incomplete B-function* = ·998,2199, which agrees with the value ·9982 given by Neyman and Pearson. Thus the odds are about 277 to 1 that if the two samples were from the same population x' would lie outside the limits $\pm\,{\cdot}3662$.

It is clear that such a problem cannot be solved directly by "Student's" ratio as originally given, unless we have the two samples of equal size. In any real case this would be likely to occur, for to produce equal ability in the two samples, the same men would probably be used for both methods. But if this were done, correlation would almost certainly come in and the (ϵ') test would be inapplicable. Hence it becomes all the more important to be certain that "Student's" test can be safely used, when the two populations are correlated member for member.

* For most practical purposes, it is adequate to use here the normal curve with standard deviation $1/\sqrt{n-3}$, the standard deviation of the x' curve Now $x' = -\,{\cdot}3663$ and $1/\sqrt{n-3} = {\cdot}1231$, therefore $x'/\sigma_{x'} = 2{\cdot}975$, and the corresponding probability $= {\cdot}99853$, which for most practical inferences is as serviceable as the correct value ·99822 obtained from the B-function tables.

It appears to me that in applying his test "Student" has really to face two problems, which cannot be solved by a single investigation in the manner he proposes:

(i) If we take two *wholly independent* sets of individuals, and administer the laevo- form of the soporific to one and the dextro- to the other, is there a probability, and what value has it, that the two means differ, and can we thus determine which is the more efficient?

(ii) If we administer both soporifics to the *same* set of individuals, i.e. allowing for the individual reactions to the two forms of the drug, will the data indicate that the one is more effective than the other?

Now (i) can be answered by "Student's" test, because he can suppose the samples drawn from the same population, and thus see how improbable the results are. Or, the (ϵ') test may be used, if the samples are of different sizes.

But (i) must be answered before (ii). If (i) show there to be no substantial difference in the hours of sleep of the two sets, then $\bar{u}$ may be put $= \bar{v}$ in (ϵ) for (ii). But if the answer to (i) is that $\bar{u}$ and $\bar{v}$ in all probability differ, then it does not seem valid to put $\bar{u} = \bar{v}$ in (ϵ) for (ii). It is clear that if $\bar{u}$ be not equal to $\bar{v}$, then a very different value and a much smaller value will be obtained for x' than that given by "Student." The problem thus raised appears to repeat itself in others of "Student's" illustrations, and my object is to press for caution in the application of his test, and indeed in other tests similar to it.

Note to this Section.

On Interpolation into Table XXV for small Values of $q = \frac{1}{2}(n-1)$.

Interpolation for $q = \frac{1}{2}(n-1)$ is bound to be laborious, even if it be straightforward. In interpolating for q into Table XXV, it will be found best, particularly in the earlier part of the table, to use a forward difference formula, e.g.

$$u_0(\theta) = u_0 + \theta\Delta u_0 - \frac{\theta(1-\theta)}{2\,!}\Delta^2 u_0 + \frac{\theta(1-\theta)(2-\theta)}{3\,!}\Delta^3 u_0$$
$$- \frac{\theta(1-\theta)(2-\theta)(3-\theta)}{4\,!}\Delta^4 u_0 + \dots.$$

If we use the tabled value $P_x(\frac{1}{2}, q)$, we may have to find, even at $x = \cdot 25$, eight or nine differences to get the correct result to seven decimal places. But if we reduce the $P_x(\frac{1}{2}, q)$ to $B_x(\frac{1}{2}, q)$ by the relation $B_x(\frac{1}{2}, q) = \{2P_x(\frac{1}{2}, q) - 1\} \times B(\frac{1}{2}, q)$ four or five differences will suffice for 7-figure accuracy when $x = \cdot 25$. For $x = \cdot 50$, the seventh difference is required for the $B_x(\frac{1}{2}, q)$'s. The $I_x(\frac{1}{2}, q)$'s would need far more. In order that Δq may not exceed $\cdot 25$, we can use when it appears desirable a negative interpolation.

The value of $B(\frac{1}{2}, q)$ is given at the top of each column to assist the reader in reducing the tabled entries to $B_x(\frac{1}{2}, q)$. From the interpolated value of the latter we find $P_x(\frac{1}{2}, q)$ by determining from a table of the complete Γ-functions the complete B-function corresponding to the interpolated value.

Illustrations.

(i) Find the value of $P_{.25}(\frac{1}{2}, 3{\cdot}25)$.

(*a*) Let us work first with $I_x(\frac{1}{2}, q) = 2P_x(\frac{1}{2}, q) - 1$:

q	$I_{.25}(\frac{1}{2}, q)$	Δ	Δ^2	Δ^3	Δ^4	Δ^5	Δ^6	Δ^7	Δ^8
3	·792,9688,								
3·5	·829,5293,	·036,5605,							
4	·858,8867,	·029,3574,	−·007,2031,						
4·5	·882,6932,	·023,8065,	−·005,5509,	·001,6522,					
5	·902,1454,	·019,4522,	−·004,3543,	·001,1966,	−·000,4556,				
5·5	·918,1358,	·015,9904,	−·003,4618,	·000,8925,	−·000,3041,	·000,1515,			
6	·931,3450,	·013,2092,	−·002,7812,	·000,6806,	−·000,2119,	·000,0922,	−·000,0593,		
6·5	·942,3012,	·010,9562,	−·002,2530,	·000,5282,	−·000,1524,	·000,0595,	−·000,0327,	·000,0266,	
7	·951,4197,	·009,1185,	−·001,8377,	·000,4153,	−·000,1129,	·000,0395,	−·000,0200,	·000,0127,	−·000,0139.

Here we must go as far as Δ^8.

$$\begin{aligned} I_{.25}(\tfrac{1}{2}, 3{\cdot}25) &= {\cdot}792{,}9688 + \tfrac{1}{2}({\cdot}036{,}5605) - \tfrac{1}{8}(-{\cdot}007{,}2031) + \tfrac{1}{16}({\cdot}001{,}6522) \\ &\quad - \tfrac{5}{128}(-{\cdot}000{,}4556) + \tfrac{7}{256}({\cdot}000{,}1515) - \tfrac{21}{1024}(-{\cdot}000{,}0593) \\ &\quad + \tfrac{33}{2048}({\cdot}000{,}0266) - \tfrac{429}{32768}(-{\cdot}000{,}0139) \\ &= {\cdot}792{,}9688 + {\cdot}018{,}2803 + {\cdot}000{,}9004 + {\cdot}000{,}1033 + {\cdot}000{,}0178 + {\cdot}000{,}0042 \\ &\quad + {\cdot}000{,}0012 + {\cdot}000{,}0004 + {\cdot}000{,}0002 \\ &= {\cdot}792{,}9688 + {\cdot}019{\cdot}3078 = {\cdot}812{,}2766, \end{aligned}$$

and $P_{.25}(\frac{1}{2}, 3{\cdot}25) = {\cdot}906{,}1383$, which is accurate to the last figure.

The process is somewhat lengthy and can be shortened by using $B_x(\frac{1}{2}, q)$.

(*b*) Starting from the $I_x(\frac{1}{2}, q)$'s, multiply them by their respective $B(\frac{1}{2}, q)$'s and we obtain the following series:

q	$B_x(\frac{1}{2}, q)$	Δ	Δ^2	Δ^3	Δ^4	Δ^5
3	·845,8334,					
3·5	·814,3885,	−·031,4449,				
4	·785,2678,	−·029,1207,	·002,3242,			
4·5	·758,2593,	−·027,0085,	·002,1122,	−·000,2120,		
5	·733,1721,	−·025,0872,	·001,9213,	−·000,1909,	+·000,0211,	
5·5	·709,8349,	−·023,3372,	·001,7500,	−·000,1713,	+·000,0196,	−·000,0015.

The differencing here is briefer and more effective.

$$\begin{aligned} B_{.25}(\tfrac{1}{2}, 3{\cdot}25) &= {\cdot}845{,}8334 - {\cdot}015{,}7224(5) - {\cdot}000{,}2905(3) - {\cdot}000{,}0132(5) \\ &\quad - {\cdot}000{,}0008(2) - {\cdot}000{,}0000(4) \\ &= {\cdot}845{,}8334 - {\cdot}016{,}0271 = {\cdot}829{,}8063. \end{aligned}$$

But $B(\frac{1}{2}, 3{\cdot}25) = 1{\cdot}021{,}58087$, hence

$$I_{.25}(\tfrac{1}{2}, 3{\cdot}25) = B_{.25}(\tfrac{1}{2}, 3{\cdot}25)/B(\tfrac{1}{2}, 3{\cdot}25) = {\cdot}812{,}27668$$

and $$P_{.25}(\tfrac{1}{2}, 3{\cdot}25) = \tfrac{1}{2}\{1 + I_{.25}(\tfrac{1}{2}, 3{\cdot}25)\} = {\cdot}906{,}1383,$$

the correct value, as before.

(ii) Find the value of $P_{\cdot 50}(\frac{1}{2}, 3\cdot 25)$.

Here, even using the B_x's, we must go as far as Δ^7 to be accurate to the seventh figure. Our scheme is as follows:

		Δ	Δ^2	Δ^3	Δ^4	Δ^5	Δ^6	Δ^7
$B_{\cdot 50}(\frac{1}{2}, 3\ )$	1·013,5197,							
$B_{\cdot 50}(\frac{1}{2}, 3\cdot 5)$	·949,2072,	−·064,3125,						
$B_{\cdot 50}(\frac{1}{2}, 4\ )$	·893,9850,	−·055,2222,	·009,0903,					
$B_{\cdot 50}(\frac{1}{2}, 4\cdot 5)$	·846,1813,	−·047,8037,	·007,4185,	−·001,6718,				
$B_{\cdot 50}(\frac{1}{2}, 5\ )$	·804,4742,	−·041,7071,	·006,0966,	−·001,3219,	·000,3499,			
$B_{\cdot 50}(\frac{1}{2}, 5\cdot 5)$	·767,8131,	−·036,6611,	·005,0460,	−·001,0506,	·000,2713,	−·000,0786,		
$B_{\cdot 50}(\frac{1}{2}, 6\ )$	·735,3579,	−·032,4552,	·004,2059,	−·000,8401,	·000,2105,	−·000,0608,	·000,0178,	
$B_{\cdot 50}(\frac{1}{2}, 6\cdot 5)$	·706,4329,	−·028,9250,	·003,5302,	−·000,6757,	·000,1644,	−·000,0461,	·000,0147,	−·000,0031.

Substituting these results in the forward difference formula, we have

$$\begin{aligned} B_{\cdot 50}(\tfrac{1}{2}, 3\cdot 25) &= 1\cdot 013{,}5197 - \tfrac{1}{2}(\cdot 064{,}3125) - \tfrac{1}{8}(\cdot 009{,}0903) - \tfrac{1}{16}(\cdot 001{,}6718) \\ &\quad - \tfrac{5}{128}(\cdot 000{,}3499) - \tfrac{7}{256}(\cdot 000{,}0786) - \tfrac{21}{1024}(\cdot 000\cdot 0178) \\ &\quad - \tfrac{33}{2048}(\cdot 000{,}0031) \\ &= 1\cdot 013{,}5197 - \cdot 032{,}1562(5) - \cdot 001{,}1362(9) - \cdot 000{,}1044(8) \\ &\quad - \cdot 000{,}0136(7) - \cdot 000{,}0021(5) - \cdot 000{,}0003(7) \\ &\quad - \cdot 000{,}0000(5) \\ &= \cdot 980{,}1064, \text{ and again } B(\tfrac{1}{2}, 3\cdot 25) = 1\cdot 021{,}58087. \end{aligned}$$

Hence $$I_{\cdot 50}(\tfrac{1}{2}, 3\cdot 25) = \cdot 959{,}4016(7),$$

and thus $$P_{\cdot 50}(\tfrac{1}{2}, 3\cdot 25) = \cdot 979{,}7008(3),$$

which is the correct value to seven figures.

(iii) Find the value of $P_{\cdot 10}(\frac{1}{2}, 3\cdot 25)$.

Now $P_{\cdot 10}(\frac{1}{2}, 3\cdot 25)$ is easy to find; we have the following series of differences for $B_{\cdot 10}(\frac{1}{2}, q)$:

q	$B_{\cdot 10}(\frac{1}{2}, q)$	Δ	Δ^2	Δ^3	Δ^4
3	·591,5567,				
3·5	·582,0941,	−·009,4626,			
4	·572,9144,	−·009,1797,	+·000,2829,		
4·5	·564,0073,	−·008,9071,	+·000,2726,	−·000,0103,	
5	·555,3632,	−·008,6441,	+·000,2630,	−·000,0096,	+·000,0007.

Hence $$\begin{aligned} B_{\cdot 10}(\tfrac{1}{2}, 3\cdot 25) &= \cdot 591{,}5567 - \cdot 004{,}73130 - \cdot 000{,}03536 \\ &\quad - \cdot 000{,}00064 - \cdot 000{,}00003 \\ &= \cdot 591{,}5567 - \cdot 004{,}7673 \\ &= \cdot 586{,}7894. \end{aligned}$$

And $$\begin{aligned} I_{\cdot 10}(\tfrac{1}{2}, 3\cdot 25) &= B_{\cdot 10}(\tfrac{1}{2}, 3\cdot 25)/B(\tfrac{1}{2}, 3\cdot 25) \\ &= \cdot 574{,}3935. \end{aligned}$$

Thus $$P_{\cdot 10}(\tfrac{1}{2}, 3{\cdot}25) = {\cdot}787{,}19675,$$
which is exact.

Beyond $x = {\cdot}75$ the forward difference method will still apply, but the number of differences required is excessive, if we start with $q = 2$ or 3. For $q = 4$ the eighth difference suffices for 7-figure accuracy; for $q = 5$ the fifth difference will suffice for like accuracy, and so on; this supposes working with $B_x(\frac{1}{2}, q)$ instead of $I_x(\frac{1}{2}, q)$. Thus by the time we get to $q = 8$, there is no trouble. For many statistical purposes four or five figure accuracy is adequate, and accordingly there is less trouble with forward difference work.

For such an extreme case as $I_{\cdot 90}(\frac{1}{2}, 3{\cdot}25)$ the limiting difference that the present table provides is the twelfth. Even if we use this and the forward difference formula we shall be out by slightly more than unity in the fifth decimal place. If we proceed also to the twelfth difference, using $B_{\cdot 90}(\frac{1}{2}, 3{\cdot}25)$, we shall be out by less than unity in the sixth decimal place, and assuming the thirteenth difference to be about half the twelfth (as it must be here) we can obtain a value differing from the true value by less than five units in the seventh decimal place. The labour, if straightforward, is considerable, and some will prefer to obtain the result by expansion methods rather than by using the present table of $I_x(\frac{1}{2}, q)$ or $B_x(\frac{1}{2}, q)$ when x approaches unity and q is fractional and small.

Table XXVI.

Table to find Modal Ordinates of symmetrical Frequency Curves.

$$\textit{Values of } q_n = \int_0^{\frac{\pi}{2}} \cos^{n-1}\phi\, d\phi = \int_0^{\frac{\pi}{2}} \sin^{n-1}\phi\, d\phi \textit{ for } n = 1 \textit{ to } 105.$$

Here $$q_n = \tfrac{1}{2} B(\tfrac{1}{2}, \tfrac{1}{2}n) = \tfrac{1}{2}\sqrt{\pi}\,\Gamma(\tfrac{1}{2}n)/\Gamma(\tfrac{1}{2}(n+1)) \quad \text{..................(i)},$$
where B and Γ represent the complete Beta and Gamma functions. The value of q_n can be found by this relationship from any table of the complete Γ-function *. But the present table enables q_n to be found without a double interpolation for $n < 106$.

The three types of frequency curves with which we have to deal are:

(a) Symmetrical U-shaped frequency curve

$$y = y_0 \frac{1}{\left(1 - \dfrac{x^2}{a^2}\right)^{m_1}}, \qquad m_1 < \tfrac{1}{2}.$$

Range: $x = -a$ to $+a$.

$$y_0 = \frac{N}{2a\, q_{2(1-m_1)}},$$

N being the total frequency.

* For example, *Tracts for Computers*, Nos. VIII and IX. Cambridge University Press.

(*b*) Symmetrical Limited Range frequency curve

$$y = y_0 \left(1 - \frac{x^2}{a^2}\right)^{m_2}.$$

Range: $x = -a$ to $+a$.

$$y_0 = \frac{N}{2a\, q_{2(1+m_2)}}.$$

(*c*) Symmetrical Unlimited Range frequency curve

$$y = y_0 \frac{1}{\left(1 + \frac{x^2}{a^2}\right)^{m_3}}.$$

Range: $x = -\infty$ to $+\infty$.

$$y_0 = \frac{N}{2a\, q_{2m_3-1}}.$$

Our table will therefore provide for the determination of y_0 in cases (*b*) and (*c*) of $m_2 = 0$ to 51·5 and of $m_3 = 0$ to 53. As m_1 only ranges from 0 to $\frac{1}{2}$, or n from 1 to 2, the table is by no means adequate for interpolating to find y_0 for symmetrical U-curves, and recourse must be had to tables of the complete Γ-function as indicated in formula (i) above. The best table for this is Legendre's*.

Illustration seems hardly needful. For fitting any one of these curves β_1 should be zero within the limits of random sampling. The constants of the curves are then obtained from a knowledge of σ^2, the squared standard deviation, and β_2.

For case (*a*):

$$a^2 = \sigma^2 (3 - 2m_1), \quad m_1 = \frac{9 - 5\beta_2}{2(3 - \beta_2)}, \quad \text{and} \quad \beta_2 = \frac{3(3 - 2m_1)}{5 - 2m_1}$$

must lie between 1 and 1·8.

For case (*b*):

$$a^2 = \sigma^2 (2m_2 + 3), \quad m_2 = \frac{5\beta_2 - 9}{2(3 - \beta_2)}, \quad \text{and} \quad \beta_2 = \frac{3(2m_2 + 3)}{5 + 2m_2}$$

must lie between 1·8 and 3·0.

For case (*c*):

$$a^2 = \sigma^2 (2m_3 - 3), \quad m_3 = \frac{5\beta_2 - 9}{2(\beta_2 - 3)}, \quad \text{and} \quad \beta_2 = \frac{3(2m_3 - 3)}{2m_3 - 5}$$

must lie between 3·0 and $+\infty$.

TABLES XXVII—XXX.

Small Samples taken from an Infinite Bivariate Normal Population. (R. A. Fisher, *Biometrika,* Vol. x. pp. 510—521; K. Pearson, *Proc. R. S.* Vol. 112, A, pp. 1—14; *Idem, Biometrika,* Vol. xvii. pp. 176—199, Vol. xix. pp. 441—442.)

1. The exact surfaces and curves of distribution of the constants of samples are now known—whatever be the size of the sample—for the special case when the parent population is a bivariate normal surface. But little progress has been made when the parent population is not normal, or, being normal, is supposed finite.

* *Tracts for Computers,* No. iv. Cambridge University Press.

We shall suppose m_1, m_2, Σ_1, Σ_2, ρ to be the means, standard deviations and coefficient of correlation of the two variates in the parent population; $\bar{x}$, $\bar{y}$, σ_1, σ_2, r_{xy} to be the corresponding quantities for a random sample of size n.

Then the distribution curves are for N samples as follows:

For the distribution of $\bar{x}$:

$$y = \frac{N\sqrt{n}}{\sqrt{2\pi}\,\Sigma_1} e^{-\frac{1}{2}n\frac{(\bar{x}-m_1)^2}{\Sigma_1^2}} \quad \text{...(i).}$$

For the distribution of σ_1:

$$y = \frac{Nn^{\frac{1}{2}(n-1)}}{2^{\frac{1}{2}(n-3)}\,\Gamma\left(\frac{1}{2}(n-1)\right)\Sigma_1} e^{-\frac{1}{2}\frac{n\sigma_1^2}{\Sigma_1^2}} \left(\frac{\sigma_1}{\Sigma_1}\right)^{n-2} \quad \text{...............(ii)*.}$$

For the distribution of $\mu_{2,0} = \sigma_1^2$:

$$y = \frac{Nn^{\frac{1}{2}(n-1)}}{2^{\frac{1}{2}(n-1)}\,\Gamma\left(\frac{1}{2}(n-1)\right)\Sigma_1^2} e^{-\frac{1}{2}\frac{n\mu_{2,0}}{\Sigma_1^2}} \left(\frac{\mu_{2,0}}{\Sigma_1^2}\right)^{\frac{n-3}{2}} \quad \text{.............. (iii).}$$

The constants of equations (ii) and (iii) are discussed in another section (pp. ciii—civ). Equation (i) is a normal curve and needs no discussion. The consideration of the distribution of correlation coefficients, r_{xy}, is also dealt with in another section (pp. cxlvii—cxlviii). $\bar{x}$ and $\bar{y}$ have a correlation ρ with each other but are not correlated with σ_1, σ_2 or r_{xy}. The correlation surface of $\bar{x}$ and $\bar{y}$ is normal and of the form

$$z = \frac{Nn}{2\pi\Sigma_1\Sigma_2\sqrt{1-\rho^2}} e^{-\frac{n}{2(1-\rho^2)}\left(\frac{(\bar{x}-m_1)^2}{\Sigma_1^2} - 2\rho\frac{(\bar{x}-m_1)(\bar{y}-m_2)}{\Sigma_1\Sigma_2} + \frac{(\bar{y}-m_2)^2}{\Sigma_2^2}\right)} \quad \text{...(iv);}$$

this equation requires only the theory of the normal surface for its discussion.

2. *Correlation Surface of Standard Deviations.*

If we write $s_1 = \Sigma_1\sqrt{1-\rho^2}/\sqrt{n}$, $s_2 = \Sigma_2\sqrt{1-\rho^2}/\sqrt{n}$, the correlation surface for σ_1, σ_2 is given by

$$\begin{aligned} z = \frac{N(1-\rho^2)^{\frac{1}{2}(n-1)}}{2^{n-3}s_1s_2\,\Gamma^2\left(\frac{1}{2}(n-1)\right)} e^{-\frac{1}{2}\left(\frac{\sigma_1^2}{s_1^2}+\frac{\sigma_2^2}{s_2^2}\right)} \left(\frac{\sigma_1\sigma_2}{s_1s_2}\right)^{n-2} \Bigg\{1 &+ \frac{\rho^2}{1\,!}\frac{\sigma_1^2\sigma_2^2}{s_1^2s_2^2(2n-2)} \\ &+ \frac{\rho^4}{2\,!}\frac{\sigma_1^4\sigma_2^4}{s_1^4s_2^4(2n-2)(2n+2)} + \dots \\ &+ \frac{\rho^{2p}}{p\,!}\frac{\sigma_1^{2p}\sigma_2^{2p}}{s_1^{2p}s_2^{2p}(2n-2)(2n+2)\dots(2n+4p-6)} + \dots\Bigg\} \quad \text{......(v).} \end{aligned}$$

If we write

$$\begin{aligned} H(\rho^2) = 1 &+ \frac{\rho^2}{1\,!}\frac{1}{2n-2} + \frac{\rho^4}{2\,!}\frac{1^2}{(2n-2)(2n+2)} + \dots \\ &+ \frac{\rho^{2p}}{p\,!}\frac{1^2 . 3^2 . 5^2 \dots (2p-3)^2}{(2n-2)(2n+2)\dots(2n+4p-6)} + \dots \quad \text{......(vi),} \end{aligned}$$

* The notation here is not the same as that used on p. ciii.

then if $$\lambda_n = \Gamma(\tfrac{1}{2}n)/\Gamma(\tfrac{1}{2}(n-1)),$$

we have $$r_{\sigma_1\sigma_2} = \frac{2\lambda_n^2 (H(\rho^2) - 1)}{n - 1 - 2\lambda_n^2} \quad \text{.........................(vii)},$$

which tends as $n \to \infty$ to become ρ^2. Table XXVII gives the values of $r_{\sigma_1\sigma_2}$ for samples of various sizes when the sampled population has a correlation ρ.

3. *Correlation Surface of Variances.*

If instead of dealing with the standard deviations, σ_1 and σ_2, we use $\mu_{2,0}$, $\mu_{0,2}$, the variances, the correlation surface is

$$z = \frac{N(1-\rho^2)^{\frac{1}{2}(n-1)}}{2^{n-1}s_1^2 s_2^2\,\Gamma^2(\frac{1}{2}(n-1))} e^{-\frac{1}{2}\left(\frac{\mu_{2,0}}{s_1^2} + \frac{\mu_{0,2}}{s_2^2}\right)} \left(\frac{\mu_{2,0}\mu_{0,2}}{s_1^2 s_2^2}\right)^{\frac{n-3}{2}}$$
$$\times \left\{1 + \frac{\rho^2}{1!}\frac{\mu_{2,0}\mu_{0,2}}{s_1^2 s_2^2(2n-2)} + \frac{\rho^4}{2!}\frac{\mu^2_{2,0}\mu^2_{0,2}}{s_1^4 s_2^4(2n-2)(2n+2)}\right.$$
$$\left. + \ldots + \frac{\rho^{2p}}{p!}\frac{\mu^p_{2,0}\mu^p_{0,2}}{s_1^{2p}s_2^{2p}(2n-2)(2n+2)\ldots(2n+4p-6)} + \ldots\right\} \ldots\text{(viii)}.$$

Here the correlation of $\mu_{2,0}$ and $\mu_{0,2}$ is simply

$$r_{\mu_{2,0}\mu_{0,2}} = \rho^2 \quad \text{....................................(ix)},$$

and the regression of $\mu_{2,0}$ on $\mu_{0,2}$ is given by the linear relation

$$\tilde{\mu}_{0,2} = \frac{n-1}{n}\Sigma_2^2(1-\rho^2) + \frac{\Sigma_2^2}{\Sigma_1^2}\rho^2\mu_{2,0} \quad \text{........................(x)}.$$

4. *Regression of Standard Deviation of one Variate on that of a second.*

On the other hand the regression curve of σ_2 on σ_1 is given by the following equation, where $\tilde{\sigma}_2$ = mean value of σ_2 for constant σ_1:

$$\tilde{\sigma}_2 = \Sigma_2(1-\rho^2)^{\frac{1}{2}}\frac{n-1}{n}\frac{\sqrt{\frac{1}{2}n}\,\Gamma(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n+1))}e^{-\kappa}$$
$$\times\left\{1 + \frac{n}{n-1}\frac{\kappa}{1!} + \frac{n(n+2)}{(n-1)(n+1)}\frac{\kappa^2}{2!} + \frac{n(n+2)(n+4)}{(n-1)(n+1)(n+3)}\frac{\kappa^3}{3!} + \ldots\right\}$$
$$\text{......(xi)},$$

where $$\kappa = \tfrac{1}{2}\frac{\rho^2\sigma_1^2}{s_1^2} = \tfrac{1}{2}\rho^2\sigma_1^2\Big/\frac{\Sigma_1^2(1-\rho^2)}{n}.$$

For n large the expression $\dfrac{\sqrt{\frac{1}{2}n}\,\Gamma(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n+1))}$ rapidly approaches unity.

Multiply out the expression in the curled brackets by the expansion of $e^{-\kappa}$ and we find

$$e^{-\kappa}\left(1 + \frac{n}{n-1}\frac{\kappa}{1!} + \frac{n(n+2)}{(n-1)(n+1)}\frac{\kappa^2}{2!} + \frac{n(n+2)(n+4)}{(n-1)(n+1)(n+3)}\frac{\kappa^3}{3!} + \ldots\right)$$
$$= 1 + \frac{1}{n-1}\frac{\kappa}{1!} - \frac{1}{(n-1)(n+1)}\frac{\kappa^2}{2!} + \frac{1.3}{(n-1)(n+1)(n+3)}\frac{\kappa^3}{3!}$$
$$- \frac{1.3.5}{(n-1)(n+1)(n+3)(n+5)}\frac{\kappa^4}{4!} + \ldots.$$

Write $\kappa = n\gamma$, and the above expression

$$= 1 + \frac{n}{n-1}\frac{\gamma}{1!} - \frac{n^2}{(n-1)(n+2)}\frac{\gamma^2}{2!} + \frac{1.3.n^3}{(n-1)(n+1)(n+3)}\frac{\gamma^3}{3!} - \dots,$$

and as n increases this approaches

$$1 + \frac{\gamma}{1!} - \frac{\gamma^2}{2!} + \frac{1.3.\gamma^3}{3!} - \frac{1.3.5.\gamma^4}{4!} + \dots,$$

$$= (1 + 2\gamma)^{\frac{1}{2}}.$$

Hence we have

$$\tilde{\sigma}_2 = \Sigma_2(1-\rho^2)^{\frac{1}{2}}\left(1 + \frac{\rho^2\sigma_1^2}{\Sigma_1^2(1-\rho^2)}\right)^{\frac{1}{2}},$$

or

$$\tilde{\sigma}_2 = \Sigma_2\left(1 - \rho^2 + \rho^2\frac{\sigma_1^2}{\Sigma_1^2}\right)^{\frac{1}{2}} \quad \text{.........................(xii)},$$

approximately, when n is large.

Neither (xi) nor (xii) denotes linear regression of σ_2 on σ_1, but (xii) indicates that when n is large we may take

$$\tilde{\sigma}_2 = \sqrt{\tilde{\mu}_{2,0}},$$

the latter being given by a linear regression equation.

5. *Correlation of Correlation Coefficient and Standard Deviation.*

We next turn to the correlation of the correlation coefficient r_{xy} with the standard deviation of one of the variates, say σ_1. The correlation surface, which has not hitherto been expressed in any simple form, is

$$z = \frac{N(1-\rho^2)^{\frac{1}{2}(n-1)}}{\sqrt{\pi}\, s_1\, 2^{\frac{1}{2}(n-3)}\,\Gamma\left(\frac{n}{2}-1\right)\Gamma\left(\frac{n-1}{2}\right)} e^{-\frac{1}{2}\left(\frac{\sigma_1}{s_1}\right)^2}\left(\frac{\sigma_1}{s_1}\right)^{n-2}(1-r^2)^{\frac{1}{2}(n-4)}$$

$$\times\left[\Gamma\left(\frac{1}{2}(n-1)\right)\left(1 + \frac{1}{2}(n-1)\frac{\chi^2}{2!} + \frac{1}{4}(n-1)(n+1)\frac{\chi^4}{4!} + \dots\right)\right.$$

$$\left. + \Gamma\left(\frac{1}{2}n\right)\left(\chi + \frac{1}{2}n\frac{\chi^3}{3!} + \frac{1}{4}n(n+2)\frac{\chi^5}{5!} + \dots\right)\right] \quad \text{......(xiii)},$$

where

$$\chi = \sqrt{2}\, r\rho\frac{\sigma_1}{s_1}.$$

There is little approach in (xiii) to a normal distribution of the variates r and σ_1. We can however find various properties of the surface.

6. *Frequency Distribution of the Correlation Coefficient.*

If we integrate with regard to r from -1 to $+1$ the second series disappears and the first reproduces the result (ii) above for the distribution of σ_1*. Again, if

* Put $r = \sqrt{z}$ and double so that the limits of z are 0 to 1; then, expressing the complete B-functions in terms of complete Γ-functions, it will be found that the series reduces to a factor $\times e^{-\frac{1}{2}\rho^2\sigma_1^2/s_1^2}$.

we integrate with regard to σ_1 we have the frequency curve for the distribution of the correlation coefficient r in samples of any size n, namely

$$z = \frac{N(1-\rho^2)^{\frac{1}{2}(n-1)}}{\sqrt{\pi}}(1-r^2)^{\frac{1}{2}(n-4)}\left[\frac{\Gamma(\frac{1}{2}(n-1))}{\Gamma(\frac{1}{2}n-1)}\left\{1+\left(\frac{n-1}{2}\right)^2\frac{(2r\rho)^2}{2!} + \left(\frac{n-1}{2}\frac{n+1}{2}\right)^2\frac{(2r\rho)^4}{4!}+\ldots\right\} + \frac{(\Gamma(\frac{1}{2}n))^2}{\Gamma(\frac{1}{2}(n-1))\Gamma(\frac{1}{2}n-1)}\left\{\frac{2r\rho}{1!}+\left(\frac{n}{2}\right)^2\frac{(2r\rho)^3}{3!} + \left(\frac{n}{2}\frac{n+2}{2}\right)^2\frac{(2r\rho)^5}{5!}+\ldots\right\}\right] \quad\ldots\ldots\ldots\ldots\text{(xiv)}.$$

This again is not a very profitable form for the surface as the series does not converge rapidly. But it is a convenient form from which to ascertain the moments for the frequency distribution of r. If we integrate zr^t for an odd integer t the second series vanishes, if for an even integer t, the first series. In either case we can deduce fairly rapidly converging series for the moment coefficients and so find the standard deviation and the β_1, β_2 for the distribution of r for a given ρ and n.

For example: multiply (xiv) by r and integrate from $r=-1$ to $r=+1$, then only the second series remains, and since $\int_{-1}^{+1} zr\,dr = N\bar{r}$ we have

$$\bar{r} = \frac{\Gamma^2(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n+1))\Gamma(\frac{1}{2}(n-1))}\rho(1-\rho^2)^{\frac{1}{2}(n-1)}\left\{1+\frac{n^2}{n+1}\frac{1}{2}\rho^2 + \frac{n^2(n+2)^2}{1.2(n+1)(n+3)}\frac{\rho^4}{4}+\frac{n^2(n+2)^2(n+4)^2}{1.2.3(n+1)(n+3)(n+5)}\frac{\rho^6}{8}+\ldots\right\}.$$

Multiply the series by the expansion of $(1-\rho^2)^{\frac{1}{2}(n-1)}$ and we find

$$\bar{r} = \frac{\Gamma^2(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n+1))\Gamma(\frac{1}{2}(n-1))}\rho\left\{1+\frac{1^2}{(n+1)}\frac{\rho^2}{2}+\frac{1^2.3^2}{1.2(n+1)(n+3)}\frac{\rho^4}{4} + \frac{1^2.3^2.5^2}{1.2.3(n+1)(n+3)(n+5)}\frac{\rho^6}{8}+\ldots\right\} \quad\ldots\ldots\text{(xv)}.$$

This is a sufficiently converging series for finding the values of $\bar{r}$. It is by reduction to similar series that the moment coefficients of r about zero have been computed*. Hence Tables XXXI—XXXIV have been calculated; these are further discussed on pp. cliv—clxxx of this Introduction.

7. *Correlation and Regression of r_{xy} and σ_1.*

We will now turn back to the frequency surface for r and σ_1, namely equation (xiii). As we know the mean values of r, σ_1 and also their standard deviations, it is possible from the integral of $\int_{-1}^{+1}\int_0^{-0} zr\sigma_1 dr d\sigma$ to find the product-moment and so deduce the value of $r_{r\sigma_1}$, the correlation coefficient of r and σ_1. This value is

* See *Biometrika*, Vol. xi. pp. 333—336.

known to be $\rho/\sqrt{2}$ in the case of large samples. The fundamental formula, if as before $\lambda_n = \Gamma(\frac{1}{2}n)/\Gamma(\frac{1}{2}(n-1))$, is

$$r_{r\sigma_1} = \sqrt{\frac{2\lambda_n^2}{n-1-2\lambda_n^2}}\,\frac{\rho-\bar{r}}{\sigma_r} \quad \text{.........................(xvi)},$$

where $\bar{r}$ is given by (xv) and σ_r by

$$\sigma_r^2 = 1 - \bar{r}^2 - (1-\rho^2)\frac{n-2}{n-1}\left(1 + \frac{2^2}{n+1}\frac{\rho^2}{2} + \frac{2^2 \,.\, 4^2}{1 \,.\, 2\,(n+1)(n+3)}\frac{\rho^4}{4}\right.$$
$$\left. + \frac{2^2 \,.\, 4^2 \,.\, 6^2}{1 \,.\, 2 \,.\, 3\,(n+1)(n+3)(n+5)}\frac{\rho^6}{8} + \dots\right) \quad \text{......(xvii)},$$

a series which converges fairly rapidly.

Table XXVIII has been calculated from equation (xvi); it will indicate how far in any particular-sized sample the student is justified in assuming $r_{r\sigma_1} = \rho/\sqrt{2}$.

When, however, we consider that the correlation coefficient is sufficiently close to $\rho/\sqrt{2}$ to use this value, it does not follow that the mean value of r for a given σ_1, i.e. $\tilde{r}_{\sigma_1}$, will be linearly related to σ_1, although it is so when n is very large. The regression equation of $\tilde{r}_{\sigma_1}$ on σ_1 is given by

$$\tilde{r}_{\sigma_1} = \frac{\Gamma(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n+1))}\frac{\rho}{\sqrt{2}}\frac{\sigma_1}{s_1}\left\{1 - \frac{1}{(n+1)\,1\,!}\frac{\rho^2}{2}\frac{\sigma_1^2}{s_1^2} + \frac{1 \,.\, 3}{(n+1)(n+3)\,2\,!}\frac{\rho^4}{4}\frac{\sigma_1^4}{s_1^4}\right.$$
$$\left. - \frac{1 \,.\, 3 \,.\, 5}{(n+1)(n+3)(n+5)\,3\,!}\frac{\rho^6}{8}\frac{\sigma_1^6}{s_1^6} + \dots\right\} \quad \text{......(xviii)},$$

which is fairly easy to compute. Remembering that s_1 contains a factor $\frac{1}{n}$ the series in curled brackets is represented as $n \to \infty$ by

$$1 - \frac{\kappa}{1\,!} + \frac{1 \,.\, 3}{2\,!}\kappa^2 - \frac{1 \,.\, 3 \,.\, 5}{3\,!}\kappa^3 + \dots = (1+2\kappa)^{-\frac{1}{2}},$$

where $\kappa = \frac{1}{2}\rho^2\sigma_1^2/((1-\rho^2)\,\Sigma_1^2)$.

Hence when n is large*, approximately,

$$\tilde{r}_{\sigma_1} = \rho\frac{\sigma_1}{\Sigma_1}\frac{1}{\left(1-\rho^2+\rho^2\left(\frac{\sigma_1}{\Sigma_1}\right)^2\right)^{\frac{1}{2}}} \quad \text{.........................(xix)}.$$

But when n is large, $\bar{r} = \rho$ and $\bar{\sigma}_1 = \Sigma_1$, and accordingly $\frac{\sigma_1 - \Sigma_1}{\Sigma_1}$ will be a small quantity; hence expanding, and neglecting all but the first power of $(\sigma_1 - \Sigma_1)/\Sigma_1$, we find

$$\tilde{r}_{\sigma_1} - \rho = \frac{\rho}{\sqrt{2}}\frac{\frac{1-\rho^2}{\sqrt{n}}}{\Sigma_1/\sqrt{2n}}(\sigma_1 - \bar{\sigma}_1) \quad \text{.........................(xx)},$$

the usual linear form†.

* $\dfrac{\sqrt{\frac{1}{2}n}\,\Gamma(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n+1))}$ for $n \to \infty$ becomes unity.

† It is probable that (xix) would give better results than (xx) for n fairly large. In *Biometrika*, Vol. XVII. p. 185, I overlooked the point that (xix) could pass into (xx).

8. *Distribution of the Regression Coefficient.*

We now turn to the distribution of the regression coefficient $R_1 = r\sigma_1/\sigma_2$ and the standard deviation of arrays $\sigma_{a_1} = \sigma_1\sqrt{1-r^2}$ in small samples.

We need formulae for their means and their standard deviations, i.e. $\overline{R}_1$, σ_{R_1}, $\overline{\sigma}_{a_1}$ and $\sigma_{\sigma_{a_1}}$. Their values are as follows:

$$\overline{R}_1 = \rho\Sigma_1/\Sigma_2 \quad \text{.................................(xxi)},$$

i.e. the value in the parent population,

$$\sigma_{R_1} = \frac{1}{\sqrt{n-3}}\frac{\Sigma_1}{\Sigma_2}\sqrt{1-\rho^2} \quad \text{.........................(xxii)};$$

the approximate value of σ_{R_1} for large samples has long been known, equalling

$$\frac{1}{\sqrt{n}}\frac{\Sigma_1}{\Sigma_2}\sqrt{1-\rho^2}.$$

The frequency curve for the distribution of regression coefficients, where

$$a^2 = \frac{\Sigma_1^2}{\Sigma_2^2}(1-\rho^2),$$

is

$$z = \frac{Na^{n-1}\Gamma(\tfrac{1}{2}n)}{\sqrt{\pi}\,\Gamma(\tfrac{1}{2}(n-1))}\frac{1}{\left(\frac{\Sigma_1^2}{\Sigma_2^2}(1-\rho^2)+\left(R_1-\rho\frac{\Sigma_1}{\Sigma_2}\right)^2\right)^{\frac{1}{2}n}} \quad \text{.........(xxiii)}.$$

Thus the slopes of the regression lines in samples vary symmetrically round the parent slope $\rho\Sigma_1/\Sigma_2$, but the distribution is given by a curve of Type IV and not by a normal curve. For this curve

$$\beta_2 = 3\frac{n-3}{n-5}, \quad \beta_4 = 15\frac{(n-3)^2}{(n-5)(n-7)}, \text{ etc.} \quad \text{............(xxiv)},$$

which measure the approach to normality as n increases.

The probability of R_1 lying within any range x from the mean value $\overline{R}_1 = \rho\Sigma_1/\Sigma_2$, i.e. $x = R_1 - \rho\Sigma_1/\Sigma_2$, can be found from

$$P_x = \frac{1}{2}\frac{B_u(\tfrac{1}{2}, \tfrac{1}{2}(n-1))}{B(\tfrac{1}{2}, \tfrac{1}{2}(n-1))},$$

where $u = x^2/(a^2+x^2)$ and $B_u(\tfrac{1}{2}, \tfrac{1}{2}(n-1))$ and $B(\tfrac{1}{2}, \tfrac{1}{2}(n-1))$ are the incomplete and complete B-functions.

The correlation surface of R_1 and σ_2 is given by

$$z = \frac{N\sqrt{n}\,(1-\rho^2)^{\frac{1}{2}(n-2)}}{\sqrt{2\pi}\,2^{\frac{1}{2}(n-3)}\,\Gamma(\tfrac{1}{2}(n-1))\,\Sigma_1} e^{-\frac{1}{2}\frac{\sigma_2^2}{s_2^2}\left(1-\frac{2\rho s_2}{s_1}R_1+\frac{s_2^2}{s_1^2}R_1^2\right)}\left(\frac{\sigma_2}{s_2}\right)^{n-1} \quad \text{...(xxv)}.$$

Clearly, for a given value of σ_2, the distribution curve of R_1 is a normal curve of mean $= \rho\dfrac{s_1}{s_2} = \rho\Sigma_1/\Sigma_2$ and standard deviation $\Sigma_1\sqrt{1-\rho^2}/(\sqrt{n}\,\sigma_2)$. Thus the regression line of R_1 on σ_2 is horizontal, or the coefficient of correlation $r_{R_1\sigma_2}$ is zero. This does not, however, signify that there is no correlation between R_1 and σ_2, for the standard deviation of R_1 for a constant σ_2 being given by

$$\frac{\Sigma_1\sqrt{1-\rho^2}}{\sqrt{n}}\,\frac{1}{\sigma_2},$$

the scedastic curve is a rectangular hyperbola. This is well illustrated by taking the regression of σ_2 on R_1. The curve of frequency of σ_2 for a given R_1 may be written

$$z = z_0\, e^{-\frac{1}{2}\left(\frac{\sigma_2}{a'}\right)^2}\left(\frac{\sigma_2}{a'}\right)^{n-1},$$

where
$$a' = \frac{\Sigma_2\sqrt{(1-\rho^2)}}{\sqrt{n}\left(1-\rho^2+\left(\rho-R_1\frac{\Sigma_2}{\Sigma_1}\right)^2\right)^{\frac{1}{2}}}.$$

The curve is therefore of the same nature as the distribution curve of any standard deviation sampled from a normal population. Hence the mean value ${}_{R_1}\bar{\sigma}_2$ and the modal value ${}_{R_1}\breve{\sigma}_2$ are given by

$${}_{R_1}\bar{\sigma}_2 = \sqrt{\frac{2}{n}}\,\frac{\Gamma\left(\frac{1}{2}(n+1)\right)}{\Gamma\left(\frac{1}{2}n\right)}\,\frac{\Sigma_2\sqrt{1-\rho^2}}{\left(1-\rho^2+\left(\rho-R_1\frac{\Sigma_2}{\Sigma_1}\right)^2\right)^{\frac{1}{2}}} \quad \text{.........(xxvi)},$$

$${}_{R_1}\breve{\sigma}_2 = \sqrt{\frac{n-1}{n}}\,\frac{\Sigma_2\sqrt{1-\rho^2}}{\left(1-\rho^2+\left(\rho-R_1\frac{\Sigma_2}{\Sigma_1}\right)^2\right)^{\frac{1}{2}}} \quad \text{...............(xxvii)}.$$

The standard deviation ${}_{R_1}\sigma_{\sigma_2}$ is given by the equation

$${}_{R_1}\sigma^2_{\sigma_2} = \frac{\Sigma_2^2(1-\rho^2)}{\left(1-\rho^2+\left(\rho-R_1\frac{\Sigma_2}{\Sigma_1}\right)^2\right)}\left(1-\frac{2}{n}\,\frac{\Gamma^2\left(\frac{1}{2}(n+1)\right)}{\Gamma^2\left(\frac{1}{2}n\right)}\right) \quad \text{......(xxviii)}.$$

Thus the regression curves of either mode or mean, and the scedastic curve of σ_2 on R_1 are given by quartic curves, showing that the frequency surface of R_1 and σ_2 has a zero correlation coefficient with heteroscedasticity both ways; while for regression curves we have a horizontal line one way and a quartic curve the other. It is an instructive example for the student to ponder upon, if he has been taught to think solely of linear regression and homoscedasticity both ways, as in normal correlation surfaces.

9. *Distribution for Samples of the Standard Deviations of Arrays.*

Let us take in the next place the standard deviation of an array in a sample of size n; we will denote it by σ_{a_1}. Its value in the parent population is $\Sigma_{A_1} = \Sigma_1\sqrt{1-\rho^2}$. We will use $\bar{\sigma}_{a_1}$ for the mean value of σ_{a_1} in samples and $\sigma_{\sigma_{a_1}}$ for its standard deviation.

The frequency curve for σ_{a_1} is given by

$$z = \frac{N n^{\frac{1}{2}(n-2)}}{\Sigma_{A_1} 2^{\frac{1}{2}(n-4)} \Gamma(\frac{1}{2}(n-2))} e^{-\frac{1}{2}n\sigma^2_{a_1}/\Sigma^2_{A_1}} \left(\frac{\sigma_{a_1}}{\sigma_{A_1}}\right)^{n-3} \text{ ....(xxix).}$$

The mean value $$\bar{\sigma}_{a_1} = \sqrt{\frac{2}{n}} \frac{\Gamma(\frac{1}{2}(n-1))}{\Gamma(\frac{1}{2}(n-2))} \Sigma_1 \sqrt{1-\rho^2} \text{ ....(xxx).}$$

The modal value $$\check{\sigma}_{a_1} = \sqrt{\frac{n-3}{n}} \Sigma_1 \sqrt{1-\rho^2} \text{ ....(xxxi).}$$

The standard deviation

$$\sigma^2_{\sigma_{a_1}} = \Sigma_1^2 (1-\rho^2) \left(\frac{n-2}{n} - \frac{2}{n} \frac{\Gamma^2(\frac{1}{2}(n-1))}{\Gamma^2(\frac{1}{2}(n-2))}\right) \text{ ....(xxxii).}$$

When a sample is large, the above values reduce to:

$$\bar{\sigma}_{a_1} = \Sigma_1 \sqrt{1-\rho^2} = \Sigma_{A_1},$$

and $$\sigma_{\sigma_{a_1}} = \frac{\Sigma_1 \sqrt{1-\rho^2}}{\sqrt{2n}} = \frac{\Sigma_{A_1}}{\sqrt{2n}}.$$

Table XXIX provides the ratio of the mean standard deviation of arrays in samples $\bar{\sigma}_{a_1}$ to the array standard deviation in the sampled population $\Sigma_{A_1} = \Sigma_1 \sqrt{1-\rho^2}$.

Table XXX provides the ratio of the standard deviation of the array standard deviations in samples to the value of standard deviation of arrays in the sampled, or parent population, divided by $\sqrt{2n}$, or the ratio

$$\sigma_{\sigma_{a_1}} \Big/ \frac{\Sigma_{A_1}}{\sqrt{2n}}.$$

It will be seen that even for relatively small samples, such as 15, this ratio approaches within 1 °/ₒ of unity. On the other hand the ratio $\bar{\sigma}_{a_1}/\Sigma_{A_1}$ fails to be within 1 °/ₒ of unity even for samples of 100.

10. *Distribution of Mean Value of y for a given x as found from the Regression Lines of the Samples.*

Lastly we may consider what is the accuracy with which the mean value of the variate y for a given value of the variate x can be determined from the regression line of the sample. This line may be represented by

$$\tilde{y}_x = \bar{y} + r \frac{\sigma_2}{\sigma_1} (x - \bar{x}) \text{ ....(xxxiii).}$$

Thus $\tilde{y}_x$ depends on all the five quantities $\bar{x}$, $\bar{y}$, σ_1, σ_2 and r as found from the sample. Now the mean value of $\tilde{y}_x$ is $m_2 + \rho \frac{\Sigma_2}{\Sigma_1}(x - m_1)$ and we will denote by $\tilde{y}_x'$ the value of $\tilde{y}_x$ as measured from its mean, i.e.

$$\tilde{y}_x' = \tilde{y}_x - m_2 - \rho \frac{\Sigma_2}{\Sigma_1}(x - m_1).$$

Further, if R_2 represent the regression coefficient $r\dfrac{\sigma_2}{\sigma_1}$ in the same, R_2' shall denote the value of R_2 measured from its mean value $\rho\dfrac{\Sigma_2}{\Sigma_1}$.

The correlation surface of $\tilde{y}_x'$ and R_2 is a somewhat complicated one, namely

$$z = z_0 \frac{e^{-\frac{1}{2}n\frac{\{\tilde{y}_x' - R_2'(x-m_1)\}^2}{\Sigma_2^2(1-\rho^2)}\frac{\Sigma_2^2(1-\rho^2)}{\Sigma_2^2(1-\rho^2)+R_2'^2\Sigma_1^2}}}{\left(\frac{\Sigma_2^2}{\Sigma_1^2}(1-\rho^2)+R_2'^2\right)^{\frac{1}{2}(n+1)}} \quad \text{.......... (xxxiv).}$$

If we integrate out for $\tilde{y}_x'$ we obtain, with proper interchange of letters, the same curve of distribution for R_2' as we obtain in equation (xxiii) for $R_1' = R_1 - \rho\dfrac{\Sigma_1}{\Sigma_2}$. For R_2' constant, we see that the distribution of $\tilde{y}_x'$ is a normal curve with

$$\text{Mean } \tilde{y}_x' = R_2'(x - m_1) \quad \text{.........................(xxxv),}$$

or there is linear regression. But the standard deviation of $\tilde{y}_x'$ for constant R_2' is given by

$${}_{R_2'}\sigma_{\tilde{y}_x'} = \frac{\Sigma_2\sqrt{1-\rho^2}}{\sqrt{n}}\left(1 + \frac{R_2'^2}{\frac{\Sigma_2^2}{\Sigma_1^2}(1-\rho^2)}\right)^{\frac{1}{2}} \quad \text{................(xxxvi).}$$

In other words the distribution of ${}_{R_2'}\sigma_{\tilde{y}_x'}$ is heteroscedastic, and the scedastic curve is part of a hyperbola.

The distribution of $\tilde{y}_x'$ depends upon the integration with regard to R_2' of equation (xxxiv), and this has not yet been achieved in any simple form*. But we can obtain the constants of the frequency curve for $\tilde{y}_x'$.

The curve for $\tilde{y}_x'$ is symmetrical, or the

$$\text{Mean } \tilde{y}_x' = 0 \quad \text{...............................(xxxvii).}$$

$$\sigma^2_{\tilde{y}_x'} = \mu_2 = \frac{\Sigma_2^2(1-\rho^2)}{n-3}\left\{1 - \frac{2}{n} + \left(\frac{x-m_1}{\Sigma_1}\right)^2\right\} \quad \text{.........(xxxviii),}$$

$$\mu_{2t+1} = 0 \quad \text{..................................(xxxix),}$$

or all odd moments vanish.

$$\mu_4 = \frac{3\Sigma_2^4(1-\rho^2)^2}{(n-3)(n-5)}\left\{\phi^4 - \frac{2}{n}\left(1 - \frac{2}{n}\right)\right\} \quad \text{......................(xl),}$$

$$\mu_6 = \frac{15\Sigma_2^6(1-\rho^2)^3}{(n-3)(n-5)(n-7)}\left\{\phi^6 - \frac{6}{n}\left(1 - \frac{2}{n}\right)\phi^2 + \frac{8}{n^2}\left(1 - \frac{2}{n}\right)\right\} \quad \text{......(xli),}$$

where ϕ^2 is written for $\qquad 1 - \dfrac{2}{n} + \left(\dfrac{x-m_1}{\Sigma_1}\right)^2$.

* It depends on expressing in some simple form or series the integral

$$I(a, b) = \int_{-\frac{1}{2}\pi}^{+\frac{1}{2}\pi} e^{-\frac{1}{2}(a\cos\theta - b\sin\theta)^2}\cos^{n-1}\theta\, d\theta,$$

where $R_2' = \dfrac{\Sigma_2}{\Sigma_1}\sqrt{1-\rho^2}\tan\theta$ defines θ, and $a = \sqrt{n}\,\tilde{y}_x'/\Sigma_2\sqrt{1-\rho^2}$, and $b = \sqrt{n}\,(x - m_1)/\Sigma_1$.

Hence
$$\beta_2 = \frac{3(n-3)}{n-5}\left(1 - \frac{\frac{2}{n}\left(1-\frac{2}{n}\right)}{\phi^4}\right) \quad \text{.....................(xlii).}$$

It is accordingly possible to fit a Type VII curve

$$z = \frac{z_0}{(a^2+x^2)^{\frac{1}{2}q}}$$

to the frequency of $\tilde{y}_x'$ which will have the same first four moments as that frequency. But as a rule $2/n$ will be small as compared to ϕ^2, in which case the appropriate Type VII curve reduces to

$$z = \frac{z_0}{\left(\Sigma_2^2(1-\rho^2)\left\{1 - \frac{2}{n} + \left(\frac{x-m_1}{\Sigma_1}\right)^2\right\} + \tilde{y}_x'^2\right)^{\frac{1}{2}n}} \quad \text{............(xliii),}$$

where the term $\frac{2}{n}$ may be neglected. Such a curve approximately represents the distribution of $\tilde{y}_x'$ found in samples, i.e. the mean of the array of y's for a given x in samples determined in each case by the regression line of the sample. $\tilde{y}_x'$ is the deviation of $\tilde{y}_x$ from its mean as given by the regression line of the parent population, i.e.

$$\tilde{y}_x' = \tilde{y}_x - m_2 - \rho\frac{\Sigma_2}{\Sigma_1}(x-m_1) \quad \text{........................(xliv).}$$

We may note that the correlation of R_2 and $\tilde{y}_x'$ is given by

$$r_{R_2\tilde{y}_x'} = \frac{\frac{x-m_1}{\Sigma_1}}{\sqrt{1-\frac{2}{n}+\frac{(x-m_1)^2}{\Sigma_1^2}}} \quad \text{........................(xlv).}$$

This is independent of ρ, the parental population correlation, and is a function of the distance from the mode of the parent population at which we require $\tilde{y}_x'$.

Tables XXXII—XXXIV.

Tables for determining the Distribution of the Correlation Coefficient in small Samples drawn from a Population assumed to be normal or approximately normal. (*Biometrika*, Vol. XI. pp. 328—413.)

"Small" samples are usually taken to be those of which the number n is less than 50, but up to $n = 100$ some results for "large" samples—i.e. those in which statistical differentials have been treated as mathematical differentials—have only rough approximation. This is peculiarly the case with the distribution of the correlation coefficient. For $n = 100$, and even for $n = 400$, the mean correlation coefficient in samples is appreciably less than the correlation coefficient in the parent population, while the β_1 and β_2 of the distributions show sensible deviations from normality when the correlation is ·6 or higher.

It will thus be clear to the reader that the so-called "probable error" of r, or $\frac{\cdot 67449}{\sqrt{n-1}}(1-r^2)$, contains no very reliable information as to the accuracy with which r represents ρ when:

(i) the sample is "small" for any value of ρ;

(ii) the sample is considerable for high values of ρ_1, say ·75, or over.

For samples of two the frequency distribution of r is a double lump; for those of three a U-shaped curve, for those of four a J-curve; for those of five onwards at first markedly skew distributions only approaching a normal distribution for low values of ρ as the size of sample increases, but for high values we have distribution curves, which even for considerable samples diverge much from the normal curve.

When n is large the "probable error" of r may be taken as $\frac{\cdot 67449}{\sqrt{n}}(1-r^2)$ just as legitimately as $\frac{\cdot 67449}{\sqrt{n-1}}(1-r^2)$, because in deducing this latter value terms in $\frac{1}{n}$ have already been neglected.

The student is strongly recommended when his sample is small and his correlation coefficient is considerable to consult the appropriate column of Table XXXII before drawing very dogmatic inferences as to his correlation coefficient.

This table gives the ordinates at distances of ·05 for r, and except for $\rho = \cdot 8$ or ·9 and $n = 18$ and onwards enough ordinates are given to obtain a reasonable statistical approximation to the areas, and thus to the *chance* of r falling within certain limits.

These frequency curve ordinates were calculated with the intention of deducing the areas of the curve from them and so forming a probability integral table for n, ρ and r. It is hoped that this may be achieved eventually, but for an *accurate* table so many more ordinates are requisite, that the great labour necessary has hindered progress in this direction.

The method of calculating the ordinates of the frequency curves for $n = 25$ and under is fully described in the original memoir*. For $n = 25$ and upwards formula (i) below, which is an approximation, gives excellent results and the formula even for $n = 10$ is good enough for practical purposes. Below that it is less reliable and requires more terms. If $y(n, r, \rho)$ be the required ordinate, i.e. the ordinate at r in a set of samples of size n from a parent population of correlation coefficient ρ, then

$$y(n,r,\rho) = \frac{n-2}{\sqrt{n-1}}(1-\rho^2)^{\frac{3}{2}}\chi(\rho,r)\left\{1 + \frac{\phi_1(\rho r)}{(n-1)} + \frac{\phi_2(\rho r)}{(n-1)^2} + \frac{\phi_3(\rho r)}{(n-1)^3} + \frac{\phi_4(\rho r)}{(n-1)^4} + \dots\right\} \quad \text{............(i)},$$

where
$$\log\chi(\rho,r) = -(n-1)\log\chi_1 - \log\chi_2,$$

and
$$\chi_1 = \frac{1-\rho r}{\{(1-\rho^2)(1-r^2)\}^{\frac{1}{2}}}, \quad \chi_2 = \frac{\sqrt{2\pi}\,\{(1-\rho^2)(1-r^2)\}^{\frac{3}{4}}}{(1-\rho r)^{\frac{1}{2}}}.$$

* *Biometrika*, Vol. XI. pp. 329—332.

Further, $\phi_1(\rho r) = \frac{1}{8}(r\rho + 2)$, $\phi_2(\rho r) = \frac{1}{128}(3r\rho + 2)^2$,

$\phi_3(\rho r) = \frac{5}{1024}\{15(r\rho)^3 + 18(r\rho)^2 - 4(r\rho) - 8\}$,

$\phi_4(\rho r) = \frac{21}{32768}\{175(r\rho)^4 + 200(r\rho)^3 - 120(r\rho)^2 - 160(r\rho) - 16\}$.

In Table XXXIII the values of $\log \frac{n-2}{\sqrt{n-1}}$, of $\log(1-\rho^2)^{\frac{3}{2}}$, of $\log \chi_1$, $\log \chi_2$ and of ϕ_1, ϕ_2, ϕ_3 and ϕ_4 are tabled for values of r proceeding by ·05 and of ρ by ·1. It is accordingly possible to find with relative ease for the range of n mentioned above the value of any ordinate.

It will be noted that all the functions dealt with are symmetrical in r and ρ except $\log(1-\rho^2)^{\frac{3}{2}}$. Thus we have the result

$$\frac{y(n, r, \rho)}{(1-\rho^2)^{\frac{3}{2}}} = \frac{y(n, \rho, r)}{(1-r^2)^{\frac{3}{2}}},$$

or, the ordinate at ρ for samples of n drawn from an indefinitely large normal population of correlation r is equal to $\left(\frac{1-r^2}{1-\rho^2}\right)^{\frac{3}{2}}$ times the ordinate at r for samples of the same size drawn from a like population of correlation ρ.

Illustration (i). For $n = 13$, the ordinate at $r = \cdot 9$ for $\rho = \cdot 7$ is 1203·06. Therefore the ordinate at $r = \cdot 7$ for $\rho = \cdot 9$ should be

$$1203{\cdot}06\left(\frac{1-(\cdot 9)^2}{1-(\cdot 7)^2}\right)^{\frac{3}{2}}$$

$$= 1203{\cdot}06\left(\tfrac{19}{51}\right)^{\frac{3}{2}} = 1203{\cdot}06\left(\tfrac{6859}{132651}\right)^{\frac{1}{2}}$$

$$= 1203{\cdot}06 \times (\cdot 05170711114)^{\frac{1}{2}} = 1203{\cdot}06 \times \cdot 227{,}392 = 273{\cdot}566.$$

The value tabled is 273·57.

Illustration (ii). Find the value for a sample of 10 of the ordinate at $r = \cdot 55$ when $\rho = \cdot 7$.

We take out of Table XXXIII, p. 217,

$$\log(1-\rho^2)^{\frac{3}{2}} = \bar{1}{\cdot}561{,}3553,$$

$$\log \chi_1 = \cdot 013{,}3179, \quad \log \chi_2 = \bar{1}{\cdot}831{,}3240,$$

and from p. 212, $$\log \frac{n-2}{\sqrt{n-1}} = \cdot 425{,}9687.$$

Hence for the preliminary part Y_n of $y(n, r, \rho)$,

$$\log Y_n = \log \frac{n-2}{\sqrt{n-1}} + \log(1-\rho^2)^{\frac{3}{2}} - 9\log \chi_1 - \log \chi_2,$$

we have

$$\begin{array}{rr} \bar{1}{\cdot}561{,}3553 - & \cdot 119{,}8611 \\ \underline{\cdot 425{,}9687} & \underline{\bar{1}{\cdot}831{,}3240} \\ \bar{1}{\cdot}987{,}3240 - & \bar{1}{\cdot}951{,}1851 \end{array}$$

$$= \cdot 036{,}1389,$$

or $$Y_n = 1{\cdot}086{,}773.$$

For the ϕ's we have from p. 217,

$$\phi_1 = \cdot 298{,}125, \quad \phi_2 = \cdot 077{,}7658, \quad \phi_3 = -\cdot 029{,}3748, \quad \phi_4 = -\cdot 051{,}3521.$$

Thus the second part Y_n' of $y(n, r, \rho)$ equals

$$1 + \frac{\cdot 298{,}125}{9} + \frac{\cdot 077{,}7658}{9^2} - \frac{\cdot 029{,}3748}{9^3} - \frac{\cdot 051{,}3521}{9^4}$$

$$= 1\cdot 0340{,}3695.$$

Hence $$y(10, \cdot 55, \cdot 7) = 1\cdot 086{,}773 \times 1\cdot 0340{,}3695$$

$$= 1\cdot 123{,}763,$$

or if the total frequency be, as in our table, 1000,

$$y(10, \cdot 55, \cdot 7) = 1123\cdot 763.$$

The value given in Table XXXII (p. 192) is 1123·76.

These results will give the student confidence that a good value may be easily obtained for any ordinate for $n = 10$ and upwards from Table XXXIII.

The reader will observe that in Table XXXII we have recorded the ordinates at intervals of ·05 and the standard deviations of no less than 270 curves distributed over the β_1, β_2 plane. Given therefore any frequency distribution with its β_1 and β_2 equal to those of one of these curves, and its total frequency reduced to 1000, it should have its ordinates nearly the same as those of the corresponding $y(n, r, \rho)$ curve provided we place mean upon mean, and adapt our ordinate interspace to the interspace in terms of the new standard deviation.

Illustration (iii). For certain data the following values were determined, the number of observations being 1086:

$$\text{Mean} = 22\cdot 8361, \qquad \sigma = 13\cdot 5078,$$
$$\beta_1 = \cdot 6783, \qquad \beta_2 = 3\cdot 7342.$$

Approximately these values of the β's will be found between the columns for $n = 13$, $\rho = \cdot 5$ and $\rho = \cdot 6$, by interpolating linearly in the ratio ·19 to ·81. We thus find

$$\beta_1 = \cdot 6761, \qquad \beta_2 = 3\cdot 7412,$$

well within their probable errors from the observed quantities.

Interpolating also linearly for the other constants we find from Table XXXII, p. 195,

$$\text{Mean} = \cdot 4841 \times \cdot 81 + \cdot 5834 \times \cdot 19 = \cdot 5030,$$

$$\text{Mode} = \cdot 5908 \times \cdot 81 + \cdot 6880 \times \cdot 19 = \cdot 6093,$$

$$\text{Standard Deviation} = \cdot 2279 \times \cdot 81 + \cdot 1994 \times \cdot 19 = \cdot 2225.$$

Distance from Mean to Origin in terms of S.D.

$$= \frac{\cdot 4841}{\cdot 2279} \times \cdot 81 + \frac{\cdot 5834}{\cdot 1994} \times \cdot 19 = 2\cdot 2765.$$

Interspace between ordinates in terms of S.D.

$$= \frac{\cdot 05}{\cdot 2279} \times \cdot 81 + \frac{\cdot 05}{\cdot 1994} \times \cdot 19 = \cdot 2254.$$

We have put down this method of obtaining these quantities in order that the reader may understand what their nature is, but they are more accurately and more readily obtained from Table XXXIV, p. 220. Here for $n=13$, $\rho=\cdot 5$ and $\rho=\cdot 6$ we have

	Origin to Mean	2·123,6943,	2·925,3194,
and	Abscissal Unit	·219,3627,	·250,7341.

Hence interpolating* ·19 to ·81, Origin to Mean in terms of S.D.

$$= 2\cdot 123{,}6943 \times \cdot 81 + 2\cdot 925{,}3194 \times \cdot 19 = 2\cdot 2763.$$

Abscissal Unit of interspace between ordinates

$$= \cdot 219{,}3627 \times \cdot 81 + \cdot 250{,}7341 \times \cdot 19 = \cdot 2253.$$

The present values are to be preferred as Table XXXIV is based on more figures for mean and standard deviations than are provided in Table XXXII. Accordingly for our present data with standard deviation = 13·5078 we have

$$\text{Distance from Origin to Mean} = 2\cdot 276{,}000 \times 13\cdot 5078 = 30\cdot 7438,$$

$$\text{Abscissal Unit} = \cdot 225{,}323 \times 13\cdot 5078 = 3\cdot 0436.$$

We may determine in the same way the position of the mode.

Distance of Mode from Origin

$$= \left(\frac{\cdot 5908}{\cdot 2279} \times \cdot 81 + \frac{\cdot 6880}{\cdot 1994} \times \cdot 19\right) \times 13\cdot 5078 = 37\cdot 208\dagger.$$

Now one point needs attention. The μ_3 of the r-frequency curve is *negative*, but that of our data is *positive*; the r-frequency curve must therefore be *reversed* and we thus obtain 53·5799 for the origin in units of our original data, to which we add abscissal units 3·0436 to obtain the abscissae on the positive side, i.e. the side of decreasing frequencies, and subtract the same 3·0436 continuously to obtain the abscissae on the negative side. Column (i) in the following table gives these abscissae in actual units of the data. On this scale the mode will be at

$$53\cdot 5799 - 37\cdot 2082 = 16\cdot 3717.$$

In Columns (ii) and (iii) we have the ordinates, y_{ii} and y_{iii}, of each of the distributions $n=13$, $\rho=\cdot 5$ and $\rho=\cdot 6$; in Column (iv) we have the interpolated values y_{iv}. But these are not what we require, for they are based on an abscissal

* The differences of the table are too unsatisfactory, the intervals of n being large, to stand more than linear interpolation. But the result shown in the diagram on p. clx below indicates that this interpolation is sufficient.

† As found from the value $\frac{\cdot 6093 \times 13\cdot 5078}{\cdot 2225}$ the distance is 36·991, a difference of only 0·4 °/₀.

unit of ·05 instead of the abscissal unit of 3·0436. Again we require a total of 1086, not 1000 as in the r-curves, accordingly we must deduce our ordinates from the formula

$$y_{\text{v}} = \frac{y_{\text{iv}} \times \cdot 05}{3\cdot 0436} \times \frac{1086}{1000} = \cdot 017{,}8407 \times y_{\text{iv}}$$

and in Column (v) we have the ordinate y_{iv} of Column (iv) multiplied by ·017,8407 as the ordinate of the graduated curve.

(i) Abscissae	(ii) Ordinates $n=13,\ \rho=\cdot 5$	(iii) Ordinates $n=13,\ \rho=\cdot 6$	(iv) Interpolated Ordinates (ii) × ·81 + (iii) × ·19	(v) Ordinates required (iv) × ·017,8407
−7·2921	0·00	0·00	0·00	0·00
−4·2485	10·79	41·42	16·61	0·30
−1·2049	127·20	383·80	175·95	3·14
+1·8387	419·43	1020·26	533·59	9·52
4·8823	829·19	1661·34	987·30	17·61
7·9259	1246·49	2095·16	1407·74	25·12
10·9695	1582·52	2267·17	1712·60	30·55
14·0131	1793·32	2220·16	1874·42	33·44
17·0567	1873·82	2029·03	1903·31	33·96
20·1003	1842·84	1763·97	1827·85	32·61
23·1439	1729·32	1477·09	1681·40	30·00
26·1875	1563·16	1201·40	1494·43	26·66
29·2311	1370·21	954·71	1291·27	23·04
32·2747	1170·41	744·26	1089·44	19·44
35·3183	977·68	570·83	900·38	16·06
38·3619	800·73	431·61	730·60	13·03
41·4055	644·20	322·16	583·01	10·40
44·4491	509·76	237·58	458·05	8·17
47·4927	397·09	173·18	354·55	6·33
50·5363	304·67	124·80	270·49	4·83
→53·5799	230·21	88·89	203·36	3·63
56·6235	171·31	62·54	150·64	2·69
59·6671	125·48	43·44	109·89	1·96
62·7107	90·38	29·75	78·86	1·41
65·7543	63·95	20·07	55·61	·99
68·7979	44·38	13·30	38·47	·69
71·8415	30·14	8·65	26·06	·46
74·8851	19·97	5·50	17·22	·31
77·9287	12·88	3·41	11·08	·20
80·9723	8·04	2·05	6·90	·12
84·0159	4·83	1·19	4·14	·07
87·0595	2·78	·66	2·38	·04
90·1031	1·51	·35	1·29	·02
93·1467	·76	·17	·65	·01
96·1903	·35	·08	·30	
99·2339	·14	·03	·12	·01
102·2775	·05	·01	·04	
105·3211	·01	·00	·01	
				Total 356·82 which × 3·0436 = 1086

On the accompanying diagram the curve plotted from these ordinates is given and compared with the ordinates of the curve

$$y = 34{\cdot}2314\left(1+\frac{x}{3{\cdot}9071}\right)^{2{\cdot}0917}\left(1-\frac{x}{33{\cdot}0320}\right)^{17{\cdot}6838},$$

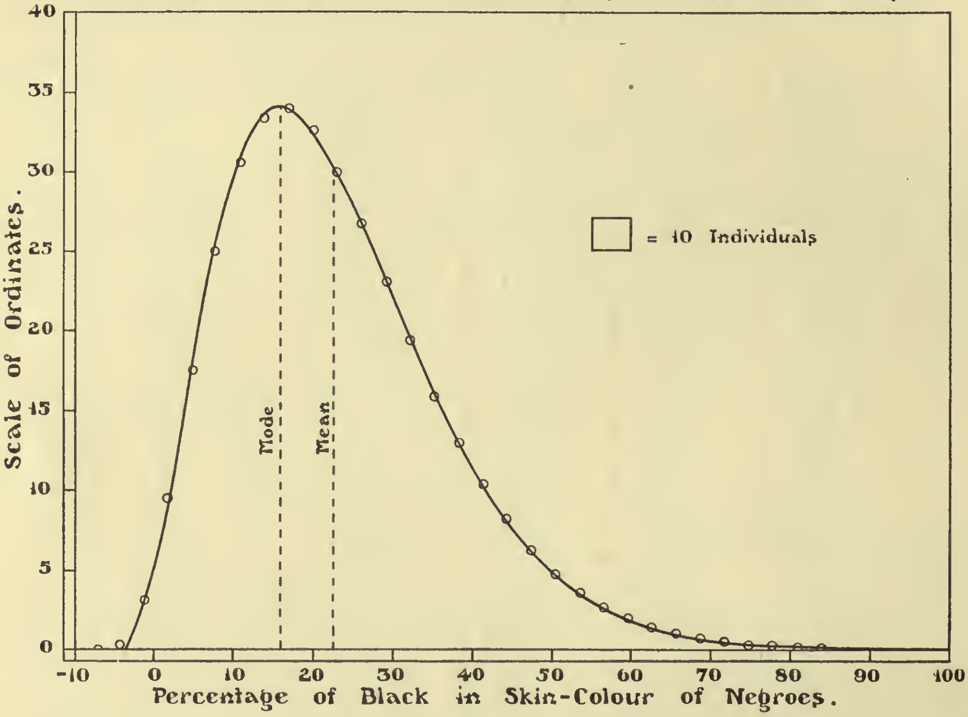
which is the curve fitted to the same data, i.e.

$$\text{Mean} = 22{\cdot}8361, \qquad \text{Standard Deviation} = 13{\cdot}5078,$$

$$\beta_1 = {\cdot}6783, \quad \beta_2 = 3{\cdot}7342,$$

the equation to the curve, however, being expressed in five actual units as working unit.

ORDINATES OF (ρ, n) CURVE, COMPARED WITH PEARSON CURVE FITTED FROM FIRST FOUR MOMENTS.



The process is considerably shorter than computing an adequate series of ordinates from the above curve. It illustrates the principle that if two distributions have the same β_1, β_2 the curves deduced from these will closely accord, if we superpose their means, and equalise their standard deviations.

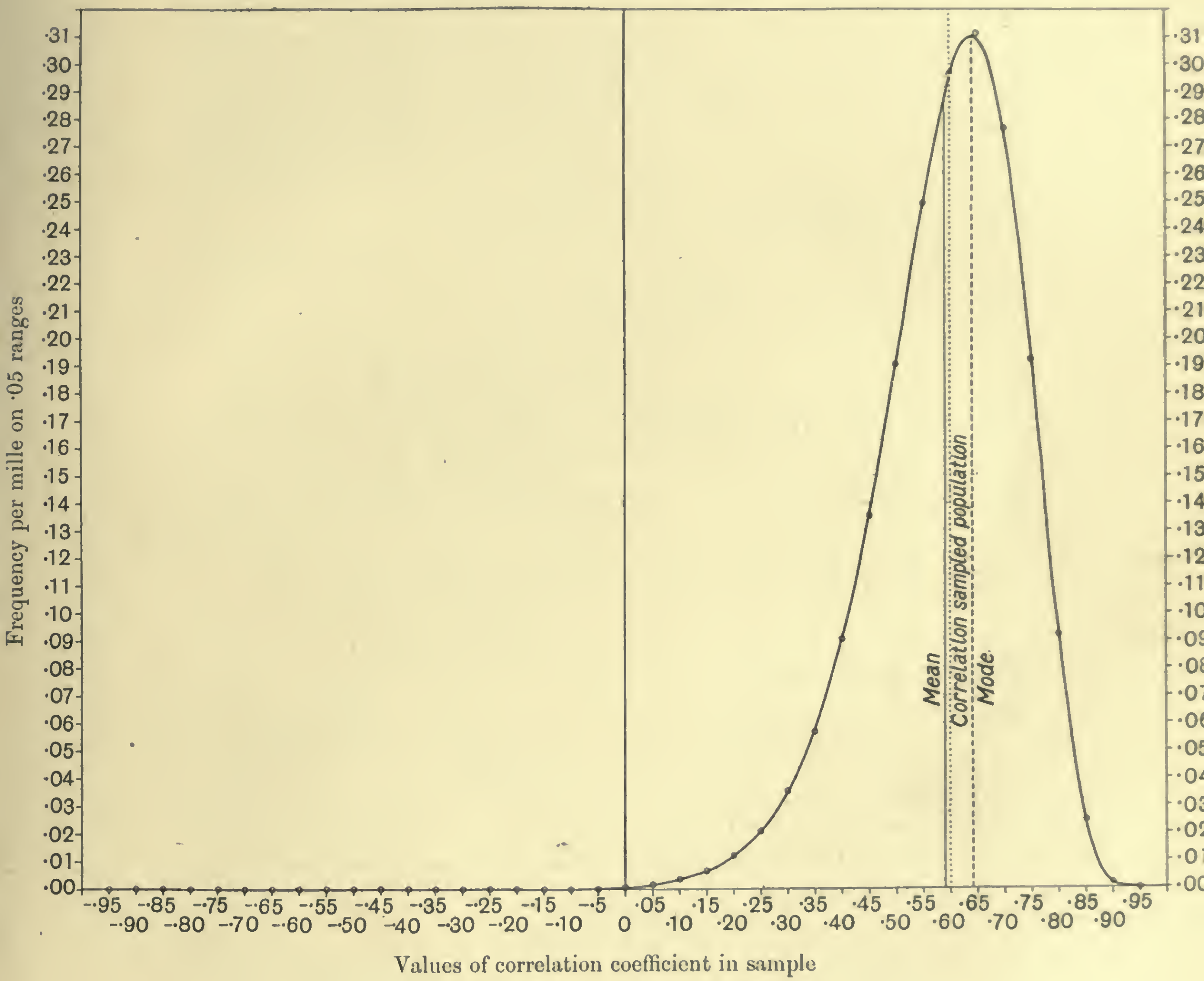
The result in the previous section shows a very good correspondence between the Pearson curve and an r-curve of the same first four moments (Mean, S.D., β_1 and β_2 the same), even for n as low as 13. This is certainly true as the value of n increases. For $n = 25$, $\rho = 0{\cdot}6$ the accompanying diagram (p. clxi), in which the true ordinates are represented by dots and the continuous curve is the Pearson curve:

$$y = {\cdot}31004\left(1-\frac{x}{{\cdot}31075}\right)^{5{\cdot}7536}\left(1+\frac{x}{9{\cdot}64157}\right)^{178{\cdot}5135},$$

illustrates again how well the latter curve fits the distribution of r, the mode —here the origin—being obtained by the equation

$$\text{Distance from Mean to Mode} = \frac{\sigma_r \sqrt{\beta_1}\,(\beta_2 + 3)}{2\,(5\beta_2 - 6\beta_1 - 9)} = \cdot 64192^* \quad \text{......(ii)}.$$

Comparison of Values of Frequency Ordinates for $n = 25$, $\rho = 0{\cdot}6$ as given by the complete theory and by a Pearson Skew Curve of Frequency. The dots mark true ordinates, the continuous line the skew curve.



* The true value of the mode is ·64194.

The student must be warned that to obtain a Pearson curve with a good fit he must deduce that curve by aid of the first four moments, not by fitting through a knowledge of the range and mean. He must disregard the fact that the curve may have a range non-coincident with the correlation range -1 to $+1$. Frequencies, if any, outside the correlation range will as a rule be wholly negligible*.

The process of fitting with a Pearson curve is easy and rapid if we know the mean, standard deviation, and β_1, β_2 of the r-distribution. Table XXXII contains these at the foot for the range of small samples $n = 3$ to 25 and for various higher values of n. But since this table also gives the ordinates for these cases, the need for curve fitting arises only in special instances for these values of n. Outside these, when we need a curve for the distribution of r, we have no table of the means, standard deviations and β's for the various values. These constants of the distribution must be computed from the original formulae, which give the first four moments about $r = 0$ of the r-frequency in converging series, and which for $n > 25$ are relatively easily evaluated. These moments must then be transferred to the mean by the usual process and $\bar{r}$, σ_r, ${}_r\beta_1$, ${}_r\beta_2$ determined.

The requisite formulae are as follows, the first having been already cited, p. cxlviii:

$$\mu_1' = \bar{r} = \rho\,\frac{q_n}{q_{n-1}}\left(1 + \frac{1^2}{1\,!\,(n+1)}\frac{\rho^2}{2} + \frac{1^2 . 3^2}{2\,!\,(n+1)(n+3)}\frac{\rho^4}{4} + \frac{1^2 . 3^2 . 5^2}{3\,!\,(n+1)(n+3)(n+5)}\frac{\rho^6}{8} + \dots\right) \quad \dots\text{(iii)},$$

$$\mu_2' = 1 - \frac{n-2}{n-1}(1-\rho^2)\left(1 + \frac{2^2}{1\,!\,(n+1)}\frac{\rho^2}{2} + \frac{2^2 . 4^2}{2\,!\,(n+1)(n+3)}\frac{\rho^4}{4} + \frac{2^2 . 4^2 . 6^2}{3\,!\,(n+1)(n+3)(n+5)}\frac{\rho^6}{8} + \dots\right) \quad \dots\text{(iv)},$$

where $\sigma_r^2 = \mu_2' - \bar{r}^2$.

$$\mu_3' = \bar{r} - \rho(1-\rho^2)\frac{q_{n+2}}{q_{n-1}}\frac{n-2}{n}\left(1 + \frac{3^2}{1\,!\,(n+3)}\frac{\rho^2}{2} + \frac{3^2 . 5^2}{2\,!\,(n+3)(n+5)}\frac{\rho^4}{4} + \frac{3^2 . 5^2 . 7^2}{3\,!\,(n+3)(n+5)(n+7)}\frac{\rho^6}{8} + \dots\right) \quad \dots\text{(v)},$$

where $\mu_3 = \mu_3' - 3\mu_2'\bar{r} + 2\bar{r}^3$.

$$\mu_4' = 2\mu_2' - 1 + \frac{n(n-2)}{(n+1)(n-1)}(1-\rho^2)^2\left(1 + \frac{4^2}{1\,!\,(n+3)}\frac{\rho^2}{2} + \frac{4^2 . 6^2}{2\,!\,(n+3)(n+5)}\frac{\rho^4}{4} + \frac{4^2 . 6^2 . 8^2}{3\,!\,(n+3)(n+5)(n+7)}\frac{\rho^6}{8} + \dots\right) \quad \dots\text{(vi)},$$

where $\mu_4 = \mu_4' - 4\mu_3'\bar{r} + 6\mu_2'\bar{r}^2 - 3\bar{r}^4$.

The student must bear in mind that if ρ be positive, μ_3 will be negative.

In the above formulae

$$q_n = \int_0^{\frac{1}{2}\pi} \sin^{n-1}\phi\, d\phi,$$

* As in the case of a stature frequency when represented by a normal curve.

and may be found from Table XXVI since n is always an integer, provided n be < 106. If on the other hand n be > 105 we have

$$q_n = \frac{\Gamma(\frac{1}{2}n)\sqrt{\pi}}{2\Gamma(\frac{1}{2}(n+1))} \quad \text{.................................(vii)}.$$

Thus $$q_n/q_{n-1} = \frac{\Gamma^2(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n-1))\,\Gamma(\frac{1}{2}(n+1))},$$

and $$\frac{q_{n+2}}{q_{n-1}} = \frac{n}{n+1}\,\frac{\Gamma^2(\frac{1}{2}n)}{\Gamma(\frac{1}{2}(n-1))\,\Gamma(\frac{1}{2}(n+1))} = \frac{n}{n+1}\,\frac{q_n}{q_{n-1}},$$

so that the factor $\frac{q_{n+2}}{q_{n-1}}\frac{n-2}{n}$ in μ_3' may be written $\frac{n-2}{n+1}\,\frac{q_n}{q_{n-1}}$, and there is only one expression $\frac{q_n}{q_{n-1}}$ to be found either from Table XXVI or from that of the Complete Γ-functions*.

We do not overlook the fact that to determine a frequency curve for r outside the range of $n = 25$ is a laborious task. But an examination of the frequency distributions of r when $n = 25$, 100 or even 400 for high values of ρ will convince the student that the normal curve is no accurate description in such cases of the distribution of the coefficient of correlation, and that accordingly in these cases the statement that the "probable error" of $r = {\cdot}67449\,(1 - r^2)/\sqrt{n}$ is to be avoided.

Illustration (iv). To find the constants for a distribution curve of r in samples of 160 taken from a normal population of $\rho = {\cdot}8$, and to compare the corresponding Pearson curve, normal curve and true ordinates calculated from Table XXXIII.

The constants to be found are the mean $\bar{r}$, the mode $\check{r}$, and μ_2', μ_3', μ_4' from formulae (iii) to (vi) on p. clxii. After somewhat laborious arithmetic and the use of the Table of the Complete Γ-functions*, we find

$$\bar{r} = {\cdot}799{,}088, \quad \mu_2' = {\cdot}63937{,}42990, \quad \mu_3' = {\cdot}51223{,}86906, \quad \mu_4' = {\cdot}41090{,}01032.$$

Hence, by transfer to the mean,

$$\mu_2 = {\cdot}00083{,}33871, \quad \mu_3 = {\cdot}00000{,}92499, \quad \mu_4 = {\cdot}00000{,}22616,$$

and consequently

$$\sigma = {\cdot}028{,}868, \quad \beta_1 = {\cdot}14782, \quad \beta_2 = 3{\cdot}2563.$$

The mode was then computed (a) by formula (xxx) (p. clxx) and Table LI[a], and (b) by aid of Pearson's formula (ii) above.

The two values agreed to four decimal places, giving

$$\check{r} = {\cdot}8045.$$

* *Tracts for Computers*, No. VIII. E. S. Pearson, *Tables of the Logarithms of the Complete Γ-functions*, 2 to 1200. Cambridge University Press.

The ordinates of the frequency curve calculated by aid of Table XXXIII were:

$r=$	·60	·65	·70	·75	·78	·80	·83	·85	·90	·95
Ordinate=	0·02	2·24	134·59	3130·32	10006·42	13914·53	8856·07	2716·94	0·62	0·00

These are not adequate for the construction of the curve, but are sufficient to indicate, as will be shown in a later section, that Pearson's appropriate curve, Type VI, for the above values of σ_1, β_1, β_2 gives an excellent fit.

See the diagram (p. clxix), where the normal curve to mean = ·7991, σ = ·028,868, and total = 10,000 samples is also drawn.

It will be clear that, when ρ is as great as ·8, with a sample as large even as 160 the normal curve gives a poor law of distribution, but the Pearson skew curve, even when based on the interpolated, not too accurately computed, constants gives satisfactorily the skew distribution of r in samples.

Tables XXXI^{a-h}, LI^{a-b}.

Special Cases of Frequency for n very small.

(i) *Samples of Two*, $n = 2$.

Here we have
$$\bar{r} = \frac{\sin^{-1}\rho}{\frac{1}{2}\pi} \quad \text{.................................(viii)},$$
and for a group of M-samples of two the distribution consists of two "lumps" $\dfrac{M\cos^{-1}(-\rho)}{\pi} = m(+)$ at $r = +1$ and $\dfrac{M\cos^{-1}\rho}{\pi} = m(-)$ at $r = -1$. Thus
$$\rho = \cos\pi\frac{m(-)}{m(+)+m(-)} \quad \text{...........................(ix)},$$
with a standard error of $\quad \pi\dfrac{\sqrt{1-\rho^2}}{\sqrt{M}}\sqrt{\dfrac{m(+)\,.\,m(-)}{M^2}}$ *,

if the number of pairs M be considerable. We can thus, by extracting pairs from a normal population, determine by the ratio of the number of positive to the number of negative correlations the true value of ρ, the correlation in the parent population. If x_1, y_1 be the values of the variates in the first, x_2, y_2 in the second member of the pair, then if x_1 be taken $> x_2$, the correlation will be positive if y_1 be $> y_2$, and negative if y_1 be $< y_2$. It is therefore possible by inspection to determine in each pair the sign of the correlation. Further constants of the distribution are

$$\mu_2 = 1-\bar{r}^2, \quad \mu_3 = -2\bar{r}(1-\bar{r}^2), \quad \mu_4 = (1-\bar{r}^2)(1+3\bar{r}^2),$$

and thus
$$\left.\begin{aligned}\beta_1 = 4\bar{r}^2/(1-\bar{r}^2), \quad \beta_2 = (1+3\bar{r}^2)/(1-\bar{r}^2)\end{aligned}\right\} \quad \text{......(x)},$$

where as above
$$\bar{r} = \frac{\sin^{-1}\rho}{\frac{1}{2}\pi}.$$

* The factor π has been dropped from this formula in *Biometrika*, Vol. XI. p. 361, ftn.

Clearly $\beta_2 - \beta_1 - 1 = 0$, as for every "two lump" frequency (see *Phil. Trans.* Vol. 216, A, p. 433).

Table XXXI^a provides for various values of ρ the constants for cases of samples of two. It will be seen that the mean correlation in samples $\bar{r}$ is markedly less than the correlation in the parent population.

Illustration (v). 200 pairs of pairs of Fathers and Sons were taken at random * from a population containing 806 † pairs for correlation of stature, each pair of pairs being returned to the population before the next drawing.

The sampled population followed closely a normal distribution with correlation $= \cdot 5189 \pm \cdot 0160$. Of the 200 pairs of pairs 132 gave a positive, 68 a negative correlation. The value of ρ found by formula (ix) from these numbers is ·4818, with a probable error of ·0622. From the known value of ρ, the numbers of positive and negative correlations should be 135 to 65, not 132 to 68. Had we used the 400 fathers of the 200 pairs of pairs to form a correlation table the probable error of the resulting coefficient of correlation would have been ·0246, showing how much more accurate the product-moment method is. The present method is, however, far less laborious.

(ii) *Samples of Three*, $n = 3$.

Here the solution is given by complete elliptic integrals, i.e. if

$$F_1(\rho) = F\left(\rho, \frac{\pi}{2}\right) = \int_0^{\frac{\pi}{2}} \frac{d\phi}{\sqrt{1-\rho^2 \sin^2\phi}},$$

$$E_1(\rho) = E\left(\rho, \frac{\pi}{2}\right) = \int_0^{\frac{\pi}{2}} \sqrt{1-\rho^2 \sin^2\phi}\, d\phi,$$

then

$$\bar{r} = \frac{1}{\rho}\{E_1(\rho) - (1-\rho^2) F_1(\rho)\} \quad \text{.........................(xi).}$$

Again,

$$\mu_2' = 1 + \frac{1}{2}\frac{1-\rho^2}{\rho^2}\log_e(1-\rho^2) \quad \text{.........................(xii),}$$

leading to

$$\sigma_r^2 = 1 - \bar{r}^2 + \frac{1}{2}\frac{1-\rho^2}{\rho^2}\log_e(1-\rho^2) \quad \text{..................(xii}^{bis}\text{).}$$

Further,

$$\left.\begin{aligned} \mu_3' &= \frac{2-\rho^2}{\rho^3}E_1(\rho) - \frac{2(1-\rho^2)}{\rho^3}F_1(\rho) \\ &= \frac{2\bar{r}}{\rho^2} - \frac{E_1(\rho)}{\rho}, \text{ a form easier for computing} \end{aligned}\right\} \text{............(xiii),}$$

$$\mu_4' = 1 + \frac{1-\rho^2}{4\rho^4}\{3\rho^2 + (3+\rho^2)\log_e(1-\rho^2)\} \quad \text{..................(xiv).}$$

* By aid of Tippett's Random Numbers, *Tracts for Computers*, No. xv. Cambridge University Press.

† The original population contained 1072 pairs of Father and Son, but as some of these were on the same card only 806 cards were used to avoid giving each card two numbers. The correlation ·5189 was calculated on 1000 pairs. I have to thank Dr A. E. R. Church for providing the 200 samples on which this *Illustration* is based.

From the above formulae Table XXXI^b has been dressed, which gives the constants of the U-curves for the distribution of r in samples of three. The first page of Table XXXII (p. 185) gives the ordinates of 10 of these U-curves. As the differences of the argument ρ are ·1, it is needful occasionally for certain values of ρ to use the above formulae for the constants. Tables of the Complete Elliptic Integrals have been computed by Legendre's *Traité des Fonctions Elliptiques*, Tom. II. The probability integrals for $n = 3$* are

$$\frac{m(+r)}{M} = \frac{1}{2}\left\{1 - \frac{\cos^{-1} r}{\frac{1}{2}\pi} + \rho\left(1 - \sqrt{\frac{1-r^2}{1-r^2\rho^2}}\,\frac{\cos^{-1}(-r\rho)}{\frac{1}{2}\pi}\right)\right\} \quad \text{......(xv)},$$

$$\frac{m(-r)}{M} = \frac{1}{2}\left\{1 - \frac{\cos^{-1} r}{\frac{1}{2}\pi} - \rho\left(1 - \sqrt{\frac{1-r^2}{1-r^2\rho^2}}\,\frac{\cos^{-1}(r\rho)}{\frac{1}{2}\pi}\right)\right\} \quad \text{.........(xvi)}.$$

Again, the integral of the area from $-r$ to $+r$

$$= \frac{m(+r)+m(-r)}{M} = 1 - \frac{\cos^{-1} r}{\frac{1}{2}\pi} - \rho\sqrt{\frac{1-r^2}{1-r^2\rho^2}}\left(1 - \frac{\cos^{-1}(r\rho)}{\frac{1}{2}\pi}\right) \text{...(xvii)},$$

while
$$\frac{m(+r)-m(-r)}{M} = \rho\left(1 - \sqrt{\frac{1-r^2}{1-r^2\rho^2}}\right) \quad \text{...............(xviii)}.$$

When $r = 1$,
$$\frac{m(+)-m(-1)}{m(+)+m(-1)} = \rho \quad \text{...............................(xix)}.$$

Thus if we take M samples of three from a normal population, we can easily determine ρ by simply counting the number of positive and negative correlations.

The values of $m(+)$ and $m(-)$ for each value of ρ are given in the last two columns of Table XXXI^b.

The determination of the sign of the correlation in the case of triplets is not so easy as in the case of doublets. If $x_1, y_1, x_2, y_2, x_3, y_3$ be the three pairs, the sign of their correlation depends on that of their product-moment

$$\tfrac{1}{3}(x_1y_1 + x_2y_2 + x_3y_3) - \tfrac{1}{3}(x_1 + x_2 + x_3)\cdot\tfrac{1}{3}(y_1 + y_2 + y_3),$$

or, if
$$\bar{y} = \tfrac{1}{3}(y_1 + y_2 + y_3),$$

on the sign of
$$(x_2 - x_1)(y_2 - \bar{y}) + (x_3 - x_1)(y_3 - \bar{y}).$$

Now if we take x_1, x_2, x_3 in ascending order of magnitude $x_2 - x_1$ and $x_3 - x_1$ will both be positive. Hence if y_2 and y_3 are both greater than $\bar{y}$, the correlation will be positive; if they are both less, it will be negative. If $y_2 - \bar{y}$ and $y_3 - \bar{y}$ are of *opposite* sign, then we must consider the numerical values of the four quantities $x_2 - x_1$, $y_2 - \bar{y}$, $x_3 - x_1$ and $y_3 - \bar{y}$; but as a rule it is not needful to multiply them out.

The student must be careful of one point in approaching the correlation of a parent population by consideration of the correlations of doublets or triplets. He must not take out n cases and form all the possible doublets or triplets from these. The theory is based upon *random* sampling from an *indefinitely large* normal

* I owe these to Mr E. C. Fieller.

population. Hence after drawing at random a doublet or triplet, these must be returned to "the bag" before a second is drawn. In a sample of n we might treat $\frac{1}{2}n$ doublets or $\frac{1}{3}n$ triplets as independent random samples of 2 or 3, but it would not be legitimate to take all possible doublet or triplet arrangements out of the n and count them as $\frac{1}{2}n(n-1)$ or $\frac{1}{6}n(n-1)(n-2)$ independent samples of 2 or 3. In random sampling in doublets from an indefinitely large population, no individual would be likely to repeat itself $\frac{1}{2}(n-1)$ times in $\frac{1}{2}n(n-1)$ drawings.

The standard error of ρ from M triplet drawings if M be considerable is given by

$$\sigma_\rho = \frac{2}{\sqrt{M}}\sqrt{\frac{m(+)}{M}\cdot\frac{m(-)}{M}} = \frac{1}{\sqrt{M}}\sqrt{1-\rho^2} \quad \text{(xx)}.$$

(iii) *Samples of Four*, $n=4$.

Here we have, if we put $\rho = \sin\alpha$,

$$\bar{r} = \frac{2}{\pi}\{\cot\alpha + \alpha(1-\cot^2\alpha)\} \quad \text{(xxi)},$$

$$\sigma_r{}^2 = 1 - 2\cot^2\alpha + 2\alpha\cot^3\alpha - \bar{r}^2 \quad \text{(xxii)},$$

$$\mu_3' = \frac{2}{\pi}\{\cot\alpha + 6\cot^3\alpha + \alpha(1 - 3\cot^2\alpha - 6\cot^4\alpha)\} \quad \text{(xxiii)},$$

$$\mu_4' = 1 - 4\cot^2\alpha - 6\cot^4\alpha + \alpha(6\cot^3\alpha + 6\cot^5\alpha) \quad \text{(xxiv)}.$$

From these formulae Table XXXI^c has been calculated. The table of ordinates (Table XXXII), under the heading of $n=4$, indicates that the frequency is expressed by truncated J-curves, starting at $\rho=0$ with the rectangle, which means that samples of 4 from an indefinitely large normal population without correlation are equally likely to give a correlation of any intensity from -1 to $+1$.

It may be of interest to note that in the case of samples of 4, the chance that the correlation coefficient of a sample should lie between 0 and $+r$ takes the form

$$\frac{m(+r)}{M} = r\frac{(1-\rho^2)^{\frac{3}{2}}}{\pi}\left\{\frac{\cos^{-1}(-r\rho)}{(1-r^2\rho^2)^{\frac{3}{2}}} - \frac{r\rho}{1-r^2\rho^2}\right\} \quad \text{(xxv)},$$

while the chance of a value between 0 and $-r$ is

$$\frac{m(-r)}{M} = r\frac{(1-\rho^2)^{\frac{3}{2}}}{\pi}\left\{\frac{r\rho}{1-r^2\rho^2} + \frac{\cos^{-1}(r\rho)}{(1-r^2\rho^2)^{\frac{3}{2}}}\right\} \quad \text{(xxvi)}.$$

Hence the chance that the coefficient of correlation in a sample of 4 should lie between $-r$ and $+r$

$$= \frac{m(+r)+m(-r)}{M} = r\left(\frac{1-\rho^2}{1-r^2\rho^2}\right)^{\frac{3}{2}} \quad \text{(xxvii)}.$$

And the excess of positive over negative coefficients in M samples of 4,

$$= m(+1) - m(-1) = M\left(1 - \frac{2\cos^{-1}\rho + 2\rho\sqrt{1-\rho^2}}{\pi}\right) \quad \text{(xxviii)}.$$

Unless the function $\cos^{-1}\rho + \rho\sqrt{1-\rho^2}$ were tabled, it would not be an easy task to find ρ from this equation. It does not seem worth while tabling it, as the determination of the sign of r in samples of 4 is tedious, when a large number have to be dealt with.

Table XXXII supplies the constants and ordinates of the distribution of r for $n = 3$ to 25.

Tables XXXI^d—XXXI^h give the frequency constants for $n = 25$, 50, 100, 200 and 400. A Pearson curve—to judge by the coincidence of the modal values and by several trials—would give the distribution closely, if we knew the β_1 and β_2 of the r-distribution.

These β's might be found either:

(i) by using the formulae and determining $\bar{r}$, μ_2', μ_3', μ_4', and hence μ_2, μ_3, μ_4;

or, (ii) more roughly by applying an ordinary interpolation formula to the results for 25, 50, 100, 200 and 400 in Tables XXXI^d—XXXI^h.

The changes of argument are so different and so great that no satisfactory formula of direct interpolation has been discovered. A formula for graduation on four points, if x be measured from the foot of the first ordinate, is

$$\begin{aligned} y = y_1 &+ \tfrac{1}{6}\{2(y_4-y_3) - 7(y_3-y_2) + 11(y_2-y_1)\}\,x \\ &- \tfrac{1}{2}\{(y_4-y_3) - 3(y_3-y_2) + 2(y_2-y_1)\}\,x^2 \\ &+ \tfrac{1}{6}\{(y_4-y_3) - 2(y_3-y_2) + (y_2-y_1)\}\,x^3 \quad \ldots\ldots\ldots\ldots\ldots(\text{xxix}), \end{aligned}$$

where we suppose equal distances between the points. Now our ordinates corresponding to n are at the abscissae 25, 50, 100, 400. Suppose we plotted to a logarithmic scale

$$\log 25, \quad \log 50, \quad \log 100, \quad \log 400,$$

or

$$\log 25, \quad \log 25 + \log 2, \quad \log 25 + 2\log 2, \quad \log 25 + 4\log 2.$$

Then if we took our units of x as $\log 2$, we should have 5 points if we introduced a table for 200, the logarithm of which $= \log 25 + 3\log 2$. This table has been computed* since the publication of the original memoir, and admits for most practical purposes of fairly adequate interpolation between $n = 25$ and $n = 400$.

Illustration (vi). Suppose we need the constants for a sample of 160; we must express this as

$$\begin{aligned} \log 160 &= \log 25 + \log\frac{160}{25} \\ &= \log 25 + \log 6{\cdot}4 = \log 25 + \left(\frac{\log 6{\cdot}4}{\log 2}\right)\log 2 \\ &= \log 25 + \frac{{\cdot}806{,}1800}{{\cdot}301{,}0300}\log 2 = \log 25 + 2{\cdot}678{,}072\log 2. \end{aligned}$$

* By Brenda N. Stoessiger, M.Sc.

Hence we have to interpolate between the values of $n = 100$, corresponding to $2 \log 2$, and $n = 200$, corresponding to $3 \log 2$; or, use the above formula (xxix) for $x = 2{\cdot}678{,}072$, where y_1, y_2 correspond to 50 and 100, and y_3, y_4 to 200 and 400. We place here the values found from the formulae for the moments and from Tables XXXI^e—XXXI^h by interpolation for $\rho = {\cdot}8$, $n = 160$:

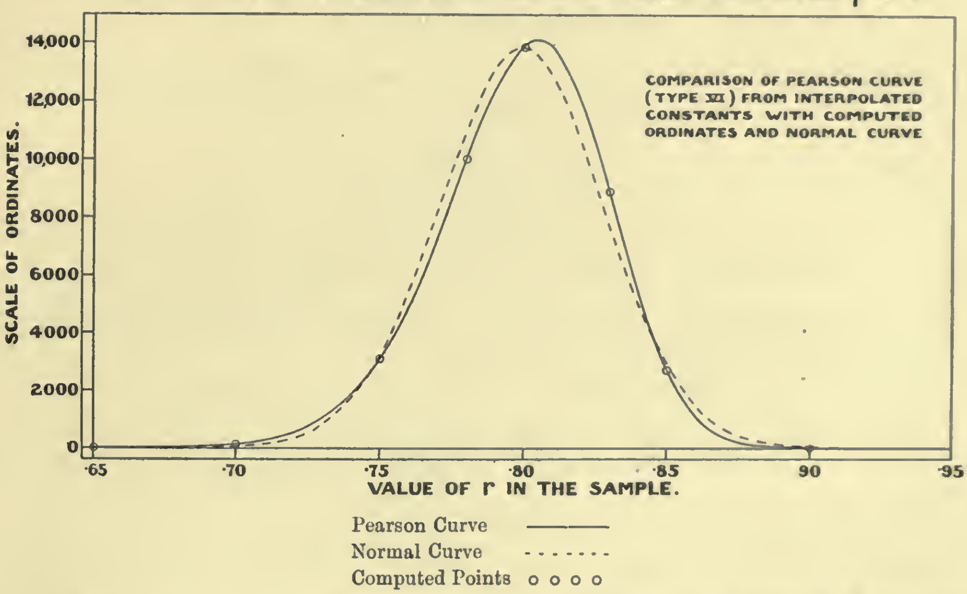
	By Moment Formulae	By Logarithmic Interpolation
Mean $\bar{r}$	·799088	·799094
Mode $\check{r}$	·8045	·8045
S.D. σ	·028868	·028846
β_1	·1478	·1467
β_2	3·2563	3·2555

The diagram below shows the Pearson curve*

$$y = 348586 \times 10^{19} (x - 599{,}6564)^{51\cdot822{,}327}\, x^{-235\cdot282{,}127}$$

computed from the interpolated constants, as against the ordinates found from Table XXXIII. See p. clxiii above.

DISTRIBUTION OF r IN SAMPLES OF 160 WITH PARENT POPULATION ρ = ·8



It will be seen that the curve differs very considerably from normality, and agrees closely with the exact points.

Besides the constants of the r-frequency curve discussed in the last section, there are several others that require consideration. These are in particular the position of the mode $\check{r}$ and the "most likely" value of ρ in the sampled population for a given value of r in the single sample, this we will denote by $\hat{\rho}$. We shall have further to introduce a value of $\rho = \breve{\rho}$, which we will term the "most reasonable" value.

* Mean at ·787,229, Mode at ·781,827 from origin of curve.

(iv) *On the Determination of the Mode,* $\breve{r}$.

The mode is given by the following formula

$$\breve{r} = \rho + \frac{\nu_1(\rho)}{n-1} + \frac{\nu_2(\rho)}{(n-1)^2} + \frac{\nu_3(\rho)}{(n-1)^3} + \frac{\nu_4(\rho)}{(n-1)^4} + \dots \quad \dots\dots\dots\text{(xxx)}.$$

Table LI^a provides the values of the first four ν's for intervals of ·05 of ρ. The result will be correct to the 6th figure if n be 100 or greater, and correct to about the 4th figure if $n = 25$. Below this value of n, we cannot rely on formula (xxx) with only four ν's. If ρ be negative $\breve{r}$ has the opposite sign, but the same numerical value as for ρ positive.

A second convenient method is as follows: Let $\rho_0{}^2 = \rho\breve{r}$, and $z = \rho_0{}^4$. Then the following equation will give an approximation to z, and therefore to $\breve{r}$:

$$6z^2 - \{(n-4)^2 + \rho^2(5n-8)\}\, z + (n-2)(n-1)\rho^4 = 0 \dots\dots\dots\text{(xxxi)}.$$

Illustration (vii). Find the mode for $n = 16$, $\rho = {\cdot}6$. Our quadratic becomes

$$6z^2 - 169{\cdot}92z + 27{\cdot}216 = 0,$$

which gives, for the only possible root of z, the root less than unity,

$$z = {\cdot}1610{,}8575,$$

whence $$\rho_0{}^2 = \sqrt{z} = {\cdot}4013{,}5489,$$

and $$\breve{r} = \rho_0{}^2/\rho = {\cdot}668{,}925.$$

The actual value of $\breve{r}$ correct to four figures is ·6709.

We see that equation (xxxi) gives us a reasonable *first* approximation to the mode, even for a sample as small as 16.

If we had applied formula (xxx) we should have from Table LI^a,

$$\breve{r} = {\cdot}60 + \frac{{\cdot}960}{15} + \frac{1{\cdot}18272}{225} - \frac{{\cdot}019{,}6608}{3375} - \frac{3{\cdot}57140{,}4288}{50625},$$

or $$\breve{r} = {\cdot}669{,}180,$$

which value is still more nearly correct.

If for n small we wish to get a better approximation to $\rho_0{}^2$ we suppose its true value, $\breve{\rho}^2$, to be $\rho_0{}^2 + \epsilon$, where ϵ is a small correction on $\rho_0{}^2$. Then

$$\epsilon = \frac{n - 1 + (2n-1)\rho_0{}^2 E' - n(1-\rho_0{}^4) E'E''}{n(1-\rho_0{}^4)(E' + E'') - (2n-1)\rho_0{}^2} \dots\dots \dots\dots\text{(xxxii)},$$

where E' and E'' are the positive roots of the two quadratic equations

$$\left.\begin{aligned} (n-1)(1-\rho_0{}^4)E'^2 - (2n-3)\rho_0{}^2 E' - (n-2) = 0 \\ n(1-\rho_0{}^4)E''^2 - (2n-1)\rho_0{}^2 E'' - (n-1) = 0 \end{aligned}\right\} \dots\dots\text{(xxxiii)}.$$

Illustration (viii). Let us apply these results to find more accurately the mode of the r-distribution in our previous example, $\rho = \cdot 6$, $n = 16$.

We have seen that formula (xxx) and Table LI^a gave us the result $\check{r} = \cdot 669,180$, and therefore $\rho_0^2 = \check{r}\rho = \cdot 4015,0810$ for a first approximation, whence we have

$$\rho_0^4 = \cdot 1612,0875, \quad 1 - \rho_0^4 = \cdot 8387,9125.$$

Accordingly equations (xxxii) and (xxxiii) become

$$\epsilon = \frac{15 + 12\cdot 4467,5110\,E' - 13\cdot 4206,6000\,E'E''}{13\cdot 4206,6000\,(E' + E'') - 12\cdot 4467,5110},$$

$$12\cdot 5818,6875\,E'^2 - 11\cdot 6437,3490\,E' - 14 = 0,$$

$$13\cdot 4206,6000\,E''^2 - 12\cdot 4467,5110\,E'' - 15 = 0.$$

Solving these two quadratics for the *positive* roots, we find

$$E' = 1\cdot 6145,9598, \quad E'' = 1\cdot 6181,4766.$$

Then substituting in the expression for ϵ we find

$$\epsilon = \frac{\cdot 0329,2377}{30\cdot 9388,0216} = \cdot 0010,6416.$$

Accordingly for our next approximation

$$\check{\rho}^2 = \rho_0^2 + \epsilon = \cdot 4015,0810 + \cdot 0010,6416$$
$$= \cdot 4025,7226,$$
$$\check{r} = \check{\rho}^2/\rho = \cdot 670,954,$$

a change from $\cdot 669,180$ deduced from formula (xxx) of only $0\cdot 27$ °/$_\circ$.

A second approximation reduces the value to $\cdot 6709$.

Pearson's formula (see equation (ii)) gives $\check{r} = \cdot 6708$, or is correct to a unit in the fourth figure, i.e. $\cdot 013$ °/$_\circ$, but it involves a prior knowledge of σ_r, β_1 and β_2. Any of the above values are quite adequate for plotting the curve of r-frequency.

(v) *On the Determination of the "most likely" and "most reasonable" Values of the Correlation in the Parental Population.*

We now turn to a still more difficult determination, that of ρ, the correlation coefficient in the parent population from a knowledge of r in a small sample.

Here we must consider the character of the parent population itself. Do we know nothing whatever about it? Or, does it belong to a certain class of populations of which we know more or less accurately the range within which ρ is likely to lie? For example, suppose we are dealing with a small sample of fathers and sons, and the coefficient of correlation for some character came out for the sample $> \cdot 7$; in the minds of those who have studied the subject of parental inheritance it would be unreasonable to suppose that the ρ of the sampled population could be as large as this. Without knowing the particular value of ρ we can in many cases, from previous experience, assert that it most probably lies within a certain range of values, and that these cluster with a more or less definite variation round a central value. We may suppose the probability of ρ lying between ρ and $\rho + d\rho$ to be $\phi(\rho)\, d\rho$. Now the chance that, for a given value of ρ, r lies between r and $r + dr$

$$= \frac{y_n}{N} dr,$$

where y_n is the ordinate at r of the r-frequency curve. This may be expressed in the form

$$\frac{n-2}{\pi}(1-\rho^2)^{\frac{n-1}{2}}(1-r^2)^{\frac{n-4}{2}} I_{n-1}\, dr,$$

where
$$I_{n-1} = \int_0^\infty \frac{dz}{(\cosh z - \rho r)^{n-1}} \quad \text{.....................(xxxiv).}$$

Accordingly the probability that r lies between r and $r + dr$ and ρ between ρ and $\rho + d\rho$

$$= \frac{n-2}{\pi}(1-\rho^2)^{\frac{n-1}{2}}(1-r^2)^{\frac{n-4}{2}} I_{n-1}\, dr\, \phi(\rho)\, d\rho.$$

Thus the most probable value of ρ will be that which makes

$$(1-\rho^2)^{\frac{n-1}{2}} I_{n-1}\, \phi(\rho)$$

a maximum, or the most probable value of ρ will be that obtained from the equation

$$\frac{d}{d\rho}\left\{(1-\rho^2)^{\frac{n-1}{2}} I_{n-1}\, \phi(\rho)\right\} = 0 \quad \text{.....................(xxxv).}$$

If we know nothing about the sampled population it is assumed by some that it is reasonable to take $\phi(\rho) =$ a constant, or

$$\frac{d}{d\rho}\left\{(1-\rho^2)^{\frac{n-1}{2}} I_{n-1}\right\} = 0 \quad \text{........................(xxxvi).}$$

The value of ρ obtained from this equation has been termed the "most likely value," and we will represent it by $\hat{\rho}$. $\hat{\rho}$ is the value of ρ which makes the observed value of r have a maximum probability, but it assumes that all values of ρ throughout the range -1 to $+1$ are equally probable. It may, however, be doubted whether—when knowing nothing of the sampled population we suppose it one of any of the innumerable possible populations,—we are justified in supposing these populations to be equally likely to have correlation coefficients of any magnitude. Most workers in statistics are accustomed to seek for high correlations, and find them with disappointing rarity. Unless we include the field of physics, which is not the field wherein the applied statistician is accustomed to investigate, we can only look upon the relation $\phi(\rho) =$ a constant as a convenient hypothesis for finding a solution of (xxxv), to be used in default of a more accurate knowledge of $\phi(\rho)$. When we endeavour from past experience to give $\phi(\rho)$, even approximately, a more reasonable value than a constant one, we shall speak of this value as the "most reasonable value" to distinguish it from the "most likely value," $\hat{\rho}$, and we shall denote it by $\breve{\rho}$.

(*a*) *To find the "most likely" value $\hat{\rho}$ in a Small Sample of Size n.*

The equation (xxxvi) may be solved in two ways:

(i) By a series expressing $\hat{\rho}$ in powers of $\frac{1}{n-1}$ with coefficients which are odd powers of r, so that $\hat{\rho}$ changes sign with r.

The series as far as $1/(n-1)^3$ is as follows:

$$\hat{\rho} = r - \frac{\lambda_1(r)}{n-1} - \frac{\lambda_2(r)}{(n-1)^2} - \frac{\lambda_3(r)}{(n-1)^3} - \dots \quad \dots\dots\dots\dots\text{(xxxvii)},$$

where $\lambda_1(r) = \frac{1}{2} r(1-r^2)$, $\lambda_2(r) = \frac{1}{8} r(5r^2-1)(1-r^2)$,

and $\lambda_3(r) = \frac{1}{16} r(17r^4 - 8r^2 - 1)(1-r^2)$.

The values of the first three λ's are given in Table LI^b.

Illustration. Suppose $r = \cdot 6$, what is the "most likely" value of ρ, the correlation in the parent population for a sample of 25?

Applying formula (xxxvii) we have

$$\hat{\rho} = \cdot 6 - \frac{\cdot 192}{24} - \frac{\cdot 0384}{576} + \frac{\cdot 040{,}2432}{13{,}824} = \cdot 591{,}936.$$

For a non-tabled value of r, it is better to interpolate between the two values of $\hat{\rho}$ for the two nearest values of r, than to interpolate for each separate value of the λ's.

Owing to the relative smallness of the λ's in (xxxvii) compared with the ν's in (xxx) on p. clxx, three values in the former will usually suffice unless n be very small.

(ii) By a method similar to that by which we have approximated to the mode.

Suppose $\rho_1^2 = \hat{\rho} r$ has been obtained through a first approximation to $\hat{\rho}$, as by the method given above, then let E be found from the quadratic

$$(n-1)(1-\rho_1^4)E^2 - (2n-3)\rho_1^2 E - (n-2) = 0 \dots\dots\dots\text{(xxxviii)},$$

and its value substituted in

$$\epsilon = (1-\rho_1^4)\frac{(r^2-\rho_1^4)E - \rho_1^2}{(1-\rho_1^4) - (n-1)(r^2-\rho_1^4) + \rho_1^2\{(n+1)(1-\rho_1^4) - (2n-1)(r^2-\rho_1^4)\}E} \quad \dots\dots\text{(xxxix)}.$$

The expression $\rho_1^2 + \epsilon$ will be a closer approximation to $\hat{\rho} r$. The approximation may, if it appears needful, be repeated.

Illustration (i). Test the case of the accuracy of the previous illustration by taking

$$\hat{\rho} = \cdot 591{,}936, \quad \hat{\rho} r = \cdot 3551{,}6160 = \rho_1^2$$

as a first approximation, r being $\cdot 6$ and $n = 25$. Here

$$\rho_1^4 = \cdot 1261{,}3976, \quad 1 - \rho_1^4 = \cdot 8738{,}6024, \quad \text{and} \quad r^2 - \rho_1^4 = \cdot 2338{,}6024,$$

and the quadratic becomes

$$20 \cdot 9726{,}4576\, E^2 - 16 \cdot 6925{,}9520\, E - 23 = 0.$$

This leads to $E = 1 \cdot 5182{,}4679$.

But equation (xxxix) gives us

$$\epsilon = \frac{\cdot 2043{,}6117\,E - \cdot 3103{,}6160}{3\cdot 9995{,}5095\,E - 4\cdot 7387{,}8552},$$

and substituting the above value for E we have

$$\epsilon = \frac{\cdot 3102{,}7069 - \cdot 3103{,}6160}{6\cdot 0723{,}0539 - 4\cdot 7387{,}8552} = - \cdot 0000{,}6813.$$

Thus $\rho_1{}^2 + \epsilon = \cdot 3550{,}9347$ and $\hat{\rho} = \cdot 591{,}822$.

Accordingly formula (xxxvii) gave a very workable approximation.

Let us take a very small sample in our next illustration.

Illustration (ii). Supposing $n = 5$, and $r = \cdot 6$, what is $\hat{\rho}$, the most likely value of ρ? We apply first formula (xxxvii) and have

$$\hat{\rho} = \cdot 6 - \frac{\cdot 192}{4} - \frac{\cdot 0384}{16} + \frac{\cdot 040{,}2432}{64}$$
$$= \cdot 550{,}2288.$$

We will therefore take as our first approximation

$$\rho_1{}^2 = \hat{\rho} r = \cdot 330{,}1373.$$

Now with such a small sample as $n = 5$, it is not possible to use equations (xxxviii) and (xxxix). We must proceed to the equations from which that method was deduced, and must obtain the first five E's. These are given by

$$E_2 = \rho_1{}^2 + \frac{1}{\sqrt{(1-\rho_1{}^4)}\cos^{-1}(-\rho_1{}^2)} \quad \text{..................(xl)},$$

$$(1-\rho_1{}^4)(n-1)E_n = (2n-3)\rho_1{}^2 + \frac{n-2}{E_{n-1}} \quad \text{..........................(xli)},$$

and if ϵ be the correction on $\rho_1{}^2$,

$$\epsilon = (1-\rho_1{}^4)\frac{(r^2-\rho_1{}^4)E_n - \rho_1{}^2}{(1-\rho_1{}^4)-(n-1)(r^2-\rho_1{}^4)+\rho_1{}^2\{(n+1)(1-\rho_1{}^4)-(2n-1)(r^2-\rho_1{}^4)\}E_n} \quad \text{.........(xlii)}.$$

Now $\rho_1{}^4 = \cdot 1089{,}9064$, $1 - \rho_1{}^4 = \cdot 8910{,}0936$, $r^2 - \rho_1{}^4 = \cdot 2510{,}0936$.

Let $\theta = \cos^{-1}(-\rho_1{}^2)$, and therefore $\cos(\pi - \theta) = \cdot 330{,}1374$,

which gives us $\pi - \theta = 1\cdot 234{,}3472$, and $\cos^{-1}(-\rho_1{}^2) = 1\cdot 907{,}2454$,

angles being in circular measure. Thus by (xl),

$$E_2 = \cdot 330{,}1373 + \frac{1}{\sqrt{\cdot 891{,}0093} \times 1\cdot 907{,}2454}$$
$$= \cdot 885{,}5966.$$

Our successive equations from (xli) are

$$1\cdot 7820{,}1872\,E_3 = \cdot 990{,}4119 + 1/E_2,$$
$$2\cdot 6730{,}2808\,E_4 = 1\cdot 650{,}6865 + 2/E_3,$$
$$3\cdot 5640{,}3744\,E_5 = 2\cdot 310{,}9611 + 3/E_4.$$

Thus we have

$$E_2 = \cdot 885{,}5966, \quad E_3 = 1\cdot 189{,}4343, \quad E_4 = 1\cdot 246{,}5855, \quad E_5 = 1\cdot 323{,}6490.$$

We have now to substitute E_5 in (xlii) with $n = 5$. There results

$$\epsilon = \frac{\cdot 891{,}0094\,\{\cdot 251{,}0094\,E_5 - \cdot 330{,}1373\}}{1\cdot 019{,}1245\,E_5 - \cdot 113{,}0282}$$

$$= \cdot 001{,}5219.$$

Hence $\qquad \rho_1^2 + \epsilon = \cdot 331{,}6592,$ and $\hat{\rho} = \cdot 552{,}765.$

It will be seen that E_4 is still not close enough to E_5, so that we cannot put both $= E'$, and obtain the quadratic for E'. The value of E' from equation (xxxviii) is $1\cdot 297{,}268$, which causes ϵ to be negative, and we move in the wrong direction from our first approximation.

(*b*) *The "most reasonable" value $\breve{\rho}$ of ρ.*

We have seen that in certain cases without knowing the actual value of ρ in the population sampled, we know that in similar populations ρ is distributed about its mean $\bar{\rho}$ with a frequency $\phi(\rho)$, and that to find the ρ which will make the probability of the observed r a maximum, we must solve the equation (see equations (xxxiv) and (xxxv))

$$\frac{d}{d\rho}\int_0^\infty \frac{(1-\rho^2)^{\frac{1}{2}(n-1)}\,\phi(\rho)\,dz}{(\cosh z - \rho r)^{n-1}} = 0 \quad \ldots\ldots\ldots\ldots\ldots\ldots(\text{xxxvi}^{bis}).$$

We will limit our consideration of this problem to the supposition that we have previously observed that ρ varies with a standard deviation σ_ρ about the mean $\bar{\rho}$ in a normal curve. Since when $\bar{\rho} = \pm 1$ the correlation will be perfect, we will assume

$$\sigma_\rho^2 = m\,(1 - \bar{\rho}^2),$$

so that

$$\phi(\rho) = \text{const.} \times e^{-\frac{1}{2}\frac{(\rho-\bar{\rho})^2}{m(1-\bar{\rho})^2}}.$$

Substituting in equation (xxxvi^{bis}) and differentiating, we have the following equation to find $\breve{\rho}$:

$$\frac{(\breve{\rho}-\bar{\rho})(1-\breve{\rho}^2)}{m(n-1)(1-\bar{\rho}^2)} + \breve{\rho} = (1-\breve{\rho}^2)\,rE_n \quad \ldots\ldots\ldots\ldots\ldots\ldots(\text{xliii}),$$

where

$$E_2 = (r\breve{\rho})^2 + \frac{1}{\sqrt{(1-(r\breve{\rho})^4)}\cos^{-1}(-r^2\breve{\rho}^2)} \quad \ldots\ldots\ldots\ldots\ldots\ldots(\text{xliv}),$$

and successive E's are to be deduced from

$$n\,(1-(r\breve{\rho})^2)\,E_{n+1} = (2n-1)\,r\breve{\rho} + \frac{n-1}{E_n} \quad \ldots\ldots\ldots\ldots\ldots\ldots(\text{xlv}).$$

Since $\breve{\rho}$ is the quantity to be found, it is clear that we can solve this system of equations by approximation. There are two chief cases which may arise, according as we have considerable or very slight knowledge of the frequency distribution of ρ.

(1) We know that the distribution is very close to a mean $\bar{\rho}$, with a small variance, i.e. m is small. Our first approximation therefore is $\breve{\rho} = \bar{\rho}$. Let us suppose

$$\breve{\rho} = \bar{\rho} + \psi.$$

Then we find

$$\psi = \frac{(1-\bar{\rho}^2)\,r - \bar{\rho}\,\dfrac{1}{E_n}}{\left(1+\dfrac{1}{m\,(n-1)}\right)\dfrac{1}{E_n} + \bar{\rho}\,(n+1)\,r - (1-\bar{\rho}^2)\,nr^2 E_{n+1}} \quad \text{......(xlvi)},$$

where E_{n+1}, E_n, etc. are the E's found from (xlv) above by substituting $\bar{\rho}$ for $\breve{\rho}$. Eliminating E_{n+1} we find finally

$$\psi = \frac{(1-r^2\bar{\rho}^2)\,\{(1-\bar{\rho}^2)\,rE_n - \bar{\rho}\}}{(1-r^2\bar{\rho}^2)\left(1+\dfrac{1}{m\,(n-1)}\right) - (n-1)r^2(1-\bar{\rho}^2) + r\bar{\rho}\,\{(n+1)(1-r^2\bar{\rho}^2) - (2n-1)r^2(1-\bar{\rho}^2)\}\,E_n} \quad \text{.........(xlvii)},$$

while
$$(n-1)(1-r^2\bar{\rho}^2)\,E_n = (2n-3)\,r\bar{\rho} + \frac{n-2}{E_{n-1}} \quad \text{............(xlviii)},$$

$$E_2 = (r\bar{\rho})^2 + \frac{1}{\sqrt{1-(r\bar{\rho})^2}\,\cos^{-1}(-(r\bar{\rho})^2)} \quad \text{...............(xlix)}.$$

In the case of a very small sample the successive E's must be worked out up to E_n. For a larger sample 25 or upwards good results may be obtained by taking $E_n = E_{n-1} = E'$ in (xlviii) and solving the quadratic to find E'; the value of E' is then substituted in (xlvii) to find ψ.

Illustration. In a sample of 25 cases only of parent and child the correlation for a certain character was found to be ·6. What is "the most reasonable" value to give to the ρ of the sampled population?

If we distributed our ignorance equally the most likely value of ρ would be (see pp. clxxiii—clxxiv):

$$\hat{\rho} = \cdot 59182.$$

But our experience is *not* that all values of ρ are equally likely; the correlation of parent and child has never been found to be negative, and the mean value of ρ as deduced from long series of observations is known to be about $+\cdot 46$, and the range is hardly more than $+\cdot 40$ to $+\cdot 52$, corresponding to a standard deviation of about ·02. Hence

$$\sigma_\rho{}^2 = m\,(1-\bar{\rho}^2) = \cdot 0004,$$

which leads to $m = \cdot 000{,}507$, say, and $\dfrac{1}{m\,(n-1)} = 82\cdot 1828$, or it is the dominating term in the equation (xlvii). We find accordingly from (xlvii)

$$\psi = \frac{\cdot 437{,}006\,E' - \cdot 424{,}959}{70\cdot 034{,}491 + 2\cdot 790{,}925\,E'} \quad \text{........................(l)}.$$

Again, (xlviii) becomes $22\cdot 171{,}776\,E'^2 - 12\cdot 972\,E' - 23 = 0$,

which gives
$$E' = 1\cdot 352{,}2185,$$

thus from (l)
$$\psi = \cdot 00225, \text{ and } \breve{\rho} = \bar{\rho} + \psi = \cdot 46225.$$

This "most reasonable value" is very different from the "most likely value"; it is the value of ρ most probable on the basis of our past experience of the frequency distribution of similar ρ's.

Statistical workers cannot be too often reminded that there is no validity in a mathematical theory pure and simple. The application of Bayes' Theorem must be based on the experience that, where we are *a priori* in ignorance, all values are equally likely to occur. This is not the case in the present illustration, and we must use our past experience in the same way as we should use our past experience of equal frequency; this appeal to experience has equal validity with the appeal to the experience that where we are ignorant all values are equally likely. We see that our new experience scarcely modifies the old, and this is what we should naturally conjecture would be the case. Thus if we increase the size of our sample, the $\dfrac{1}{m(n-1)}$ term becomes very small, and we approach nearer and nearer the value ·59182, obtained by distributing our ignorance equally. But past experience will bias the value obtained from the new material for a long time, and we see that according to the weight of the past experience $\breve{\rho}$ may vary from ·46225 to ·59182. It will thus be evident that in problems like the present the indiscriminate use of the "most likely value" $\hat{\rho}$ is to be deprecated.

(2) If we take the case where we have some past experience, but it is not as in (1) a dominating factor, we must start, in order to be successful in our approximation, with something nearer to $\hat{\rho}'$ than to $\bar{\rho}$. Let us write $\bar{\rho}r = \bar{\rho}_0^2$ and $\breve{\rho}r = \rho_0^2$, then if we have made a guess at $\breve{\rho}$, e.g. $\breve{\rho}_1$, $\rho_0^2 = \breve{\rho}_1 r$ will be our first approximation, and our second will be $\rho_0^2 + \epsilon'$, where ϵ' is given by

$$\epsilon' = \frac{(r^2-\rho_0^4) - \left\{\rho_0^2 + \dfrac{(\rho_0^2-\bar{\rho}_0^2)(r^2-\rho_0^4)}{m(n-1)(r^2-\bar{\rho}_0^4)}\right\}\dfrac{1}{E_n}}{\left\{1 + \dfrac{r^2+2\rho_0^2\bar{\rho}_0^2-3\rho_0^4}{m(n-1)(r^2-\bar{\rho}_0^4)}\right\}\dfrac{1}{E_n} + \left\{(n+1)\rho_0^2 + \dfrac{(\rho_0^2-\bar{\rho}_0^2)(r^2-\rho_0^4)}{m(r^2-\bar{\rho}_0^4)}\right\} - n(r^2-\rho_0^4)E_{n+1}} \quad \text{.........(li)},$$

and

$$n(1-\rho_0^4)E_{n+1} = (2n-1)\rho_0^2 + \frac{n-1}{E_n} \quad \text{..................(lii)}.$$

Now if we can make a *good* guess at ρ_0 so that ϵ' is small, then it will be sufficient to put $E_{n+1} = E_n = E'$, and solve for E', substituting as before in (li) to find ϵ'.

Illustration. The correlation between length and breadth of the skull is at present not very definitely known. Its mean value is about ·30, but the values so far determined can range from about 0 to ·60. Such a range (see Table XXII) would mark a standard deviation of about ·10. What is the most reasonable value, $\breve{\rho}$, when a sample of 25 skulls shows a correlation of ·50?

Using equation (xxxvii) on p. clxxiii and Table LI^b we find

$$\hat{\rho} = {·}49217.$$

Now

$$\bar{\rho} = {·}30000.$$

Somewhere between these two the value $\breve{\rho}$ we are seeking must lie. For want of better information take $\breve{\rho}_1 = \frac{1}{2}(\hat{\rho} + \bar{\rho}) = \cdot 40$ nearly, as a jumping off point for our first approximation. Then

$$\bar{\rho}_0{}^2 = r\bar{\rho} = \cdot 15, \quad \rho_0{}^2 = r\breve{\rho}_1 = \cdot 20,$$

as a first approximation.

Equation (lii), with $E_{n+1} = E_n = E'$, becomes

$$24E'^2 - 9\cdot 8E' - 24 = 0,$$

which gives $$E' = 1\cdot 224{,}7959.$$

We have now to substitute this value in (li). That equation becomes, since $m = \dfrac{1}{91}$,

$$\epsilon' = \frac{\cdot 21E' - \cdot 375}{4\cdot 166{,}6667 + 9\cdot 4E' - 5\cdot 25E'^2} \quad \text{......................(liii)}$$

$$= -\frac{\cdot 117{,}792{,}86}{7\cdot 804{,}0919} = -\cdot 015{,}0937.$$

Hence $$\breve{\rho}_2 r = \cdot 184{,}9063, \text{ and } \breve{\rho}_2 = \cdot 369{,}813.$$

We now start to find a second approximation

We have $$\rho_0{}^2 = r\breve{\rho}_2 = \cdot 184{,}9063,$$

and $$\rho_0{}^4 = \cdot 034{,}1903, \quad 1 - \rho_0{}^4 = \cdot 965{,}8097.$$

The equation for E' becomes now

$$24\cdot 145{,}2425E'^2 - 9\cdot 060{,}4087E' - 24 = 0,$$

whence $$E' = 1\cdot 202{,}1116.$$

This value of E' must now be substituted in the new equation (li). We have

$$\epsilon' = \frac{\cdot 215{,}8097E' - \cdot 310{,}4583}{4\cdot 381{,}6832 + 7\cdot 820{,}8111E' - 5\cdot 395{,}2425E'^2}$$

$$= -\frac{\cdot 051{,}0310}{5\cdot 986{,}6555} = -\cdot 008{,}5241.$$

Thus $$\breve{\rho}_3 r = \rho_0{}^2 + \epsilon' = \cdot 176{,}3822,$$

and accordingly $$\breve{\rho}_3 = \cdot 352{,}764.$$

We will now make a last approximation.

Here $$\rho_0{}^2 = \cdot 176{,}3822,$$

and we have $$\rho_0{}^4 = \cdot 031{,}1107, \quad 1 - \rho_0{}^4 = \cdot 968{,}8893.$$

The equation for E' becomes

$$24\cdot 222{,}2325E'^2 - 8\cdot 642{,}7278E' - 24 = 0,$$

giving $$E' = 1\cdot 189{,}668.$$

Turning to the equation for ϵ', we have

$$\epsilon' = \frac{\cdot 218{,}8893E' - \cdot 272{,}6286}{4\cdot 493{,}043 + 6\cdot 895{,}850E' - 5\cdot 472{,}223E'^2}$$

$$= -\frac{\cdot 012{,}223}{4\cdot 951{,}910} = -\cdot 002{,}4683.$$

Hence $\qquad \breve{\rho}_4 r = \rho_0^2 + \epsilon' = \cdot 173{,}9139$, and $\breve{\rho}_4 = \cdot 34783$.

This value again is very different from the observed value $r = \cdot 5$ and from the most likely value $\hat{\rho} = \cdot 49217$.

A somewhat different method of approximation consists in equating E_n to E_{n-1}.

The quadratic equation is then

$$(n-1)(1-\rho_0^4)E'^2 - (2n-3)\rho_0^2 E' - (n-2) = 0.$$

Solving this for E', we take the answer to be E_n and then find E_{n+1} from

$$n(1-\rho_0^4)E_{n+1} = (2n-1)\rho_0^2 + \frac{n-1}{E_n} \qquad \text{.................(liv).}$$

We then substitute in equation (li) for ϵ' *both* E_n and E_{n+1}, and do not treat them as equal.

Thus, in the last illustration, taking $\breve{\rho}_1 = \cdot 40$ as before, we have $\rho_0^2 = r\breve{\rho}_1 = \cdot 20$, and find for E' the equation

$$23\cdot 04E'^2 - 9\cdot 4E' - 23 = 0,$$

which gives $\qquad E_n = E' = 1\cdot 223{,}7367.$

Equation (liv) then gives $\qquad E_{n+1} = 1\cdot 225{,}5025,$

whence substituting in (li) we have

$$\epsilon' = -\cdot 015{,}1371,$$

$$r\breve{\rho}_2 = \cdot 20 - \cdot 015{,}1371 = \cdot 184{,}863,$$

or $\qquad \breve{\rho}_2 = \cdot 36972.$

Starting with $\rho_0^2 = \cdot 18486$, near enough to $\cdot 184{,}863$, our quadratic becomes

$$23\cdot 179{,}842E'^2 - 8\cdot 68842E' - 23 = 0,$$

giving $\qquad E_n = E' = 1\cdot 201{,}003,$

and from (liv) $\qquad E_{n+1} = 1\cdot 202{,}760.$

Whence we deduce $\qquad \epsilon' = +\cdot 008{,}543,$

and $\qquad \breve{\rho}_3 r = \rho_0^2 + \epsilon' = \cdot 176{,}317,$

and $\qquad \breve{\rho}_3 = \cdot 35263.$

Proceeding to a fourth approximation we take $\breve{\rho}_3 = \cdot 35263$, $\rho_0^2 = \cdot 17632$, and find $E_n = 1\cdot 188{,}549$ and $E_{n+1} = 1\cdot 190{,}300$ leading to $\epsilon' = -\cdot 002{,}462$ and $\breve{\rho}_4 = \cdot 34772$, which is in excellent agreement with the result $\breve{\rho}_4 = \cdot 34783$ above. We have confirmed our previous result, but the process is not shortened. Without further approximation we may take $\breve{\rho}$ as nearly equal to $\cdot 3480$; it will be seen that this "most reasonable value" differs considerably from the "most likely value" $\hat{\rho} = \cdot 4922$.

But no biometrician would admit the absolute ignorance requisite for deducing in this case the "most likely value." The correlation of skull length and breadth has been determined rather vaguely and not on adequate numbers*, and it probably varies from race to race, but it undoubtedly lies between 0 and ·6. This *a priori* knowledge leads—on precisely the same logical basis as Bayes' Theorem—to the value $\breve{\rho} = \cdot 3480$, a result very much closer to previous experience of the mean value, than to the observed result, ·50. There are relatively few cases in which some such, even if only vague *a priori*, experience does not exist, and accordingly in practice an attempt to find $\breve{\rho}$ the most reasonable value should be preferred to a determination of $\hat{\rho}$, which must be reserved for cases in which we are forced to distribute our ignorance "equally."

TABLES XXXV—XXXVI.

To determine the Probability that a Small Sample has been drawn from a Normal Population with a specified Mean and Standard Deviation. (J. Neyman and E. S. Pearson, *Biometrika*, Vol. xx^{A}. pp. 235—240.)

Let us suppose there is reason to believe that a sample of n individuals measured for a single character, x, with mean $= \bar{x}$ and standard deviation $= s$, has been drawn from *some* normal population, and that we wish to test the hypothesis that the mean and standard deviation in the population are respectively a and σ. It would be possible to consider separately the significance of the difference between $\bar{x}$ and a and between s and σ, but the use of a single test based on the conception of "likelihood" has been suggested by Neyman and Pearson in the paper referred to above. According to this method of approach the likelihood of the hypothesis tested decreases as the criterion

$$\lambda = S^n e^{-\frac{n}{2}(M^2+S^2-1)} \quad \text{.............................(i)}$$

decreases from unity towards zero, where

$$M = (\bar{x} - a)/\sigma, \quad S = s/\sigma.$$

The test, therefore, consists in finding the chance, P_λ, that a value of λ as small as or smaller than that calculated from the given sample would occur in random sampling from the hypothetical population.

Using the above notation the simultaneous frequency distribution of M and S in samples of n is

$$f(M, S) = \text{constant} \times S^{n-2} e^{-\frac{n}{2}(M^2+S^2)} \quad \text{.....................(ii)},$$

and P_λ is the integral of the frequency taken outside the curve on which λ is constant, i.e. upon which

$$(M^2 + S^2)\log_{10} e - \log_{10} S^2 = \log_{10} e - \frac{2}{n}\log_{10}\lambda = k \quad \text{...........(iii)}.$$

* This was written in 1917, longer series worked out since suggest ·37 to ·39 as a more suitable value than ·30 for $\bar{\rho}$.

It will be noted that if n be not too small the system of curves (iii) tends to coincide with the contours of the (M, S) frequency surface (ii), or

$$(M^2+S^2)\log_{10}e - \{(n-2)/n\}\log_{10}S^2 = k' \quad \ldots\ldots\ldots\ldots\ldots \text{(iv)}.$$

In any given problem, if $n \leqslant 50$, the following procedure should be carried out:

(*a*) Find $M=(\bar{x}-a)/\sigma = m/\sigma$ and $S=s/\sigma$.

(*b*) Using M and S as coordinates, obtain a value for k from Diagrams 1 or 2 over page. A more accurate value for k could be obtained from equation (iii), but an estimate to two decimal places obtained from the diagrams will generally be quite sufficient.

(*c*) Find P_λ by entering Table XXXV with n and k.

If however $n > 50$ we may proceed as follows:

(a') Find k as in (*b*).

(b') Calculate λ from the relation $\log_{10}\lambda = \frac{1}{2}n(\log_{10}e - k)$.

(c') Obtain the ratio P_λ/λ by entering with k the auxiliary Table XXXVI (p. 223).

(d') Multiply this ratio by the λ of (b') and so find P_λ.

Illustration. (i) Measurements of 884 Egyptian skulls (XXVI—XXX Dynasties)* gave for the distribution of cephalic index, mean = 75·06, standard deviation = 2·68. Would it be justifiable to consider that the 10 skulls with cephalic indices as follows—66·7, 69·4, 67·8, 73·2, 79·3, 80·7, 64·9, 82·2, 72·4, 78·1†—were a random sample from this population?

The distribution of cephalic indices is in general found to be symmetrical but somewhat leptokurtic; we shall assume however that if $\beta_1=0$ but $\beta_2=3{\cdot}4$ to $3{\cdot}5$, the use of the P_λ test is still valid‡. It is found that

$$\bar{x}=73{\cdot}47, \quad s=5{\cdot}942, \quad M=-{\cdot}593, \quad S=2{\cdot}217,$$

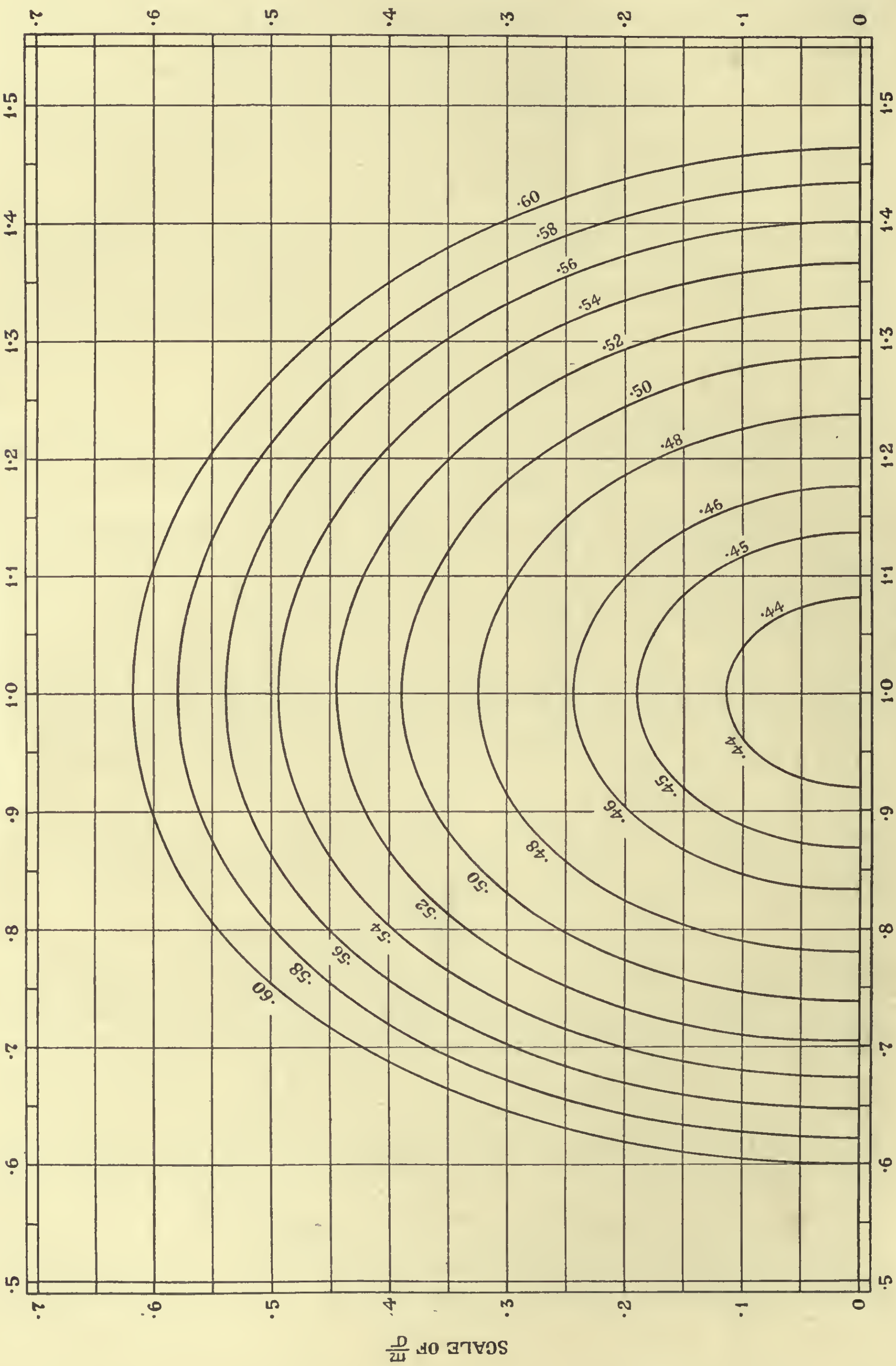
and the sample point falls near the contour $k=1{\cdot}60$ in Diagram 2 (p. clxxxiii). (N.B. in the diagrams m/σ is written for M and s/σ for S.) A reference to Table XXXV shows that for $n=10$, $k=1{\cdot}60$, P_λ is less than ·0001. From the position of the point in the diagram it will be seen that the divergence is mainly due to a very large value of s compared with σ; the mean is not exceptionally divergent from the supposed population mean 75·06. We should conclude that it was very improbable that the 10 skulls were a random sample from the Egyptian population, and that probably the

* Values taken from *Biometrika*, Vol. XVI. Tables II and III, pp. 337 and 338.

† Ten crania selected from a London graveyard of the 17th century.

‡ Neyman and Pearson showed experimentally that in the case of samples of ten from a population for which $\beta_1={\cdot}2193$, $\beta_2=3{\cdot}1577$, the use of the test was still valid.

k-Contours for use with P_λ Tables



SCALE OF $\frac{S}{\sigma}$

Diagram 1.

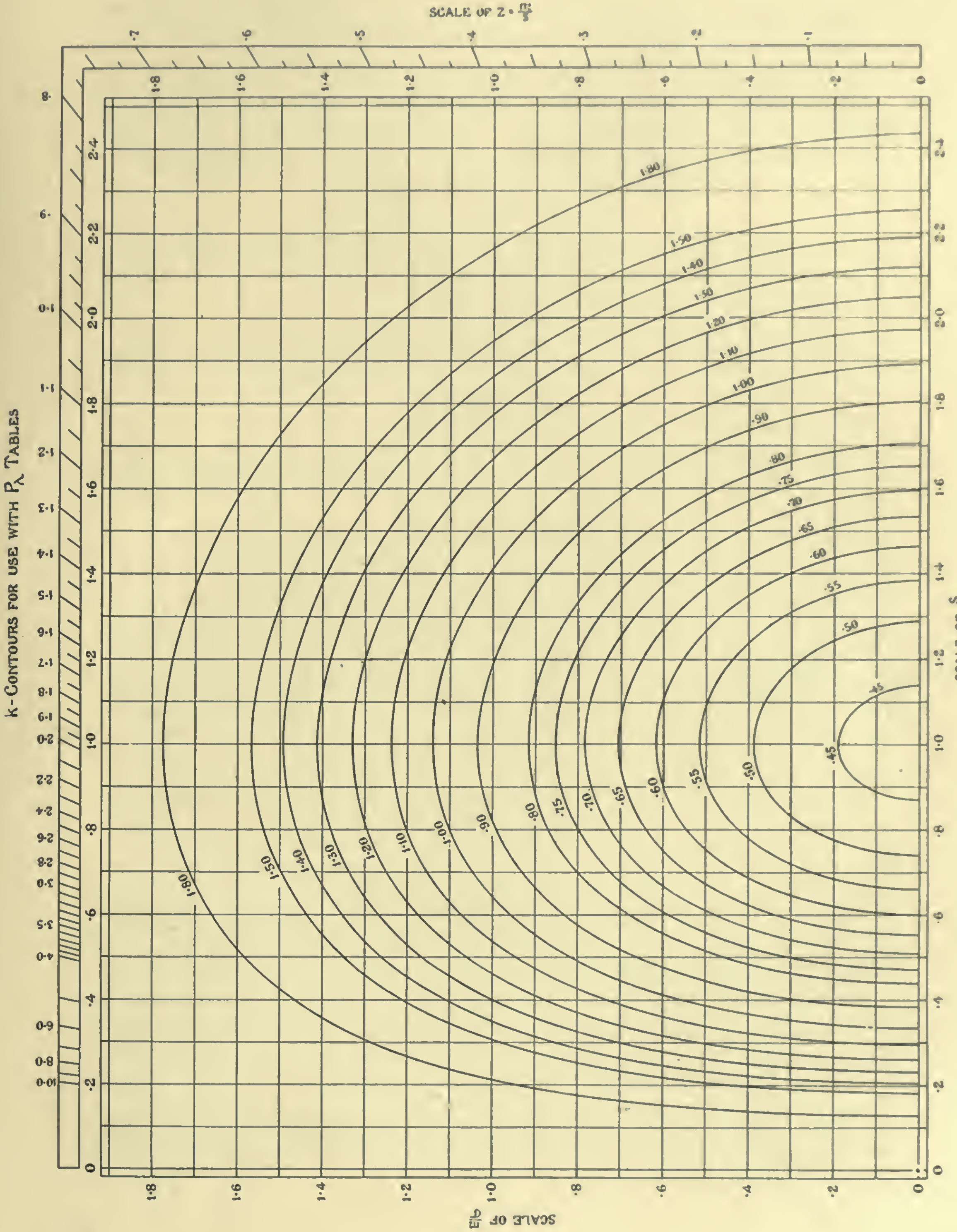

SCALE OF Z = m/S
K-CONTOURS FOR USE WITH P_λ TABLES
SCALE OF S/σ
SCALE OF m/σ

Diagram 2.

sample consisted of heterogeneous material, since the variability is much greater than that generally found within a sample from a homogeneous race *.

(ii) Suppose that we had been given only the mean cephalic index and not the standard deviation in the population. We could ask whether it was likely, having regard to the observed variability, i.e. $s = 5{\cdot}942$, that a random sample of ten could have been drawn having a mean differing by $73{\cdot}47 - 75{\cdot}06 = -1{\cdot}59$ from the population mean. Applying "Student's" test †, it is found that

$$z = (\bar{x} - a)/s = -{\cdot}268 \quad \text{and} \quad P_z = {\cdot}221.$$

That is to say so large a deviation of z in excess or defect would occur in 44 °/₀ of random samples. Without a knowledge of the population σ we should therefore find no reason for rejecting the sample ‡.

(iii) If, however, while ignorant of the exact value of σ in the Egyptian population, we had known from other sources that the standard deviation of cephalic

* We may approach the problem from another standpoint. Given the parent population mean 75·06 and standard deviation 2·217, the distribution of means in samples of ten will be a normal curve mean 75·06, and standard deviation $2{\cdot}217/\sqrt{10} = {\cdot}70107$. The occurrence of a mean 73·47, or a deviation 1·59, would give us $x = 1{\cdot}59/{\cdot}70107$ or 2·268 to be looked up in the table of the probability integral (Part I, Table II); the chance of this or greater value occurring is ·0117, or considering excesses and defects ·023. Such a mean would occur about once in 50 trials.

By Table XVII the mean S.D. in samples of ten $= {\cdot}9227\sigma = {\cdot}9227 \times 2{\cdot}217 = 2{\cdot}046$, the observed standard deviation is 5·942 less $2{\cdot}046 = 3{\cdot}896$. Further from the same table the standard deviation of the distribution of standard deviations in samples of ten $= {\cdot}9853 \times \sigma/\sqrt{20} = {\cdot}48845$. The observed deviation is therefore 7·976 times the standard deviation. The actual value of this might, if desired, be found from the *Tables of the Incomplete Γ-function* (published by H.M. Stationery Office). But it is unnecessary; a value eight times the S.D. in a curve of this form has an infinitesimal frequency. We therefore conclude that such a difference of mean is not very probable, and such a difference of S.D.'s highly improbable. Since we assume normality the two probabilities are independent. The student must be careful to distinguish the problem in the text above from the problem in this footnote. In the latter we ask what is the probability of a *combined* event. We ask what is the probability $p_{\bar{x}}$ that a mean as great as or greater than $\bar{x}$ will occur, and what is the probability p_s that a standard deviation as great as or greater than s will occur, if the parent population be a, σ. Since $\bar{x}$ and s are supposed to be obtained from a normally distributed population they vary independently and the probability of the *combined* event is $P = p_{\bar{x}} \times p_s$. In the text we consider the probability of a function of certain ratios occurring and find it to be P_λ. We then ask what is the probability of a *single* event, namely the probability of any values of $\bar{x}$ and s giving a probability greater than or as great as P_λ. This is the probability of a certain probability occurring, a single event. If this probability be exceedingly small, then we can reject $\bar{x}$ and s as a sample from a and σ. But if it be fairly large, it does not follow that either $\bar{x}$ or s tested alone by the rules of this footnote may not lead to the rejection of the hypothesis that the sample has been taken from a and σ, notwithstanding that such rejection does not flow from the method in the text.

† Tables of the probability integral of z for $n=4$ to 10 form Table XXV of the first volume of these tables. More extensive tables were given by "Student" in *Biometrika*, Vol. XI. pp. 416—417, while tables entered with n' = size of sample and $t = z\sqrt{n'-1}$ have been given in *Metron*, Vol. V. No. 3, pp. 26—30. Tables for symmetrical curves have also been published in *Biometrika*, Vol. XXII. pp. 253—283, and are reproduced in this work: see pp. cxxi and 171. E. S. Pearson and N. K. Adyanthāya have shown (*Biometrika*, Vol. XXI. pp. 259—286) that the z or t test may be used safely for populations differing considerably from the normal.

‡ That is to say by the z-test. The first footnote * above shows that the mean of the sample is improbable, if the standard deviation of the supposed parent-population takes any value of the usual order, i.e. circa 2·25 to 3·25.

index within a single race lay within the range 2·5 to 4·0, we could have improved upon the z-test used in (ii). We could say that the sample point in Diagram 2, p. clxxxiii, must lie somewhere on the line $z = \cdot 268$ which joins the origin, $M = 0 = S$, to the corresponding division of the radiating z-scale given in the right-hand margin of the diagram. The exact position depends on the value given to σ, but if we may infer that $\sigma < 4\cdot 0$ we can say that it is very unlikely that the sample point will lie further to the left along this z-line than the point for which

$$S = s/\sigma = 5\cdot 942/4\cdot 0 = 1\cdot 485.$$

To the right of this point the contours cutting the line have $k > \cdot 68$ and therefore, as shown by the table, $P_\lambda < \cdot 08$. We should therefore argue that the hypothesis as to the origin of the sample is less likely to be true than the value of P_z obtained in (ii) would suggest. The knowledge of the probable limits of σ, drawn from wider experience, has enabled us to apply a more searching test, although still not so exact as that which could be applied in (i).

Tables XXXVII^{a-b}.

The Case of Two Samples. (E. S. Pearson and J. Neyman, "On the Problem of Two Samples," *Bulletin de l'Académie Polonaise des Sciences et des Lettres*, pp. 73—96, Cracovie, 1930.)

A further problem is that of judging the probability that two samples in which the individuals have been measured for a single character, x, have been drawn from the same population. In the test to be described it is assumed that the character in the population sampled is approximately normally distributed; the first sample is of size n_1 with a mean $\bar{x}_1$ and standard deviation s_1, the second of size n_2 with the corresponding quantities $\bar{x}_2$ and s_2. Then it would be possible to consider separately the significance of the difference between $\bar{x}_1$ and $\bar{x}_2$, and between s_1 and s_2, but Pearson and Neyman, in the paper referred to above, have again suggested the use of a single test based upon the principle of likelihood.

In this case the appropriate criterion is

$$\lambda = \left(\frac{s_1}{s_0}\right)^{n_1} \left(\frac{s_2}{s_0}\right)^{n_2},$$

where s_0 is the standard deviation obtained by combining together the $n_1 + n_2$ variables of the two samples. The test consists in finding the chance, P_λ, that a value of λ smaller than that calculated from the observations would occur in drawing two independent random samples from a common normal population. The distribution of λ is independent of the mean and standard deviation of the population sampled. Although its exact form has not been determined the moment-coefficients of this distribution can be obtained; making use of these coefficients and certain other considerations the writers provided two *approximate* tables giving for a variety of combinations of n_1 and n_2 the values of λ corresponding to $P_\lambda = \cdot 05$ and $\cdot 01$. It is believed that the values of λ tabled are not in error by more than two units in the 4th decimal place.

A limiting case of this problem occurs when $n_2 \to \infty$ but n_1 remains finite (or *vice versa*). The second sample then becomes indistinguishable from an infinite population, and the problem is reduced to that discussed in the previous section, namely that of testing the hypothesis that a sample of $n\,(=n_1)$ with mean $\bar{x}\,(=\bar{x}_1)$ and standard deviation $s\,(=s_1)$ has been drawn from a normal population with mean $a\,(=\bar{x}_2)$ and standard deviation $\sigma\,(=s_2)$. The values of P_λ found accurately by quadrature in this earlier problem provided therefore a method of checking the marginal columns (i.e. those for n_1 or $n_2=\infty$) of Tables XXXVII^{a-b}.

Illustration. The following figures represent the values of the Cephalic Index calculated for two series of 10 human skulls.

Sample I. 74·1; 77·7; 74·4; 74·0; 73·8; 72·2; 75·2; 78·2; 77·1; 78·4;

whence $n_1=10$; $\bar{x}_1=75{\cdot}51$; $s_1=2{\cdot}059$.

Sample II. 66·7; 69·4; 67·8; 73·2; 79·3; 80·7; 64·9; 82·2; 72·4; 78·1;

whence $n_2=10$; $\bar{x}_2=73{\cdot}47$; $s_2=5{\cdot}942$.

We may now test the hypothesis that the two samples have been randomly drawn from the same population, only making the assumption that the distribution of cephalic index does not differ so much from normality as to invalidate the test.

On combining the two samples it is found that $s_0=4{\cdot}562$, and hence

$$\lambda=(s_1s_2/s_0^2)^{10}={\cdot}00493.$$

The table shows that for $n_1=n_2=10$ this value corresponds closely to $P_\lambda={\cdot}01$; that is to say only once in a hundred times should we expect the criterion, λ, to have as low or a lower value were the hypothesis tested true. We should therefore conclude that it was very unlikely that the two series of skulls were random selections from the same population.

Table XXXVII^{bis}.

Further Tests of Normality. Table showing the 5 °/。 *and* 1 °/。 *probability limits for* $\sqrt{\beta_1}$ *and* β_2 *in random samples drawn from a Normal Population.* (E. S. Pearson, *Biometrika*, Vol. XXII. p. 248.)

The table shows for samples of various sizes the upper and lower limits of $\sqrt{\beta_1}$ and of β_2 which will be exceeded in (*a*) 5 °/。, and (*b*) 1 °/。 of random samples. The distribution of $\sqrt{\beta_1}$ is symmetrical about zero so that the corresponding upper and lower limits are of the same magnitude but with opposite signs. The table may also be entered with β_1; in this case positive and negative values of $\sqrt{\beta_1}$ will be clubbed together and the limits will therefore be those exceeded in 10 °/。 and 2 °/。 of samples. Since in samples from a normal population $\sqrt{\beta_1}$ and β_2 are completely uncorrelated, we have two separate and independent tests.

The table has been based upon the known values of the first four moment-coefficients of the sampling distributions of $\sqrt{\beta_1}$ and β_2, and it has then been assumed that Pearson Type VII and Type IV curves, with their moment-coefficients, will represent adequately the true sampling distributions at their two probability levels.

Illustration. In a sample of 500 the following values are found:

$$\sqrt{\beta_1} = -\cdot 2040, \quad \beta_2 = 3\cdot 7823.$$

Is it possible that the sampled population was normal?

The table shows that in 5 °/₀ of random samples from a normal population $\sqrt{\beta_1}$ may be expected to be less than $-\cdot 179$ and in 1 °/₀ less than $-\cdot 255$. The observed value falls in between these limits. For β_2 we see that only 1 °/₀ of samples can be expected to give a β_2 greater than 3·60, and the observed value lies outside this limit. The test therefore provides a doubtful answer when applied to $\sqrt{\beta_1}$ but a decisive one when applied to β_2, and we may therefore conclude that it is practically certain that the sample has not been drawn at random from a normal population.

TABLES XXXVIII—XLI.

Moment-Coefficients of Asymptotic Frequency Distributions. (Gertrude E. Pearse, *Biometrika*, Vol. XX^A. pp. 314—355.)

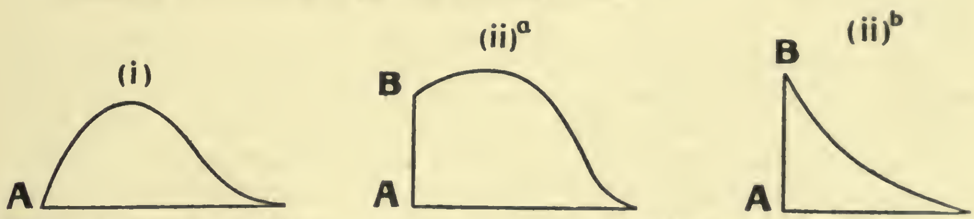
Pearson and Pairman have discussed the formulae for correction of moment-coefficients when the frequency curve rises abruptly at one or both terminals from its base or from a vertical, i.e. when there is not, what Sheppard's corrections suppose, high contact at the terminals*. These authors then passed to the consideration of cases in which the frequency curve, instead of rising abruptly from the base, asymptotes to the vertical at one or both terminals, i.e. when it is a true J- or U-curve. The corrections to be made to the moments in all such cases as the above are termed *abruptness-coefficients.* We may distinguish the two cases as non-asymptotically abrupt curves and asymptotically abrupt curves.

In the second part of the Pearson and Pairman paper—wherein $x = 0$ to $x = x_p$ is the total range and N is the total frequency—, the form

$$Z = \int_x^{x_p} y dx = N\left[1 + x^q (A + Bx + Cx^2 + Dx^3 + Ex^4)\right] \text{ ....(i)}$$

was proposed as a suitable auxiliary curve in the case of asymptotically abrupt

* *Biometrika*, Vol. XII. pp. 231 *et seq.* The two forms are thus



Springing abruptly from base at A Springing from vertical at B

All these forms occur in the Pearson Type Curves.

curves. Here q may be given any value from slightly over zero to slightly under unity. For with this condition $\frac{dy}{dx}$ will become infinite when $x = 0$, but the area Z of the auxiliary curve remain finite. Pairman and Pearson, seeing the difficulty of determining q, took its value equal to the mean of its possible range, i.e. $= \frac{1}{2}$, but they realised that q was actually a measure of the "intensity of asymptoting," and would vary from one frequency curve to a second.

The reader must be warned straightway of the difficulty of the subject. In practical statistics we are given the frequencies on certain subranges, say n_1, n_2, n_3, n_4, n_5 and n_6 on the first six subranges supposed equal. We cannot, however, assert, if these quantities be in order of magnitude, n_1 being the greatest, that the curve is asymptotic at the terminal. They may be "exponential," or they may rise with extreme abruptness from the base, so that n_1 is the greatest frequency. Or again they may be asymptotic although n_1 is *not* the greatest frequency, because the asymptote may spring from the base at a point *within the first subrange.* There are not a few cases in which we do not know where the range of the frequency curve starts, and this must be determined from the data themselves. But it is just in such cases that the abruptness-coefficients make the most substantial changes in the crude moment-coefficients, and until we know the true moments we are unable to determine whether the curve be asymptotic or non-asymptotic. We thus move in a vicious circle, and may have to proceed by trial-and-error processes. No method of calculating abruptness-coefficients has yet been devised, which leaves the start of the frequency curve, and therefore the start of the auxiliary curve, one of the factors to be determined. We assume a knowledge of the start of the curve be it asymptotic or abrupt, but this never flows from the subrange frequencies themselves. For example, when we start a curve of house rentals with the first group £0—£10, it is clear that no cottage is really rented as £0; if it were it would be because it would be given as part wages. The least rental value before the War might be 2*s.* 6*d.* weekly or £6 a year. Hence, if the distribution be asymptotic, the asymptote does not lie at the start of the first subrange 0—10, but inside it, at a point not conveyed by the statistical data, but to be obtained from other considerations. Thus in dealing with infantile mortality the first year's frequency may be greater than that of any later year, but to obtain a reasonable fit we may have to take prenatal deaths into consideration, and put the start of the curve even in the early days of pregnancy.

Other considerations also arise, when we wish, for instance, to fit continuous curves to really discrete data, or to data given in discrete form. For example, if we are told that a buttercup may have 5 to 11 petals, there is no great forcing of the data if we suppose the subrange of 5 to be a block of frequency on the base 4·5 to 5·5, and place the asymptote at 4·5. On the other hand, if we are given data for "cloudiness" in the 11 groups 0, 1, 2, ... 9, 10, which signify that none of the heavens $\frac{1}{10}$, $\frac{2}{10}$, ... $\frac{9}{10}$, and the whole sky was covered by clouds at a certain hour of the day, we have no hesitation in interpreting 2 as covering the range of cloudiness from 1·5 to 2·5 tenths, but we have doubts in supposing the subranges 0 and 10 to extend from $-0\cdot5$ to $+0\cdot5$ and $+9\cdot5$ to $+10\cdot5$, which would signify that the heavens could be more than quite clear of cloud, and more than wholly enveloped in cloud. We are forced by considerations other than the frequency data to place our asymptotes for the actual U-curve of frequency at 0 and 10, so that the total range is, as it should be physically, 10. But this involves the terminal ranges being only one-half the other ranges, or the assumption that 0 to 0·5 and 9·5 to 10 are what the observers would record as 0 and 10. To such changes in the terminal subranges attention must be paid not only in calculating the abruptness-coefficients, but in selecting appropriate positions for the asymptote or asymptotes.

After these warnings we may return to curve (i). Supposing $n_1 = Nn_1'$, $n_2 = Nn_2'$,... $n_5 = Nn_5'$ and putting $x = 1, 2, 3, 4, 5$, we obtain five relations between the six constants A, B, C, D, E and q and the *five* relative frequencies n_1', n_2', n_3', n_4' and n_5'. q is then given a series of values between 0 and 1·0; in this series it was found needful to make the intervals smaller for the range 0·0 to 0·1, where q proceeds by hundredths, than for the range 0·1 to 1·0, where q proceeds by tenths. We have now got an auxiliary curve, which leaves q arbitrary, but gives the correct areas for the first *five* equal subranges. How is q to be determined? After much consideration, it was settled to determine q by making the sixth subrange frequency ($n_6 = Nn_6'$) equal in the auxiliary curve to the value given by the data. Since A, B, C, D and E are known in terms of n_1', n_2', n_3', n_4', n_5' and q, we have

$$n_6' = {}_qC_5 n_5' - {}_qC_4 n_4' + {}_qC_3 n_3' - {}_qC_2 n_2' + {}_qC_1 n_1' \quad \ldots\ldots\ldots\ldots\ldots\text{(ii)},$$

where the constants ${}_qC_5$, ${}_qC_4$, ${}_qC_3$, ${}_qC_2$, ${}_qC_1$ are functions of q only. They are provided in Table XXXVIII. On the machine by continuous process it is fairly easy to find the value of n_6' corresponding to any given q. We proceed therefore by trial and error, and having found two values of q, one of which makes n_6' lie above and the other below the true data value, we proceed to find a suitable q by linear interpolation. This is the purpose of Table XXXVIII, i.e. it is used to select a suitable q.

The next four tables (XXXIX) give (when multiplied by N and with due regard to sign) the first four moments about $x = 1$,

$$Nn_1'\mu_1'',\ Nn_1'\mu_2'',\ Nn_1'\mu_3'' \text{ and } Nn_1'\mu_4'',$$

(with due regard to sign) of the first element of the auxiliary curve, and they are taken to represent the corresponding moments of the observed frequency on the first subrange. But having ascertained the contributions to the total moments of this first subrange wherein the asymptote lies, we can find the corrections for the crude moments of the rest of the curve by the usual formulae for an abrupt, but non-asymptotic, terminal*. This process would involve abruptness-coefficients in terms of n_2, n_3, n_4, n_5, n_6, but for each value of q, n_6 is known in terms of n_1, n_2, n_3, n_4 and n_5.

* For the actual manner in which this has been carried out see Pairman and Pearson, *Biometrika*, Vol. XII. pp. 251—253, and G. E. Pearse, *ibid.* Vol. XX[A]. pp. 315—319.

Hence, if a_1, a_2, a_3, a_4 and a_5 be the abruptness-coefficients for absolute values of the five initial frequencies, they will be known in terms of n_1, n_2, n_3, n_4 and n_5, being given by linear relations. These are provided in Table XL (pp. 227—229), but they are, as we shall see, only auxiliary tables, and the reader need pay no attention to them unless for some special purpose he desires to find the actual values of the abruptness-coefficients at $x=1$. We can now put our formulae into the following form in working units, i.e. the subrange h as unit, where ν_s''' is the crude moment-coefficient of the frequency $N-n_1$ about $x=1$ the start of this frequency

$$\left.\begin{aligned}
N\mu_1''' &= (N-n_1)\,\nu_1''' + n_1\mu_1'' + \frac{a_1}{12} - \frac{a_3}{720} + \frac{a_5}{30240}\\
N\mu_2''' &= (N-n_1)\left(\nu_2''' - \tfrac{1}{12}\right) + n_1\mu_2'' - \frac{a_2}{120} + \frac{a_4}{3024}\\
N\mu_3''' &= (N-n_1)\left(\nu_3''' - \tfrac{1}{4}\,\nu_1'''\right) + n_1\mu_3'' - \frac{a_1}{40} + \frac{a_3}{504} - \frac{a_5}{9600}\\
N\mu_4''' &= (N-n_1)\left(\nu_4''' - \tfrac{1}{2}\,\nu_2''' + \tfrac{7}{240}\right) + n_1\mu_4'' + \frac{a_2}{126} - \frac{a_4}{1440}
\end{aligned}\right\} \ldots\text{(iii)}.$$

Here μ_s''' is the corrected sth moment-coefficient of the whole frequency N, about $x=1$, or the non-asymptotic terminal of the first subrange. But we note two points:

(*a*) The first series of terms for each moment-coefficient are the moments of the remainder, $N-n_1$, of the frequency with the usual Sheppard's corrections.

(*b*) The rest of the formulae consist of two parts, (i) the moment of the first asymptotic subrange, and (ii) the abruptness-coefficients for the start of the second subrange. Both these parts are linear functions of the frequency of the first five subranges n_1, n_2, n_3, n_4 and n_5. Call their contributions to $N\mu_s'''$, K_s, then our formulae may be rewritten in the following manner:

$$\left.\begin{aligned}
N\mu_1''' &= (N-n_1)\,\nu_1''' + K_1\\
N\mu_2''' &= (N-n_1)\,(\nu_2''' - \tfrac{1}{12}) + K_2\\
N\mu_3''' &= (N-n_1)\,(\nu_3''' - \tfrac{1}{4}\nu_1''') + K_3\\
N\mu_4''' &= (N-n_1)\,(\nu_4''' - \tfrac{1}{2}\nu_2''' + \tfrac{7}{240}) + K_4
\end{aligned}\right\} \ldots\ldots\ldots\ldots\ldots\text{(iv)*}.$$

We shall have

$$K_s = {}_qe_s'n_1 - {}_qe_s''n_2 + {}_qe_s'''n_3 - {}_qe_s^{\text{iv}}n_4 + {}_qe_s^{\text{v}}n_5 \ldots\ldots\ldots\ldots\ldots\ldots\text{(v)},$$

where the values of the constants ${}_qe_s'$, ${}_qe_s''$, ${}_qe_s'''$, ${}_qe_s^{\text{iv}}$, ${}_qe_s^{\text{v}}$ are provided in Table XLI (pp. 230—231).

The process of determining the asymptotic abruptness corrections is now fairly simple:

(i) The computer *omits* the first subrange frequency and computes the moments of the remainder $N-n_1$ about the end of the first subrange.

* Should the reader desire to work in absolute values and not the subrange h as working unit, he must use the formulae

$$N\mu_1''' = (N-n_1)\,\nu_1''' + hK_1,\quad N\mu_2''' = (N-n_1)\,(\nu_2''' - \tfrac{1}{12}h^2) + h^2K_2,$$
$$N\mu_3''' = (N-n_1)\,(\nu_3''' - \tfrac{1}{4}h^2\nu_1''') + h^3K_3,\quad N\mu_4''' = (N-n_1)\,(\nu_4''' - \tfrac{1}{2}h^2\nu_2''' + \tfrac{7}{240}h^4) + h^4K_4.$$

(ii) He selects q from Table XXXVIII to give as nearly as possible n_6' (i.e. n_6/N).

(iii) He takes from Table XLI the values of the K's corresponding to this value of q and adds them on to the moments found in (i).

(iv) Dividing by N the computer obtains the moment-coefficients of the whole system in corrected form about the division between the first and second subranges.

The moment-coefficients must now be referred to the mean by the usual formulae*. Special cases may arise, which need detailed consideration.

The formulae as given above apply to J-curves asymptoting to the vertical at one terminal and to the horizontal at the second. But at the second terminal there may be also abruptness, and this will now be considered.

Suppose there to be p subranges, and let K_1', K_2', K_3' and K_4' be the values found for K_1, K_2, K_3 and K_4, when we write n_p, n_{p-1}, n_{p-2}, n_{p-3}, n_{p-4} for n_1, n_2, n_3, n_4 and n_5 respectively, *and change all the signs.* We then have in working units:

$$N\mu_1''' = (N - n_1 - n_p)\,\nu_1''' + K_1 + K_1' + (p-2)\,n_p,$$

$$N\mu_2''' = (N - n_1 - n_p)\,(\nu_2''' - \tfrac{1}{12}) + K_2 + K_2' + 2\,(p-2)\,K_1' + (p-2)^2\,n_p,$$

$$N\mu_3''' = (N - n_1 - n_p)\,(\nu_3''' - \tfrac{1}{4}\nu_1''') + K_3 + K_3' + 3\,(p-2)\,K_2' + 3\,(p-2)^2 K_1' + (p-2)^3\,n_p,$$

$$N\mu_4''' = (N - n_1 - n_p)\,(\nu_4''' - \tfrac{1}{2}\nu_2'' + \tfrac{7}{240}) + K_4 + K_4' + 4\,(p-2)\,K_3' + 6\,(p-2)^2 K_2' + 4\,(p-2)^3 K_1' + (p-2)^4\,n_p \ldots\ldots \text{(vi)}.$$

Here, for example in $N\mu_3'''$, the first term $(N - n_1 - n_p)\,(\nu_3''' - \tfrac{1}{4}\nu_1''')$ represents the frequency of the observed data *excluding the first and last subrange frequencies* about the division between the first and second subranges. K_3 represents the moment of the first subrange frequency about the same point, and

$$K_3' + 3\,(p-2)\,K_2' + 3\,(p-2)^2 K_1' + (p-2)^3\,n_p$$

represents the moment of the last subrange transferred to the same point ($x = 1$) again.

If there be high contact at the second terminal, then

$$n_p = n_{p-1} = n_{p-2} = n_{p-3} = n_{p-4} = 0$$

and all the K''s vanish. This corresponds to the case of J-curves in formulae (iv).

If there be non-asymptotic abruptness at the second terminal, then we must put $q = 1$†. Such cases arise with limited range J-curves.

* Mean = value of variate at division of first and second subranges $+ h\mu_1'''$,

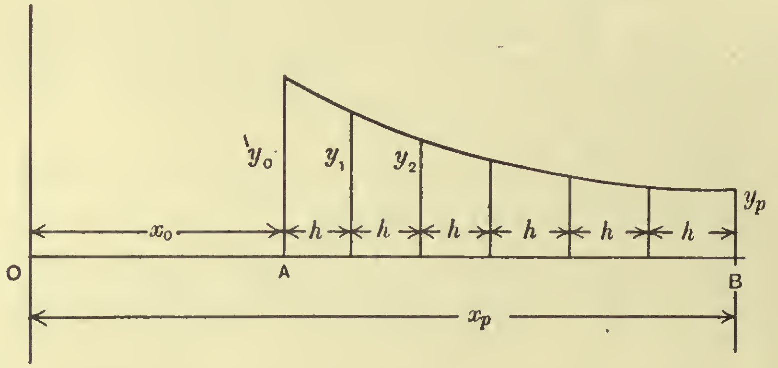
$$\sigma^2 = \mu_2 = \mu_2''' - \mu_1'''^2, \quad \mu_3 = \mu_3''' - 3\mu_2'''\mu_1''' + 2\mu_1'''^3, \quad \mu_4 = \mu_4''' - 4\mu_3'''\mu_1''' + 6\mu_2'''\mu_1'''^2 - 3\mu_1'''^4,$$

the last three moments in working units.

† The taking of $q = 1$ for the case of non-asymptotic abruptness differs to some extent from using the non-asymptotic abruptness-coefficients of Pairman and Pearson (*Biometrika*, Vol. XII. p. 240). In the latter method we should find the crude moments for the $p - 1$ subranges (excluding the first) and add the terms in the usual abruptness-coefficients b_1, b_2, b_3, b_4 and b_5. In the present method we find the crude moments on $p - 2$ subranges, and deduce the corrected moment for the pth subrange from the auxiliary curve itself.

Should it be impossible to select a satisfactory value of q from Table XXXVIII, it will usually denote that the curve is non-asymptotic, but occasionally it may be due to an erroneous assumption as to the position of the asymptote. As a rule it will be adequate to select an approximate value of q and not necessary to obtain the exact n_6' by elaborate interpolation into Table XXXVIII.

If notwithstanding first impressions as to the existence of an asymptote we find no suitable value of q, then we must have recourse to the non-asymptotic abruptness formulae*. It may shorten the computer's labours to place them here. The diagram representing doubly abrupt terminals at x_0 and x_p with p subranges is given below:



The formulae for the first six moment-coefficients *about the start*, $x = x_0$, of the total range are:

$$\mu_1' = \nu_1' + \{\tfrac{1}{12}(a_1' - \tfrac{1}{60}a_3' + \tfrac{1}{2520}a_5') + \tfrac{1}{12}(b_1' - \tfrac{1}{60}b_3' + \tfrac{1}{2520}b_5')\} \quad \text{(vii)}.$$

$$\begin{aligned}\mu_2' = \nu_2' - \tfrac{1}{12} + \{&-\tfrac{1}{120}(a_2' - \tfrac{5}{126}a_4') + \tfrac{1}{120}(b_2' - \tfrac{5}{126}b_4') \\ &+ \tfrac{1}{6}p(b_1' - \tfrac{1}{60}b_3' + \tfrac{1}{2520}b_5')\} \quad \text{(viii)}.\end{aligned}$$

$$\begin{aligned}\mu_3' = \nu_3' - \tfrac{1}{4}\nu_1' + \{&-\tfrac{1}{40}(a_1' - \tfrac{5}{63}a_3' + \tfrac{1}{240}a_5') - \tfrac{1}{40}(b_1' - \tfrac{5}{63}b_3' + \tfrac{1}{240}b_5') \\ &+ \tfrac{1}{40}p(b_2' - \tfrac{5}{126}b_4') + \tfrac{1}{4}p^2(b_1' - \tfrac{1}{60}b_3' + \tfrac{1}{2520}b_5')\} \quad \text{(ix)}.\end{aligned}$$

$$\begin{aligned}\mu_4' = \nu_4' - \tfrac{1}{2}\nu_2' + \tfrac{7}{240} + \{&\tfrac{1}{126}(a_2' - \tfrac{7}{80}a_4') - \tfrac{1}{126}(b_2' - \tfrac{7}{80}b_4') - \tfrac{1}{10}p(b_1' - \tfrac{5}{63}b_3' + \tfrac{1}{240}b_5') \\ &+ \tfrac{1}{20}p^2(b_2' - \tfrac{5}{126}b_4') + \tfrac{1}{3}p^3(b_1' - \tfrac{1}{60}b_3' + \tfrac{1}{2520}b_5')\} \quad \text{(x)}.\end{aligned}$$

$$\begin{aligned}\mu_5' = \nu_5' - \tfrac{5}{6}\nu_3' + \tfrac{7}{48}\nu_1' + \{&\tfrac{5}{252}(a_1' - \tfrac{7}{40}a_3' + \tfrac{7}{440}a_5') + \tfrac{5}{252}(b_1' - \tfrac{7}{40}b_3' + \tfrac{7}{440}b_5') \\ &- \tfrac{5}{126}p(b_2' - \tfrac{7}{80}b_4') - \tfrac{1}{4}p^2(b_1' - \tfrac{5}{63}b_3' + \tfrac{1}{240}b_5') + \tfrac{1}{12}p^3(b_2' - \tfrac{5}{126}b_4') \\ &+ \tfrac{5}{12}p^4(b_1' - \tfrac{1}{60}b_3' + \tfrac{1}{2520}b_5')\} \quad \text{(xi)}.\end{aligned}$$

$$\begin{aligned}\mu_6' = \nu_6' - \tfrac{5}{4}\nu_4' + \tfrac{7}{16}\nu_2' - \tfrac{31}{1344} + \{&-\tfrac{1}{80}(a_2' - \tfrac{5}{33}a_4') + \tfrac{1}{80}(b_2' - \tfrac{5}{33}b_4') \\ &+ \tfrac{5}{42}p(b_1' - \tfrac{7}{40}b_3' + \tfrac{7}{440}b_5') - \tfrac{5}{42}p^2(b_2' - \tfrac{7}{80}b_4') - \tfrac{1}{2}p^3(b_1' - \tfrac{5}{63}b_3' + \tfrac{1}{240}b_5') \\ &+ \tfrac{1}{8}p^4(b_2' - \tfrac{5}{126}b_4') + \tfrac{1}{2}p^5(b_1' - \tfrac{1}{60}b_3' + \tfrac{1}{2520}b_5')\} \quad \text{(xii)}.\end{aligned}$$

These are in working units, i.e. the subrange h is taken as unity.

* Pairman and Pearson, *Biometrika*, Vol. XII. pp. 233, 239.

The values of the abruptness-coefficients are:

$$\left.\begin{aligned}
a_1' &= -\tfrac{1}{60}\,\{137n_1' - 163n_2' + 137n_3' - 63n_4' + 12n_5'\}\\
a_2' &= \tfrac{1}{12}\,\{\ 45n_1' - 109n_2' + 105n_3' - 51n_4' + 10n_5'\}\\
a_3' &= -\ \tfrac{1}{4}\,\{\ 17n_1' - \ 54n_2' + \ 64n_3' - 34n_4' + \ 7n_5'\}\\
a_4' &= \phantom{-\tfrac{1}{4}}\ \{\ \ 3n_1' - \ 11n_2' + \ 15n_3' - \ 9n_4' + \ 2n_5'\}\\
a_5' &= - \phantom{\tfrac{1}{4}}\ \{\ \ \ n_1' - \ \ 4n_2' + \ \ 6n_3' - \ 4n_4' + \ \ n_5'\}
\end{aligned}\right\}\ \ldots\ldots\text{(xiii)}.$$

Similarly we find for the b coefficients

$$\left.\begin{aligned}
b_1' &= +\tfrac{1}{60}\,\{137n'_p - 163n'_{p-1} + 137n'_{p-2} - 63n'_{p-3} + 12n'_{p-4}\}\\
b_2' &= -\tfrac{1}{12}\,\{\ 45n'_p - 109n'_{p-1} + 105n'_{p-2} - 51n'_{p-3} + 10n'_{p-4}\}\\
b_3' &= +\ \tfrac{1}{4}\,\{\ 17n'_p - \ 54n'_{p-1} + \ 64n'_{p-2} - 34n'_{p-3} + \ 7n'_{p-4}\}\\
b_4' &= - \phantom{\tfrac{1}{4}}\ \{\ \ 3n'_p - \ 11n'_{p-1} + \ 15n'_{p-2} - \ 9n'_{p-3} + \ 2n'_{p-4}\}\\
b_5' &= \phantom{-\tfrac{1}{4}}\ \{\ \ \ n'_p - \ \ 4n'_{p-1} + \ \ 6n'_{p-2} - \ 4n'_{p-3} + \ \ n'_{p-4}\}
\end{aligned}\right\}\ \ldots\text{(xiv)}.$$

We can, however, throw these results into a form, first suggested by F. Sandon*, where however we use factors more suited than his decimal fractions to continuous processes on the arithmometer. These results dispense with the calculation of the a's and b's entirely.

Let

$$\left.\begin{matrix}H_{1,a}\\ H_{1,b}\end{matrix}\right\} = \frac{11{,}153\begin{Bmatrix}n_1\\ n_p\end{Bmatrix} - 12{,}566\begin{Bmatrix}n_2\\ n_{p-1}\end{Bmatrix} + 10{,}176\begin{Bmatrix}n_3\\ n_{p-2}\end{Bmatrix} + 4{,}586\begin{Bmatrix}n_4\\ n_{p-3}\end{Bmatrix} + 863\begin{Bmatrix}n_5\\ n_{p-4}\end{Bmatrix}}{60480\times N},$$

$$\left.\begin{matrix}H_{2,a}\\ H_{2,b}\end{matrix}\right\} = \frac{1{,}830\begin{Bmatrix}n_1\\ n_p\end{Bmatrix} - 4{,}358\begin{Bmatrix}n_2\\ n_{p-1}\end{Bmatrix} + 4{,}110\begin{Bmatrix}n_3\\ n_{p-2}\end{Bmatrix} - 1{,}962\begin{Bmatrix}n_4\\ n_{p-3}\end{Bmatrix} + 380\begin{Bmatrix}n_5\\ n_{p-4}\end{Bmatrix}}{60480\times N},$$

$$\left.\begin{matrix}H_{3,a}\\ H_{3,b}\end{matrix}\right\} = \frac{29{,}487\begin{Bmatrix}n_1\\ n_p\end{Bmatrix} - 25{,}128\begin{Bmatrix}n_2\\ n_{p-1}\end{Bmatrix} + 15{,}702\begin{Bmatrix}n_3\\ n_{p-2}\end{Bmatrix} - 5{,}928\begin{Bmatrix}n_4\\ n_{p-3}\end{Bmatrix} + 987\begin{Bmatrix}n_5\\ n_{p-4}\end{Bmatrix}}{10\times 60480\times N},$$

$$\left.\begin{matrix}H_{4,a}\\ H_{4,b}\end{matrix}\right\} = \frac{1{,}674\begin{Bmatrix}n_1\\ n_p\end{Bmatrix} - 3{,}898\begin{Bmatrix}n_2\\ n_{p-1}\end{Bmatrix} + 3{,}570\begin{Bmatrix}n_3\\ n_{p-2}\end{Bmatrix} - 1{,}662\begin{Bmatrix}n_4\\ n_{p-3}\end{Bmatrix} + 316\begin{Bmatrix}n_5\\ n_{p-4}\end{Bmatrix}}{60480\times N}.$$

Here the upper n's correspond to $H_{s,a}$ and the lower to $H_{s,b}$.

The reciprocal of 60480 is $\cdot 0000{,}16\dot{5}3{,}439\dot{1}{,}5344$, if the computer prefer to use it, instead of dividing the total already on his machine by $60480N$.

Introducing h the base unit, we have for moments about the origin:

$$\mu_1' = \nu_1' - h\,(H_{1,a} - H_{1,b}),$$

$$\mu_2' = \nu_2' - \tfrac{1}{12}h^2 - h^2\,(H_{2,a} + H_{2,b}) - 2x_0 h H_{1,a} + 2x_p h H_{1,b},$$

$$\mu_3' = \nu_3' - \tfrac{1}{4}h^2\nu_1' + h^3\,(H_{3,a} - H_{3,b}) - 3x_0 h^2 H_{2,a} - 3x_p h^2 H_{2,b} - 3x_0^2 h H_{1,a} + 3x_p^2 h H_{1,b},$$

$$\begin{aligned}\mu_4' = \nu_4' - \tfrac{1}{2}h^2\nu_2' + \tfrac{7}{240}h^4 + h^4\,(H_{4,a} + H_{4,b}) + 4x_0 h^3 H_{3,a} - 4x_p h^3 H_{3,b}\\
- 6x_0^2 h^2 H_{2,a} - 6x_p^2 h^2 H_{2,b} - 4x_0^3 h H_{1,a} + 4x_p^3 h H_{1,b}.\end{aligned}$$

* *Biometrika*, Vol. XVI. pp. 193—195. An error in the value of μ_2' on p. 194, i.e. $2x_p'k_1/N$ is printed for $-2x_p'k_1/N$.

Clearly these equations will be simplified by taking $x_0 = 0$, or moments about the start of the frequency distribution; in this case $x_p = ph$. Finally, if there be high contact at the b-terminal, all the $H_{s,b}$ are zero and we have the simple forms:

$$\mu_1' = \nu_1' - hH_{1,a}, \qquad \mu_2' = \nu_2' - h^2\left(\tfrac{1}{12} + H_{2,a}\right),$$
$$\mu_3' = \nu_3' - \tfrac{1}{4}h^2\nu_1' + h^3\left(H_{3,a} - H_{3,b}\right),$$
$$\mu_4' = \nu_4' - \tfrac{1}{2}h^2\nu_2' + h^4\left(\tfrac{7}{240} + H_{4,a} + H_{4,b}\right).$$

Illustration (i). The following data are based on returns for Prussia of infants dying in the first twelve months of life. They cover the years 1877 to 1881.

Deaths per 1000 *infants born.*

Months	Deaths
0—1	$n_1 = 63{\cdot}99$
1—2	$n_2 = 22{\cdot}59$
2—3	$n_3 = 18{\cdot}58$
3—4	$n_4 = 15{\cdot}96$
4—5	$n_5 = 13{\cdot}30$
5—6	$n_6 = 11{\cdot}51$
6—7	10·61
7—8	$n_{p-4} = 9{\cdot}30$
8—9	$n_{p-3} = 8{\cdot}74$
9—10	$n_{p-2} = 8{\cdot}29$
10—11	$n_{p-1} = 7{\cdot}51$
11—12	$n_p = 6{\cdot}94$
Total	197·32

Here we have $p = 12$,

$$n_1' = {\cdot}3242{,}9556, \quad n'_{p-4} = {\cdot}0471{,}3156,$$
$$n_2' = {\cdot}1144{,}8409, \quad n'_{p-3} = {\cdot}0442{,}9353,$$
$$n_3' = {\cdot}0941{,}6177, \quad n'_{p-2} = {\cdot}0420{,}1297,$$
$$n_4' = {\cdot}0808{,}8384, \quad n'_{p-1} = {\cdot}0380{,}6000,$$
$$n_5' = {\cdot}0674{,}0320, \quad n'_p = {\cdot}0351{,}7130,$$
$$[n_6' = {\cdot}0583{,}3164], \quad p = 12.$$

Is this distribution asymptotic at $x = 0$? It is clearly abrupt, but not asymptotic at $x = 12$. We require the mean age of infant deaths and the variability, i.e. the standard deviation of infantile ages at death.

n_6' as found from Table XXXVIII runs as follows:

$$q = 0{\cdot}0, \quad n_6' = {\cdot}0464{,}7275,$$
$$q = 0{\cdot}1, \quad n_6' = {\cdot}0465{,}2959,$$
$$q = 0{\cdot}4, \quad n_6' = {\cdot}0551{,}9489,$$
$$q = 0{\cdot}5, \quad n_6' = {\cdot}0635{,}6643,$$
$$q = 1{\cdot}0, \quad n_6' = {\cdot}2216{,}7041.$$

Our value of n_6' is $\cdot 0583{,}3164$; hence by linear interpolation between $q = 0{\cdot}4$ and $0{\cdot}5$ we have

$$q = \cdot 43747 \quad \text{for} \quad n_6' = \cdot 0583{,}3164.$$

We now require K_1 and K_2 for this value of q from Table XLI (p. 230)

$$q = 0{\cdot}4, \quad K_1 = -47{\cdot}8016{,}2629\,\text{*},$$
$$q = 0{\cdot}5, \quad K_1 = -46{\cdot}6546{,}2486\,;$$

hence for $q = \cdot 43747$, $\quad K_1 = -47{\cdot}3718{,}4485.$

$$q = 0{\cdot}4, \quad K_2 = +37{\cdot}9368{,}8590,$$
$$q = 0{\cdot}5, \quad K_2 = +36{\cdot}1452{,}9770\,;$$

hence for $q = \cdot 43747$, $\quad K_2 = 37{\cdot}2655{,}7780.$

Both these results are by linear interpolation.

We now require the K_1' and K_2' at the abrupt but non-asymptotic terminal. Here we take

$$\left.\begin{aligned} n_1 &= n_{12} = 6{\cdot}94 \\ n_2 &= n_{11} = 7{\cdot}51 \\ n_3 &= n_{10} = 8{\cdot}29 \\ n_4 &= n_9 \ = 8{\cdot}74 \\ n_5 &= n_8 \ = 9{\cdot}30 \end{aligned}\right\} \text{ and we put } q = 1.$$

We work these out from our Table XLI, reversing the signs of K_1 and K_2 to get K_1' and K_2'. We find

$$K_1' = +4{\cdot}0542{,}3379,$$
$$K_2' = -2{\cdot}3180{,}3042.$$

We see from these results that the non-asymptotic abruptness towards the end of the first year of life will raise the mean age at death and lower the variability.

We have now to find ν_1''' and ν_2''' or the raw moments about $x = 1$ of the whole system without the frequencies of the first and last subranges, i.e. $n_1 = 63{\cdot}99$ and $n_p = n_{12} = 6{\cdot}94$. We can arrange this for a continuous process on the machine:

	Frequencies		x		x^2
	22·59	×	0·5	×	0·25
	18·58		1·5		2·25
	15·96		2·5		6·25
	13·30		3·5		12·25
	11·51		4·5		20·25
	10·61		5·5		30·25
	9·30		6·5		42·25
	8·74		7·5		56·25
	8·29		8·5		72·25
	7·51		9·5		90·25
Totals	126·39		503·575		3025·4375
	$= N - n_1 - n_{12}$		$= (N - n_1 - n_{12})\,\nu_1'''$		$= (N - n_1 - n_{12})\,\nu_2'''$

We can now turn to formulae (vi) and insert the above results there in the first two values. Numerically we have

$$197{\cdot}32\mu_1''' = 503{\cdot}575 - 47{\cdot}3718{,}4485 + 4{\cdot}0542{,}3379 + 69{\cdot}4 = 529{\cdot}6573{,}8894.$$

* The reader may be reminded that for K_1 and K_2 the absolute values n_1, n_2, n_3, n_4, n_5 are to be used.

Hence $\mu_1''' = 2{\cdot}684,256.$

Again, $197{\cdot}32\,\mu_2''' = 3025{\cdot}4375 - 10{\cdot}5325 + 37{\cdot}2655,7780 - 2{\cdot}3180,3042 + 81{\cdot}0846,7580 + 694$
$= 3824{\cdot}9372,2318.$

Hence $\mu_2''' = 19{\cdot}384,438.$

Thus $\sigma^2 = \mu_2''' - \mu_1'''^2 = 19{\cdot}384,438 - 7{\cdot}205,230 = 12{\cdot}179,208,$

and $\sigma = 3{\cdot}489,872$ months,

while the Mean $= 1 + \mu_1''' = 3{\cdot}684,256$ months.

Taking the month as 30·4375 days we have

Mean = 112·14 days,

Standard Deviation = 106·22 days.

Now suppose we make no abruptness corrections, nor use Sheppard's correction in calculating the second moment, i.e. use merely raw moments, we find*

Mean = 3·759,224 months = 114·42 days,

Standard Deviation = 3·417,314 months = 104·01 days.

Using merely the Sheppard's correction, which is not legitimate, as the terminals have no high contact, we have

Mean = 114·42 days, and Standard Deviation = 103·64 days.

Thus Sheppard's correction without the abruptness-coefficients changes the raw second moment in the *wrong* direction.

The reader must be warned that the obtaining of a possible value for q does not necessarily prove that the frequency is asymptotic at $x = 0$. When the third and fourth moments are worked out in this case, we find that the theoretical frequency curve is not asymptotic. All we have really achieved is to find an asymptotic curve which gives the first six subranges the same frequencies as the actual data. But the corrected moments are much the same in a case of this type when we apply the non-asymptotic formulae (vii) and (viii) with the use of (xiii) and (xiv). This we will now proceed to do.

We may determine first ν_1' and ν_2' by continuous machining. Thus:

	Frequencies		x		x^2
	63·99	×	0·5	×	0·25
	22·59		1·5		2·25
	18·58		2·5		6·25
	15·96		3·5		12·25
	13·30		4·5		20·25
	11·51		5·5		30·25
	10·61		6·5		42·25
	9·30		7·5		56·25
	8·74		8·5		72·25
	8·29		9·5		90·25
	7·51		10·5		110·25
	6·94		11·5		132·25
Totals	197·32		741·770		5092·7900
			$=197{\cdot}32\,\nu_1'$		$=197{\cdot}32\,\nu_2'$

* See below for ν_1' and ν_2'.

Thus $\nu_1' = 3{\cdot}759{,}224, \quad \nu_2' = 25{\cdot}809{,}801.$

Then from formula (xiii) by continuous process on the machine*:

$$a_1' = -{\cdot}5730{,}1507, \qquad a_2' = {\cdot}7125{,}3970,$$
$$a_3' = -{\cdot}7697{,}52195, \qquad a_4' = {\cdot}5328{,}4008,$$
$$a_5' = -{\cdot}1751{,}9766.$$

In the same way from formula (xiv) we have:

$$b_1' = {\cdot}0357{,}59189, \qquad b_2' = -{\cdot}0048{,}2299,$$
$$b_3' = {\cdot}0138{,}6077, \qquad b_4' = -{\cdot}0126{,}6980,$$
$$b_5' = {\cdot}0049{,}6656.$$

With these values we find:

$$\tfrac{1}{12}\left(a_1' - \tfrac{1}{60}a_3' + \tfrac{1}{2520}a_5'\right) = -{\cdot}0466{,}8795^-,$$
$$\tfrac{1}{12}\left(b_1' - \tfrac{1}{60}b_3' + \tfrac{1}{2520}b_5'\right) = {\cdot}0029{,}6085^-,$$
$$\tfrac{1}{120}\left(a_2' - \tfrac{5}{126}a_4'\right) = {\cdot}0057{,}6163,$$
$$\tfrac{1}{120}\left(b_2' - \tfrac{5}{126}b_4'\right) = -{\cdot}0000{,}3601.$$

Hence by (vii) and (viii) we deduce:

$$\mu_1' = 3{\cdot}759{,}224 - {\cdot}046{,}688 + {\cdot}002{,}9608$$
$$= 3{\cdot}715{,}497,$$
$$\mu_2' = 25{\cdot}809{,}801 - {\cdot}0833{,}3333 - {\cdot}0057{,}6163 - {\cdot}0000{,}3601 + {\cdot}0710{,}6040$$
$$= 25{\cdot}791{,}730,$$
$$\sigma^2 = \mu_2' - \mu_1'^2 = 11{\cdot}986{,}812.$$

Thus Mean $= 3{\cdot}715{,}497$ months $= 113{\cdot}09$ days.

Standard Deviation $= 3{\cdot}462{,}198$ months $= 105{\cdot}38$ days.

We may now put our results together for the guidance of the reader in dealing with similar problems.

Mean and Standard Deviation of Infantile Deaths in Days.

	Raw moments	Sheppard's correction only	Abruptness-correction: Distribution assumed asymptotic	Abruptness-correction: Distribution assumed non-asymptotic	Values found by breaking up data into a number of very small sub-ranges
Mean	114·42	114·42	112·14	113·09	113·07
S. D.	104·01	103·64	106·22	105·38	105·44

It will be clear from these results that the non-asymptotic-correction is better than the asymptotic, but both are better than that obtained by using Sheppard's correction alone, which in this case changes the variability in the wrong direction.

* It is well to add all the positive terms before subtracting the negative ones in machining.

Illustration (ii). Obtain a curve to describe the data represented by the following table*:

	Frequency		Frequency
0—1	4165 (n_1)	9—10	9
1—2	2028 (n_2)	10—11	2
2—3	982 (n_3)	11—12	1
3—4	480 (n_4)	12—13	1
4—5	266 (n_5)	13—14	1
5—6	132 (n_6)	14—15	1
6—7	71		
7—8	36		
8—9	17	Total	8192

The data have clearly high contact at the tail, or all the K''s may be put zero. We first turn to Table XXXVIII to find q at the assumed asymptotic start, and we have from that table

$$\left.\begin{aligned} q &= \cdot 7, & n_6 &= -253\cdot 6 \\ q &= \cdot 9, & n_6 &= +\ \ 34\cdot 8 \\ q &= 1\cdot 0, & n_6 &= +375 \end{aligned}\right\} \text{The real } n_6 = 132.$$

Hence by rough interpolation $q = \cdot 9286$.

We might proceed to interpolate to find the K's but it is really adequate to take $q = \cdot 9$, whence Table XLI gives us

$$K_1 = -2604\cdot 306{,}99, \qquad K_2 = 1682\cdot 917{,}97,$$
$$K_3 = -1267\cdot 010{,}60, \qquad K_4 = 1119\cdot 669{,}46.$$

Taking moments about $x = 1$ as in *Illustration* (i), for all frequencies except the first, we have

$$(N - n_1)\,\nu_1''' = 4027\nu_1''' = 6107\cdot 5, \quad (N - n_1)\,\nu_2''' = 4027\nu_2''' = 17{,}684\cdot 75,$$
$$4027\nu_3''' = 77{,}705\cdot 875, \qquad 4027\nu_4''' = 451{,}458\cdot 6875.$$

By aid of equations (iv), we find

$$\begin{aligned} 8192\mu_1''' &= 3{,}503\cdot 193{,}01, & \text{or} \quad \mu_1''' &= \cdot 427{,}636, \\ 8192\mu_2''' &= 19{,}032\cdot 084{,}64, & \text{or} \quad \mu_2''' &= 2\cdot 323{,}253, \\ 8192\mu_3''' &= 74{,}911\cdot 989{,}40, & \text{or} \quad \mu_3''' &= 9\cdot 144{,}530, \\ 8192\mu_4''' &= 443{,}853\cdot 436{,}13, & \text{or} \quad \mu_4''' &= 54\cdot 181{,}328. \end{aligned}$$

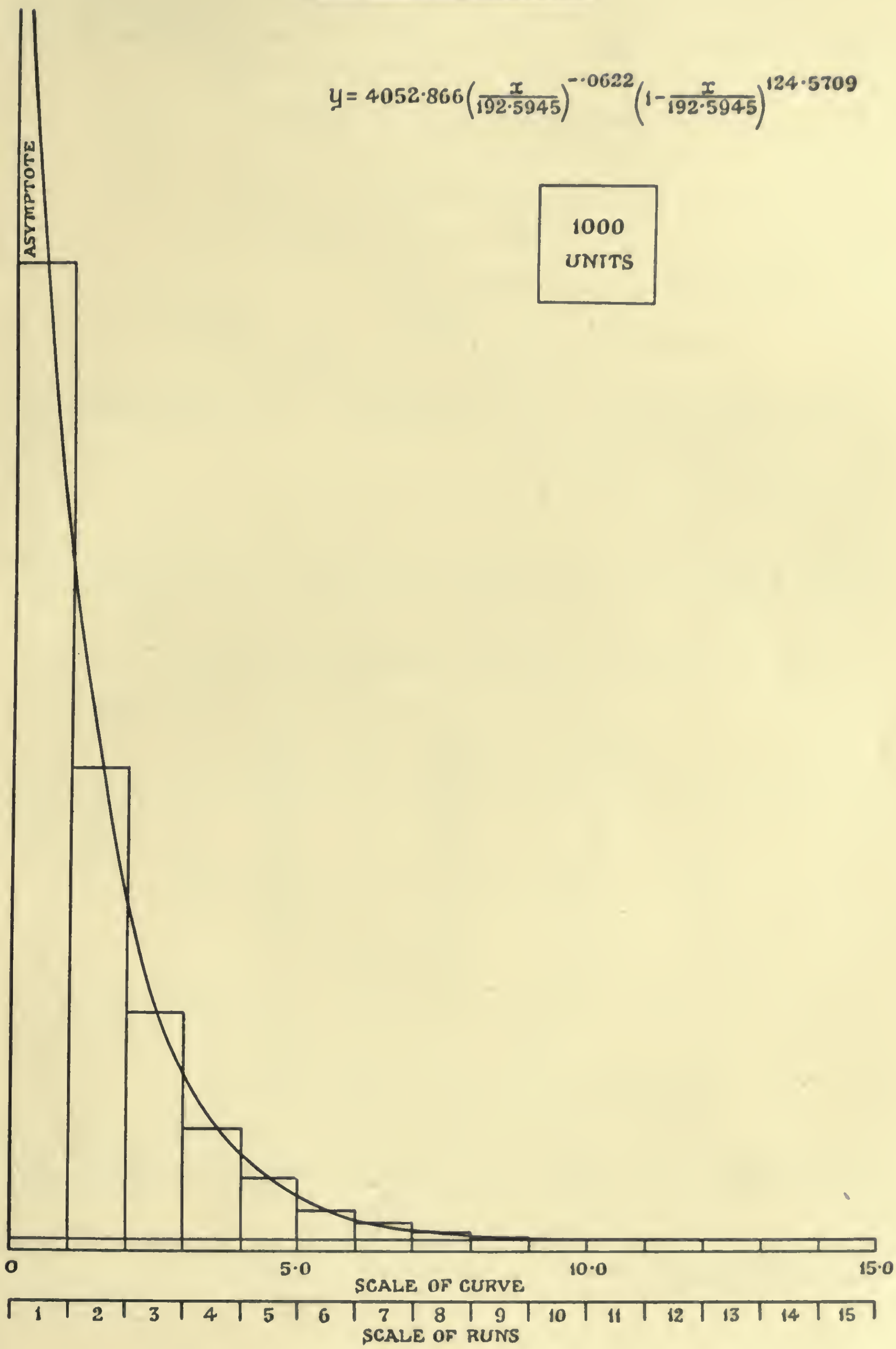
These are the fully corrected moments of the whole system about $x = 1$. Transferring to the mean we obtain

$$\text{Mean} = 1\cdot 427{,}636,$$
$$\mu_2 = 2\cdot 140{,}379, \quad \mu_3 = 6\cdot 320{,}416, \quad \mu_4 = 40\cdot 988{,}041,$$

and therefore $\qquad \beta_1 = 4\cdot 073{,}98 \quad \text{and} \quad \beta_2 = 8\cdot 946{,}97.$

* These data are really discrete, representing runs in experimental coin tossing, but the fitting of a curve is a good illustration of the use of the asymptotic abruptness-coefficients.

Runs in Coin Tossing



An alternative is now open to us: the curve is a J-curve of Pearson Type I, but if we use the first four moments we shall find the asymptote is not exactly at $x=0$, as we have assumed it to be when finding the abruptness-coefficients. We will accordingly neglect μ_4 and fit our curve from the mean, μ_2 and μ_3.

The equation to the curve referred to $x=0$ as origin is

$$y=\frac{N\,\Gamma(m_1+m_2+2)}{b\,\Gamma(m_1+1)\,\Gamma(m_2+2)}\left(\frac{x}{b}\right)^{m_1}\left(1-\frac{x}{b}\right)^{m_2},$$

and we find $\qquad m_1=-\cdot 062{,}235,\quad m_2=124\cdot 570{,}905,$

and $b=192\cdot 594{,}54$, or the equation to the curve is

$$y=4052\cdot 866\left(\frac{x}{192\cdot 5945}\right)^{-\cdot 0622}\left(1-\frac{x}{192\cdot 5945}\right)^{124\cdot 5709}.$$

We find β_2 for this curve $=9\cdot 017{,}46$, instead of the data value $8\cdot 946{,}97$, a difference of little statistical importance.

The graph of the curve with the data as a histogram is on p. cxcix, and it is clear that the fit is good.

If the frequencies be computed by the formula which expands an incomplete B-function in terms of incomplete Γ-functions*, we have the following results:

Observations		Frequency Curve		Contribution to χ^2
4165		4183·5		·082
2028		1982·9		1·026
982		997·6		·244
480		506·2		1·356
266		258·5		·218
132		129·7		·041
71		66·2		·348
36		33·5		·187
17		16·9		·001
9		8·6		·019
2	6	4·2	8·2	·590
1		2·2		
1		⋮		
1		2		
1		⋮		
Totals 8192		8192		$4\cdot 112=\chi^2$

whence by Table XII of Part I, $P=\cdot 94$, indicating a very good graduation of the data.

* See *Tracts for Computers*, No. VII. p. 41. The formula is good when one power is very large as compared with the other.

Illustration (iii). The following data are for the frequencies of different degrees of cloudiness as observed at Greenwich during the years 1890—1900, 1902—1904 for the month of July, there being usually four observations a day.

Degrees of Cloudiness	Frequency	Degrees of Cloudiness	Frequency
10	676	3	68
9	148	2	74
8	90	1	129
7	65	0	320
6	55		
5	45		
4	45	Total	1715

We are dealing with a continuous variate which can only lie between zero, that is entirely clear sky, and 10, entirely overcast sky. But the continuous variate has been grouped in eleven classes. We cannot make the first group extend from 10·5 to 9·5, or the last from $-0·5$ to $+0·5$, for the sky cannot be more than entirely overcast or less than completely clear. We are thus driven to suppose the 10 group to extend from 9·5 to 10 and the 0 group from 0 to 0·5, while any group such as 9 extends through a full unit from 8·5 to 9·5 and so on. Thus our ranges are not all alike, the terminal ranges being $\frac{1}{2}$ unit each and the rest a whole unit each. It is needful therefore in order to apply abruptness-coefficients to break up the frequency on the whole unit subranges into two frequencies on half-unit subranges.

This may be done in the following manner*. Assume

$$Z = N\{1 + x^q(A + Bx + Cx^2 + Dx^3 + Ex^4)\}$$

to give the total frequencies from x to 10 and suppose A, B, C, D and E to be determined in terms of q and the frequencies n_1', n_2', n_3', n_4' and n_5'. The resulting values are

$$\left.\begin{aligned}
384A &= \frac{-105(n_1'+n_2'+\ldots+n_5')}{(4·5)^q} + \frac{540(n_1'+n_2'+\ldots+n_4')}{(3·5)^q}\\
&\qquad - \frac{1134(n_1'+n_2'+n_3')}{(2·5)^q} + \frac{1260(n_1'+n_2')}{(1·5)^q} - \frac{945n_1'}{(·5)^q},\\
24B &= \frac{22(n_1'+n_2'+\ldots+n_5')}{(4·5)^q} - \frac{111(n_1'+n_2'+\ldots+n_4')}{(3·5)^q}\\
&\qquad + \frac{225(n_1'+n_2'+n_3')}{(2·5)^q} - \frac{229(n_1'+n_2')}{(1·5)^q} + \frac{93n_1'}{(·5)^q},\\
48C &= \frac{-43(n_1'+n_2'+\ldots+n_5')}{(4·5)^q} + \frac{208(n_1'+n_2'+\ldots+n_4')}{(3·5)^q}\\
&\qquad - \frac{390(n_1'+n_2'+n_3')}{(2·5)^q} + \frac{328(n_1'+n_2')}{(1·5)^q} - \frac{103n_1'}{(·5)^q},
\end{aligned}\right\} \text{(xv)},$$

* Gertrude E. Pearse, *Biometrika*, Vol. xx^A. pp. 339—346.

$$\left.\begin{aligned}
6D &= \frac{2(n_1'+n_2'+\ldots+n_5')}{(4{\cdot}5)^q} - \frac{9(n_1'+n_2'+\ldots+n_4')}{(3{\cdot}5)^q} \\
&\quad + \frac{15(n_1'+n_2'+n_3')}{(2{\cdot}5)^q} - \frac{11(n_1'+n_2')}{(1{\cdot}5)^q} + \frac{3n_1'}{({\cdot}5)^q}, \\
24E &= \frac{-(n_1'+n_2'+\ldots+n_5')}{(4{\cdot}5)^q} + \frac{4(n_1'+n_2'+\ldots+n_4')}{(3{\cdot}5)^q} \\
&\quad - \frac{6(n_1'+n_2'+n_3')}{(2{\cdot}5)^q} + \frac{4(n_1'+n_2')}{(1{\cdot}5)^q} - \frac{n_1'}{({\cdot}5)^q},
\end{aligned}\right\} \text{(xv) continued}$$

and to determine q from n_6'

$$\frac{-192(n_1'+n_2'+\ldots+n_6')}{11^q} = \frac{-3622(n_1'+n_2'+\ldots+n_5')}{9^q} + \frac{13899(n_1'+n_2'+\ldots+n_4')}{7^q}$$
$$- \frac{21885(n_1'+n_2'+n_3')}{5^q} + \frac{15601(n_1'+n_2')}{3^q} - 4185n_1' \quad \ldots\ldots\text{(xvi)}.$$

In this particular case we have, from (xvi), on substituting for n_1', n_2', n_3', n_4' and n_5' at the first terminal

$$n_6 = 11^q\left\{\frac{-1034}{11^q} + \frac{19505{\cdot}979}{9^q} - \frac{70870{\cdot}422}{7^q} + \frac{104181{\cdot}719}{5^q} - \frac{66954{\cdot}292}{3^q} + 14734{\cdot}687\right\}.$$

We find the following values:

$$\begin{array}{llllll} q = & 0, & {\cdot}08, & {\cdot}10, & {\cdot}12, & 1{\cdot}00, \\ n_6 = & -436{\cdot}33, & -165{\cdot}10, & -67{\cdot}75^-, & +43{\cdot}52, & +57221{\cdot}11. \end{array}$$

Therefore $q = {\cdot}12$ is the best value for q.

Substituting this value for q we have

$$NA = -702{\cdot}128{,}820, \quad NB = -70{\cdot}292{,}106, \quad NC = 10{\cdot}746{,}671,$$
$$ND = -{\cdot}315{,}428, \quad NE = -{\cdot}082{,}135^-.$$

Hence our auxiliary curve at the first terminal is

$$Z = 1715 + x^{\cdot 12}(-702{\cdot}128{,}820 - 70{\cdot}292{,}106x$$
$$+ 10{\cdot}746{,}671x^2 - {\cdot}315{,}428x^3 - {\cdot}082{,}135x^4).$$

We now deduce from this curve by putting x in succession 0, 0·5, 1, 1·5, ... the frequencies on the half-unit subranges up to and including the frequency 45 at cloudiness 5.

In precisely the same way we deduce from equations like (xv) and (xvi) an auxiliary curve at the other terminal of the distribution. There we find $q = {\cdot}44$, and the following table for cloudiness in twenty half-units arises:

Cloudiness Range	Working Unit	Frequency	Cloudiness Range	Working Unit	Frequency
10·0—9·5	0—1	676·0	5·0—4·5	10—11	22·5
9·5—9·0	1—2	86·1	4·5—4·0	11—12	22·5
9·0—8·5	2—3	61·9	4·0—3·5	12—13	22·5
8·5—8·0	3—4	49·3	3·5—3·0	13—14	33·1
8·0—7·5	4—5	40·7	3·0—2·5	14—15	34·9
7·5—7·0	5—6	34·6	2·5—2·0	15—16	35·5
7·0—6·5	6—7	30·4	2·0—1·5	16—17	38·5
6·5—6·0	7—8	27·9	1·5—1·0	17—18	48·9
6·0—5·5	8—9	27·1	1·0—0·5	18—19	80·1
5·5—5·0	9—10	22·5	0·5—0·0	19—20	320·0

Here the combined frequency on every pair of half-unit ranges, other than the first and last, is identical with that of the original data, and the first and last sub-ranges have also the frequencies of the data.

To this table of revised data we can apply directly the method of the present section. The q's at the two terminals will of course be the same, i.e. ·12 and ·44, but it will be quite adequate to take them ·1 and ·4. We have

$$n_1' = 676{\cdot}0/1715, \quad n_2' = 86{\cdot}1/1715, \ldots \quad n_5' = 40{\cdot}7/1715,$$
$$n'_p = 320{\cdot}0/1715, \quad n'_{p-1} = 80{\cdot}1/1715, \ldots \; n'_{p-4} = 35{\cdot}5/1715,$$

whence we deduce from Table XLI

$$K_1 = -\,604{\cdot}161{,}373, \quad K_1' = +\,242{\cdot}593{,}046,$$
$$K_2 = +\,559{\cdot}648{,}063, \quad K_2' = -\,195{\cdot}592{,}259,$$
$$K_3 = -\,535{\cdot}911{,}377, \quad K_3' = +\,171{\cdot}309{,}304,$$
$$K_4 = +\,523{\cdot}571{,}319, \quad K_4' = -\,159{\cdot}045{,}916.$$

We now take as before the moments of $N - n_1 - n_p = 719$ about $x = 1$ and find in the working units

$$719\nu_1''' = 6214{\cdot}1, \qquad 719\nu_2''' = 80{,}492{\cdot}95,$$
$$719\nu_3''' = 1{,}174{,}477{\cdot}325, \quad 719\nu_4''' = 18{,}049{,}426{\cdot}3375.$$

Further $p - 2 = 18$, whence by formulae (vi)

$$\mu_1''' = 6{\cdot}771{,}155, \qquad \mu_2''' = 112{\cdot}659{,}148,$$
$$\mu_3''' = 1903{\cdot}228{,}954, \quad \mu_4''' = 33{,}173{\cdot}876{,}879,$$

are the moment coefficients about $x = 1$.

Transferring to the mean $\bar{x} = 1 + \mu_1''' = 7{\cdot}771{,}155$ we have

$$\mu_2 = 66{\cdot}810{,}601, \quad \mu_3 = 235{\cdot}626{,}406, \quad \mu_4 = 6310{\cdot}921{,}674,$$

yielding $\beta_1 = {\cdot}186{,}171, \quad \beta_2 = 1{\cdot}413{,}846,$

corresponding to a U-curve of Pearson Type I.

In order to make the curve fit the range at 20, we must neglect β_2, and fit only by the range, ($b = 20$), β_1, μ_2 and the mean.

With the usual notation, if the curve be

$$y = y_0 \left(1 + \frac{x}{a_1}\right)^{m_1} \left(1 - \frac{x}{a_2}\right)^{m_2}$$

with origin *at the mode,* we have

$$r = m_1 + m_2 + 2 = m_1' + m_2',$$

$$\epsilon = m_1' m_2', \text{ and } m_1' = m_1 + 1, \quad m_2' = m_2 + 1,$$

and $$b_2 = \frac{\mu_2 r^2 (r+1)}{\epsilon}, \text{ but } \epsilon = \frac{r^2 (r+1)}{4(r+1) + \frac{1}{4}\beta_1 (r+2)^2}.$$

Thus $$b^2 = \mu_2 \{4(r+1) + \tfrac{1}{4}\beta_1 (r+2)^2\},$$

and $$\tfrac{1}{4}\beta_1 (r+2)^2 + 4(r+2) - \left(4 + \frac{b^2}{\mu^2}\right) = 0^*.$$

But $$\beta_1 = \cdot 186{,}171, \quad \mu_2 = 66\cdot 810{,}601,$$

and accordingly we have the quadratic for $r+2$,

$$\cdot 0465{,}4275 (r+2)^2 + 4(r+2) - 9\cdot 987{,}074 = 0,$$

whence $$r + 2 = 2\cdot 428{,}165,$$

and $$r = \cdot 428{,}165.$$

But $$\epsilon = \frac{\mu_2 r^2 (r+1)}{b^2} = \cdot 043{,}731.$$

Hence to find m_1' and m_2' we have

$$m'^2 = \cdot 428{,}165 m' + \cdot 043{,}731,$$

yielding $$m_1' = \cdot 168{,}250, \quad m_2' = \cdot 259{,}914;$$

and accordingly $$m_1 = -\cdot 831{,}750 \text{ and } m_2 = -\cdot 740{,}086,$$

$$a_1 = \frac{m_1}{m_1 + m_2} b = 10\cdot 583{,}167, \quad a_2 = \frac{m_2}{m_1 + m_2} b = 9\cdot 416{,}833.$$

Thus the required curve is

$$y = 27\cdot 437{,}08 \left(1 + \frac{x}{10\cdot 583{,}167}\right)^{-\cdot 831{,}750} \left(1 - \frac{x}{9\cdot 416{,}833}\right)^{-\cdot 740{,}086},$$

y_0 being determined in the usual way from the complete B-function.

Now the value of r, if found from β_1 and β_2, is

$$= 6(\beta_2 - \beta_1 - 1)/(3\beta_1 - 2\beta_2 + 6),$$

but by compelling the curve to have the range 20, we have found $r = \cdot 428{,}165$, instead of $\cdot 366{,}152$. In doing this we neglected the value of β_2. If we find β_2 from the above equation, substituting the value $r = \cdot 428{,}165$ and $\beta_1 = \cdot 186{,}171$, we have $\beta_2 = 1\cdot 447{,}590$, while the observation value is $1\cdot 413{,}846$. This alteration is not statistically of any great importance.

But we have only made the range = 20, we have not made its terminal start at

* In *Biometrika*, Vol. xx[A]. pp. 342—343, the equations for r at foot of first and top of second page are erroneous, but the numerical value of r is correct.

$x=0$. We must see how nearly it starts from that point. The distance between the mean and the mode

$$=\frac{\sigma\sqrt{\beta_1}(\beta_2+3)}{2(5\beta_2-6\beta_1-9)},$$

and $\sigma=\sqrt{\mu_2}=8{\cdot}173{,}775$, $\sqrt{\beta_1}={\cdot}431{,}475$ and $\beta_2=1{\cdot}447{,}590$ for the above curve. Hence it follows that the required distance $=2{\cdot}724{,}079$, or the mode is $10{\cdot}495{,}234$, but the start of the curve is at a distance $a_1=10{\cdot}583{,}167$, before the mode, and accordingly the curve starts at $-{\cdot}087{,}933$ from $x=0$ and, its range being 20, ends at $19{\cdot}912{,}067$. Thus we have given the range its correct value, 20, and β_2 is approximately correct, but we have the range shifted less than 0·44 % of its value to the left. This again is too slight a change to be of real importance, and we may assume the above curve to give the distribution of cloudiness from 10 to 0 in half-units. The diagram on p. ccvi gives the graph of the curve compared with the histogram of frequencies. The areas of the curve were then calculated from the formula

$$\text{area from } x=0 \text{ to } x=x=185{\cdot}080\left(\frac{x}{b}\right)^{1+m_1}$$

$$\times\left[\frac{1}{1+m_1}-\frac{m_2}{2+m_1}\frac{x}{b}+\frac{m_2(m_2-1)}{1.2(3+m_1)}\left(\frac{x}{b}\right)^2-\frac{m_2(m_2-1)(m_2-2)}{1.2.3(4+m_1)}\left(\frac{x}{b}\right)^3+\dots\right],$$

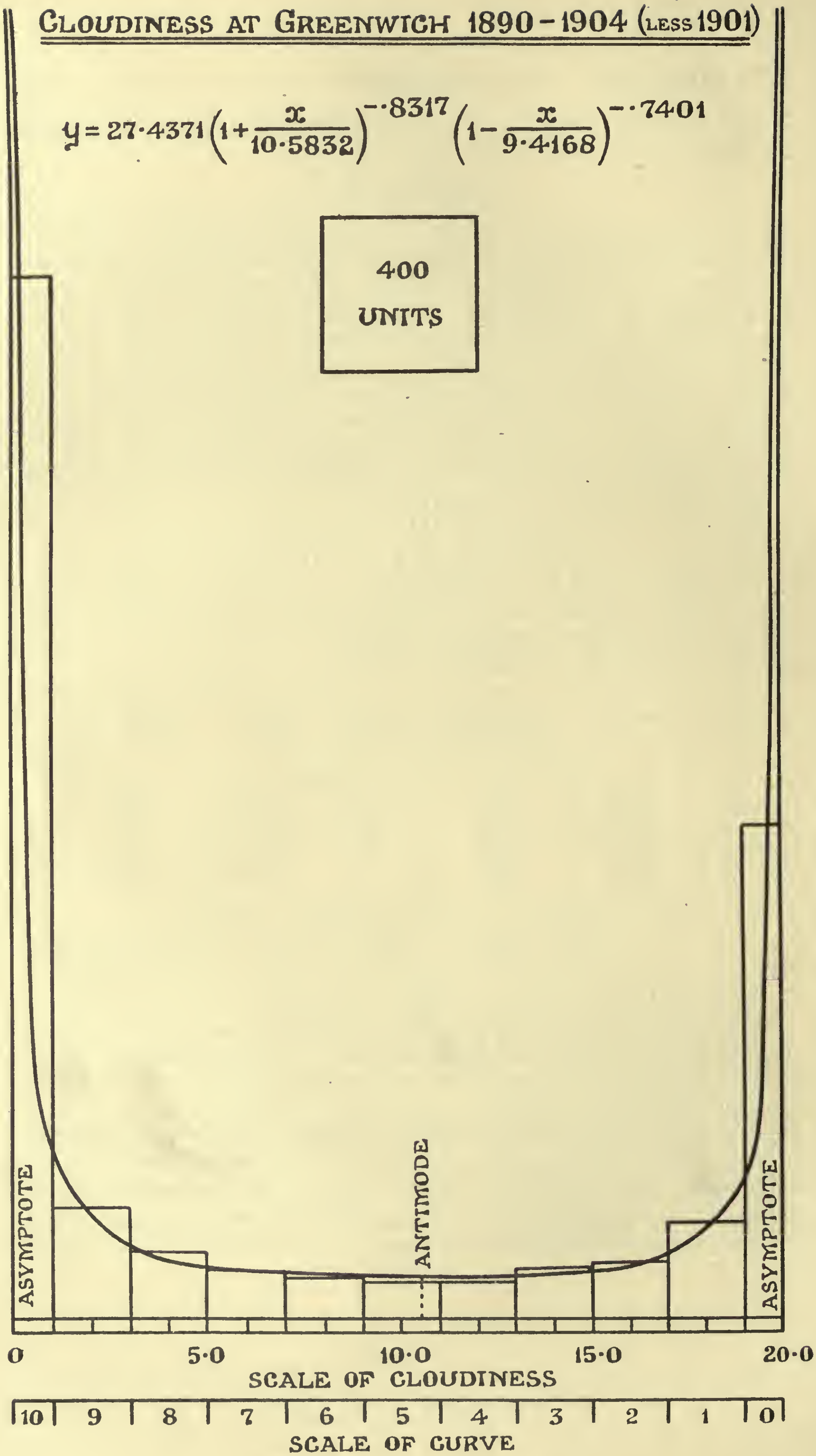
with a similar expression when x is measured from the other end of the curve. The following table gives corresponding values of the observed frequencies and the calculated areas for the eleven original subranges.

True Area	Calculated Area	$\frac{(\text{Difference})^2}{\text{Calculated Value}}$	True Area	Calculated Area	$\frac{(\text{Difference})^2}{\text{Calculated Value}}$
676	678·0	·0059	45	56·0	2·1607
148	139·6	·5298	68	61·4	·7094
90	83·2	·5558	74	75·1	·0161
65	65·5	·0038	129	121·5	·4630
55	57·8	·1356	320	321·7	·0090
45	55·2	1·8848			
		Totals	1715	1715	$\chi^2=6{\cdot}4739$, $n'=11$

Testing for Goodness of Fit, $P={\cdot}773$.

It may be noted here, that if we proceed in exactly the same way with a fixed range of 10, but use the uncorrected moments, we obtain for Goodness of Fit, $P={\cdot}005$, a very poor result, which demonstrates how important the abruptness corrections are in such a case.

The above illustrations will indicate how the Tables provided make it possible to determine the corrections for the moments of J- or U-shaped curves. The real difficulties of the subject lie in the determination of the true position of the asymptotes, and in adjusting, as is often necessary, the observed data to a form which is theoretically feasible to handle.



CLOUDINESS AT GREENWICH 1890 - 1904 (LESS 1901)
$$y = 27{\cdot}4371\left(1+\frac{x}{10{\cdot}5832}\right)^{-{\cdot}8317}\left(1-\frac{x}{9{\cdot}4168}\right)^{-{\cdot}7401}$$
400 UNITS
ASYMPTOTE
ANTIMODE
ASYMPTOTE
0
5·0
10·0
15·0
20·0
SCALE OF CLOUDINESS
10 9 8 7 6 5 4 3 2 1 0
SCALE OF CURVE

Table XLII.

The Occipital Index (*Oc. I*) *determined from the Occipital Arc* (S_3) *and the Occipital Chord* (S_3'). (*Biometrika*, Vol. XIII. p. 261, M. L. Tildesley.)

The Occipital Index is a measure of the cerebellar development in individual or race. The arc S_3 is measured on the skull from lambda to opisthion with the tape, and the chord between the same two points with the callipers. The formula for the Occipital Index is

$$Oc.\ I = 100\frac{S_3}{S_3'}\sqrt{\frac{S_3}{24\,(S_3 - S_3')}},$$

$$= \frac{100R^{\frac{3}{2}}}{\sqrt{24\,(R-1)}}.$$

The *Oc. I* is tabled for $R = S_3/S_3'$ from 1·050 to 1·500. For craniometric purposes it is rarely needful to interpolate into the Table.

Illustration. For two crania we have respectively

$$S_3 = 114{\cdot}7,\quad S_3' = 98{\cdot}6,\quad \text{and}\quad S_3 = 110{\cdot}0,\quad S_3' = 95{\cdot}4.$$

Hence: $S_3/S_3' = 1{\cdot}163$ for the first, and $= 1{\cdot}153$ for the second.

Accordingly the occipital indices by the Table are 63·41 and 64·61; the occipital is thus flatter in the second than in the first skull. They correspond to the mean crania of men and women of the same race.

Table XLIII.

Coefficients for Sheppard's Quadrature Formula (*c*). (*Biometrika*, Vol. I. p. 276, and P. F. Everitt, *ibid.* Vol. XII. pp. 282—283.)

This particular quadrature formula has been found very satisfactory in a number of cases, where the curve represents a continuous mathematical function. The formula supposes the area to be divided into p trapezettes on bases of equal size h. Then A_C, the chordal area, is given by

$$A_C = h\left(\tfrac{1}{2}z_0 + z_1 + z_2 + \ldots + z_{p-1} + \tfrac{1}{2}z_p\right),$$

where $z_0, z_1, z_2, \ldots z_{p-1}, z_p$ are the $p+1$ equally spaced ordinates forming the sides of the trapezettes. The required area of the curve is then

$$\begin{aligned}\text{Area} = A_C &+ C_1\{(z_1 - z_0) - (z_p - z_{p-1})\}\,h\\ &- C_2\{(z_2 - z_1) - (z_{p-1} - z_{p-2})\}\,h\\ &+ C_3\{(z_3 - z_2) - (z_{p-2} - z_{p-3})\}\,h.\end{aligned}$$

Here C_1, C_2, C_3 are certain functions of p provided in Table XLIII. They are selected to give the best result, provided we stop at third terminal differences.

Illustration (i). Given the following 21 ordinates spaced at 0·05, find the area of the corresponding curve.

$z_0 =$ ·394,4793	·352,0653	·277,9849
$z_1 =$ ·391,0427	·342,9439	·266,0852
$z_2 =$ ·386,6681	·333,2246	·254,0591
$z_3 =$ ·381,3878	·322,9724	$z_{p-3} =$ ·241,9707
·375,2403	·312,2539	$z_{p-2} =$ ·229,8821
·368,2701	·301,1374	$z_{p-1} =$ ·217,8522
·360,5270	·289,6916	$z_p =$ ·205,9363

Here

$$z_1 - z_0 - (z_p - z_{p-1}) = \cdot 008{,}4793, \quad z_2 - z_1 - (z_{p-1} - z_{p-2}) = \cdot 007{,}6553,$$
$$z_3 - z_2 - (z_{p-2} - z_{p-3}) = \cdot 006{,}8083,$$

and $$A_C = \cdot 315{,}273{,}355.$$

From the Table for $p = 20$ trapezettes

$$C_1 = \cdot 163{,}7782, \quad C_2 = \cdot 123{,}0418, \quad C_3 = \cdot 043{,}1061.$$

Hence

A_C	·315,273,355
$+ C_1 \{(z_1 - z_0) - (z_p - z_{p-1})\} h$	+ ·000,069,436
$- C_2 \{(z_2 - z_1) - (z_{p-1} - z_{p-2})\} h$	− ·000,047,096
$+ C_3 \{(z_3 - z_2) - (z_{p-2} - z_{p-3})\} h$	+ ·000,014,674
A	= ·315,310,369

or, to seven figures = ·315,3104, which is the correct value of the area required to those figures.

Illustration (ii). Let us take alternate ordinates of the above example. Our scheme is now

$z_0 =$ ·394,4793	·342,9439	$z_{p-3} =$ ·277,9849
$z_1 =$ ·386,6681	·322,9724	$z_{p-2} =$ ·254,0591
$z_2 =$ ·375,2403	·301,1374	$z_{p-1} =$ ·229,8821
$z_3 =$ ·360,5270		$z_p =$ ·205,9363

and $$h = 0{\cdot}1,$$

$$C_1 = \cdot 179{,}1068, \quad C_2 = \cdot 172{,}2411, \quad C_3 = \cdot 085{,}4119,$$

whence we have

A_C	·315,162,300
$+ C_1 \{(z_1 - z_0) - (z_p - z_{p-1})\} h$	+ ·000,288,982
$- C_2 \{(z_2 - z_1) - (z_{p-1} - z_{p-2})\} h$	− ·000,219,594
$+ C_3 \{(z_3 - z_2) - (z_{p-2} - z_{p-3})\} h$	+ ·000,078,686
A	= ·315,310,374

or $A =$ ·315,310,374, only a difference in the ninth figure from the previous result. Thus 10 trapezettes would have given as good a result as the 20 originally taken.

TABLE XLIV.

Table of Functions to test Geometrical Decadence in the case of the Variate Difference Method. (Pearson, Elderton and Henderson, *Biometrika*, Vol. XIV. pp. 294—297, 310.)

We suppose X_p and Y_p to be the deviations of two variates, each from their own secular trends, and we desire to find r_{XY}, the correlation of X with Y. The subscript p does not denote that X and Y are taken at the *same time*,—actually there might be a lag if p denotes time; it marks that X and Y are the *corresponding* values we wish to discuss.

There are three kinds of correlations which may arise among these fluctuations from the secular trends:

(*a*) X_p and $X_{p\pm\tau}$ may be correlated, $\rho'_{\pm\tau}$.

(*b*) Y_p and $Y_{p\pm\tau}$ may be correlated, $\rho''_{\pm\tau}$.

(*c*) X_p and $Y_{p\pm\tau}$ may be correlated, $\rho_{\pm\tau}$.

Now let $\Delta^n X_p$ and $\Delta^n Y_p$ denote the nth differences of X_p and Y_p respectively, and let curled brackets { } denote that the mean values of the whole series of observed X_p, Y_p's have been taken. Then the following results may be deduced from the finite difference values of $\Delta^n X_p$, $\Delta^n Y_p$*:

$$\frac{\{(\Delta^n X_p)^2\}}{\sigma^2_X} = \frac{(2n)!}{n!\,n!}\Big((-1)^n \frac{n!\,n!}{(2n)!}\rho'_{-n} + \dots + \frac{n(n-1)}{(n+1)(n+2)}\rho'_{-2} - \frac{n}{n+1}\rho'_{-1}$$
$$+ 1 - \frac{n}{n+1}\rho_1' + \frac{n(n-1)}{(n+1)(n+2)}\rho_2' - \dots (-1)^n \frac{n!\,n!}{(2n)!}\rho_n'\Big) \quad \text{.........(i)},$$

$$\frac{\{(\Delta^n Y_p)^2\}}{\sigma^2_Y} = \frac{(2n)!}{n!\,n!}\Big((-1)^n \frac{n!\,n!}{(2n)!}\rho''_{-n} + \dots + \frac{n(n-1)}{(n+1)(n+2)}\rho''_{-2} - \frac{n}{n+1}\rho''_{-1}$$
$$+ 1 - \frac{n}{n+1}\rho_1'' + \frac{n(n-1)}{(n+1)(n+2)}\rho_2'' - \dots (-1)^n \frac{n!\,n!}{(2n)!}\rho_n''\Big) \quad \text{......(ii)},$$

$$\frac{\{\Delta^n X_p \Delta^n Y_p\}}{\sigma_X \sigma_Y} = \frac{(2n)!}{n!\,n!}\Big((-1)^n \frac{n!\,n!}{(2n)!}\rho_{-n} + \dots + \frac{n(n-1)}{(n+1)(n+2)}\rho_{-2} - \frac{n}{n+1}\rho_{-1}$$
$$+ \rho_0 - \frac{n}{n+1}\rho_1 + \frac{n(n-1)}{(n+1)(n+2)}\rho_2 - \dots (-1)^n \frac{n!\,n!}{(2n)!}\rho_n\Big) \quad \text{.........(iii)}.$$

Now it is clear that if all the correlations of X_p and $X_{p\pm\tau}$, and of Y_p and $Y_{p\pm\tau}$, were zero, and X_p correlated only with Y_p and not with $Y_{p\pm\tau}$, then we should have

$$\rho_0 = \frac{\{\Delta^n X_p \Delta^n Y_p\}}{\sqrt{\{(\Delta^n X_p)^2\}\,\{(\Delta^n Y_p)^2\}}},$$

and thus we should obtain $\rho_0 = r_{XY}$, the correlation of corresponding fluctuations from the secular trends of X_p and Y_p. This was "Student's" original version of the Variate Difference Method. It assumed that a fluctuation had no association with adjacent fluctuations, but solely with the corresponding fluctuation of the

* E. S. Pearson, *Biometrika*, Vol. XIV. pp. 37—39.

second variate. While a whole series of equations like (i)—(iii) can be written down by varying n, and making p differ for X and Y, they are of small service without any further hypothesis, because n is in practice limited to a relatively small number. *A priori* the most reasonable hypothesis appears to be that ρ_{-s}, ρ_{+s}, ρ'_{-s}, ρ'_{+s}, ρ''_{-s}, ρ''_{+s} all rapidly decrease as s increases. An additional hypothesis, which deserves in the first place consideration, is that the decreases in the three series follow geometrical progressions, i.e.

$$\rho_s = \epsilon^s \rho_0, \quad \rho_s' = \epsilon'^s, \quad \rho_s'' = \epsilon''^s.$$

Let us denote by $\phi(n, \epsilon)$ the series

$$(-1)^n \frac{n!\,n!}{(2n)!} \epsilon^n + \dots + \frac{n(n-1)}{(n+1)(n+2)} \epsilon^2 - \frac{n}{n+1} \epsilon + 1.$$

Then we have

$$\frac{\sigma^2_{\Delta^{n+1}X}}{\sigma^2_{\Delta^n X}} = \frac{\{(\Delta^{n+1}X_p)^2\}}{\{(\Delta^n X_p)^2\}} = \left(4 - \frac{2}{n+1}\right) \frac{2\phi(n+1, \epsilon') - 1}{2\phi(n, \epsilon') - 1} \quad \text{.........(iv)},$$

$$\frac{\sigma^2_{\Delta^{n+1}Y}}{\sigma^2_{\Delta^n Y}} = \frac{\{(\Delta^{n+1}Y_p)^2\}}{\{(\Delta^n Y_p)^2\}} = \left(4 - \frac{2}{n+1}\right) \frac{2\phi(n+1, \epsilon'') - 1}{2\phi(n, \epsilon'') - 1} \quad \text{.........(v)},$$

$$\frac{r_{\Delta^{n+1}X\Delta^{n+1}Y} \,.\, \sigma_{\Delta^{n+1}X}\sigma_{\Delta^{n+1}Y}}{r_{\Delta^n X\Delta^n Y} \,.\, \sigma_{\Delta^n X}\sigma_{\Delta^n Y}} = \frac{\{\Delta^{n+1}X_p \Delta^{n+1}Y_p\}}{\{\Delta^n X_p \Delta^n Y_p\}} = \left(4 - \frac{2}{n+1}\right) \frac{2\phi(n+1, \epsilon) - 1}{2\phi(n, \epsilon) - 1} \quad \text{......(vi)}.$$

Now if x_p, y_p be the original variates including the secular trend, and we suppose that trend to be parabolic in character, i.e.

$$x_p = X_p + a_0 + a_1 t + a_2 t^2 + \dots + a_s t^s,$$
$$y_p = Y_p + b_0 + b_1 t + b_2 t^2 + \dots + b_{s'} t^{s'},$$

then $\Delta^n x_p = \Delta^n X_p$, $\Delta^n y_p = \Delta^n Y_p$, if n be greater than s and s' *. Accordingly the left-hand sides of (iv) to (vi) will be known if we difference the observed variates and form the mean squares and mean product.

By interpolation into Table XLIV which gives

$$\left(4 - \frac{2}{n+1}\right) \left(\frac{2\phi(n+1, \epsilon) - 1}{2\phi(n, \epsilon) - 1}\right)$$

in heavy type, we can determine ϵ, ϵ' and ϵ''.

We then have

$$r_{XY} = r_{\Delta^n x_p \Delta^n y_p} \times \frac{\sqrt{2\phi(n, \epsilon') - 1}\,\sqrt{2\phi(n, \epsilon'') - 1}}{2\phi(n, \epsilon) - 1} \quad \text{............(vii)},$$

to find the correlation of X_p and Y_p, from the function $2\phi(n, \epsilon) - 1$ with the appropriate values of ϵ, ϵ', ϵ'', as tabled in ordinary type in Table XLIV.

Of course such values of ϵ as are provided by the Table may represent only roughly the real law of decadence, and their applicability should in every case be interpreted with special regard to the data under investigation.

* In practice it is easy to take the n different for the X and for the Y, if desirable, but a modification of the function which represents $\{\Delta^n X_s \Delta^n Y_s\}$ in the present table is then required.

Two points may be noted in connection with the Table:

(*a*) The heavy type function is always greater than $4 - \frac{2}{n+1}$; it is therefore idle to seek for values of ϵ, ϵ', ϵ'' unless the ratios on the left of equations (iv), (v) and (vi) are greater than $4 - \frac{2}{n+1}$. If one or more of them be less than this value, either we have not taken high enough differences, or the X_p, Y_p's in regard to their intercorrelations do not even approximate to a simple law of geometrical decadence.

(*b*) It may also be that the ratio of the second moments or the product-moments of successive differences lies outside the possible values of the ϵ-functions, and again a geometrical decadence of the X_p and Y_p correlation cannot hold even approximately.

Illustration (i). In dealing with Italian Economic Indices*, only those for *Gross Receipts of Railways* (Rail), *Importation of Coal* (Coal) and *Return of Imported Coffee* (Coffee), provide values of $\sigma^2_{\Delta^6 x}/\sigma^2_{\Delta^5 x}$ which exceed $\left(4 - \frac{2}{n+1}\right)$, or since $n = 5$, exceed 3·667. The values of these ratios are: Rail, 3·711; Coal, 3·682 and Coffee, 3·791†. Looking out these values in the column marked $n = 5$ in the Table we obtain by rough linear interpolation

$$\text{Rail, } \epsilon_1' = -\cdot 2135\,; \quad \text{Coal, } \epsilon_2' = -\cdot 0809\,; \quad \text{Coffee, } \epsilon_3' = -\cdot 4941.$$

We see accordingly that there is a difference between the second and the first and third indices. In Rail and Coffee a rise in the index deviation above the secular value in one year is correlated *negatively* with the index deviation in the following year. In the case of Coal a rise in the index deviation above the secular value in one year is also correlated *negatively* but hardly significantly with that of the following year. In other words if more Coal in excess of the secular value be imported in one year, that excess will hardly be associated with a defect in the following year. An immediate balancing, or see-saw effect, is sensible in Railway Receipts and in Imports of Coffee, where the swing above the secular value is sufficient to give a significant negative value on the average to the correlation between successive years.

We now determine from these values of ϵ' the corresponding values of the small type function; they are for

Rail, 1·404,322; Coal, 1·142,834; Coffee, 2·104,922.

But these will be of no service unless the ratios of difference products are consistent with geometrical decadence.

We should accordingly find the ratios

$$\frac{\{\Delta^6 X_p \Delta^6 Y_p\}}{\{\Delta^5 X_p \Delta^5 Y_p\}} = \frac{r_{\Delta^6 X_p \Delta^6 Y_p}}{r_{\Delta^5 X_p \Delta^5 Y_p}} \frac{\sigma_{\Delta^6 X_p \Delta^6 Y_p}}{\sigma_{\Delta^5 X_p \Delta^5 Y_p}}$$

* See G. Mortara, *Giornale degli Economisti*, Feb. 1914, and for the computations of the constants cited, *Biometrika*, Vol. x. pp. 346—349.

† See *Biometrika*, Vol. x. p. 346.

for each pair of cases *before* determining the small type functions. Now for

	Rail and Coal	Rail and Coffee	Coal and Coffee
$r_{\Delta^6 X_p \Delta^6 Y_p} =$	$+\cdot 383 \pm \cdot 214,$	$-\cdot 204 \pm \cdot 240,$	$+\cdot 152 \pm \cdot 245,$
$r_{\Delta^5 X_p \Delta^5 Y_p} =$	$+\cdot 402 \pm \cdot 197,$	$-\cdot 139 \pm \cdot 232,$	$+\cdot 163 \pm \cdot 230.$

Most of these correlations do not differ significantly from zero, but retaining them for the purposes of illustration we shall need

	Rail	Coal	Coffee
$\dfrac{\sigma_{\Delta^6 X_p}}{\sigma_{\Delta^5 X_p}} =$	$\dfrac{28\cdot 84}{14\cdot 97}$,	$\dfrac{120\cdot 50}{62\cdot 80}$,	$\dfrac{59\cdot 52}{30\cdot 57}$,
	$=$	$=$	$=$
	$1\cdot 92652,$	$1\cdot 91879,$	$1\cdot 94701.$

From these ratios and from the ratios of the corresponding correlation coefficients given above we deduce

	Rail and Coal	Rail and Coffee	Coal and Coffee
$\dfrac{\{\Delta^6 X_p \Delta^6 Y_p\}}{\{\Delta^5 X_p \Delta^5 Y_p\}} =$	$3\cdot 522,$	$5\cdot 504,$	$3\cdot 484.$

Two of these values lie below, one above the range of values in Table XLIV for the column $n = 5$. It is therefore not possible to express the relationship, if there be any, in these cases between X_p and $Y_{p\pm s}$ by a geometrical decadence. An examination of the correlations $r_{\Delta^6 X_p \Delta^5 Y_p}$ and $r_{\Delta^5 X_p \Delta^6 Y_p}$ shows that, having regard to their probable errors, they are wholly unreliable in at least four out of the six cases. Twenty-eight individual indices for each variate are far from adequate when we must proceed to sixth order differences before the constants approach stability.

All we are justified in concluding from the above data is that while geometrical decadence may be approximately true for the Rail and Coffee Indices, and to a minor extent for the Coal Index, treated by themselves, it will not suffice—at any rate without the introduction of lag—to modify the intercorrelations of Rail, Coal and Coffee Indices with one another.

Illustration (ii). The following data are taken from a paper by Dr Alice Lee* dealing with Sir Arthur Newsholme's suggested influence of segregation on the death-rate from phthisis. I_ϕ = crude death-rate from phthisis $= 10^5 \times$ deaths from phthisis $\div$ total population. I_τ = a measure of segregation $= 100 \times$ total paupers $\div$ indoor paupers. These indices of Sir Arthur Newsholme were found by Dr Lee in the case of England and Wales for the years 1866—1903 inclusive. For $n=6$ she reached the results

$$\frac{\sigma^2_{\Delta^7 I_\phi}}{\sigma^2_{\Delta^6 I_\phi}} = 3\cdot 729, \quad \frac{\sigma^2_{\Delta^7 I_\tau}}{\sigma^2_{\Delta^6 I_\tau}} = 3\cdot 780,$$

while

$$r_{\Delta^7 I_\phi \Delta^7 I_\tau} = \cdot 539,$$

$$r_{\Delta^6 I_\phi \Delta^6 I_\tau} = \cdot 583.$$

* *Biometrika*, Vol. x. pp. 538 and 546.

Hence
$$\frac{\{\Delta^7 I_\phi \Delta^7 I_\tau\}}{\{\Delta^6 I_\phi \Delta^6 I_\tau\}} = \frac{r_{\Delta^7 I_\phi \Delta^7 I_\tau}}{r_{\Delta^6 I_\phi \Delta^6 I_\tau}} \cdot \frac{\sigma_{\Delta^7 I_\phi} \sigma_{\Delta^7 I_\tau}}{\sigma_{\Delta^6 I_\phi} \sigma_{\Delta^6 I_\tau}}$$
$$= \frac{\cdot 539}{\cdot 583} \sqrt{3\cdot 729 \times 3\cdot 780}$$
$$= 3\cdot 471.$$

But the value of
$$4 - \frac{2}{n+1} = 3\cdot 714.$$

Thus we might expect a correlation to exist between X_n and X_{n+s}, and Y_n and Y_{n+s}; but such a correlation is not evidenced by the value 3·471 for the ratio of the difference products, for this is less than 3·714. Accordingly we cannot assume from this result that X_p and Y_{p+s}, when s is not zero, are correlated according to geometrical decadence.

Interpolating roughly into the Table we find for I_ϕ and I_τ respectively
$$\epsilon' = -\cdot 1009, \quad \epsilon'' = -\cdot 3583.$$

Thus if we may judge by geometrical decadence there is a small negative correlation between the phthisis death-rates for two successive years, and a somewhat larger negative correlation between the pauper segregation rates.

But the student needs to be warned that such values are only suggestive; the probable errors of short series of these higher difference correlations are so large that with the short series of indices generally available*, the results are very likely to be erratic. Thus if we take the 7th and 8th differences we find
$$\frac{\sigma^2_{\Delta^8 I_\phi}}{\sigma^2_{\Delta^7 I_\phi}} = 3\cdot 802, \quad \frac{\sigma^2_{\Delta^8 I_\tau}}{\sigma^2_{\Delta^7 I_\tau}} = 3\cdot 843, \quad 4 - \frac{2}{n+1} = 3\cdot 750,$$

and
$$r_{\Delta^8 I_\phi \Delta^8 I_\tau} = \cdot 557, \quad r_{\Delta^7 I_\phi \Delta^7 I_\tau} = \cdot 539,$$

and consequently
$$\frac{\{\Delta^8 I_\phi \Delta^8 I_\tau\}}{\{\Delta^7 I_\phi \Delta^7 I_\tau\}} = \frac{\cdot 557}{\cdot 539} \sqrt{3\cdot 802 \times 3\cdot 750} = 3\cdot 902.$$

Here all our three quantities exceed $4 - \frac{2}{n+1}$, and the correlation between X_p and Y_{p+1}, on the hypothesis of geometrical decadence, exceeds numerically $-0\cdot 7$, while we found any geometrical decadence correlation impossible on the basis of the 6th and 7th differences.

This illustrates how difficult it may sometimes be to reach a valid conclusion from the ratio of two successive difference values.

The probable errors of the correlation coefficients of differences exceed ·150, and an examination of their values† indicates that
$$r_{\Delta^s I_\phi \Delta^s I_\tau}$$
is already practically stable when $s = 2$!

* Yearly indices for social, economic, or hygienic data are scarcely obtainable for as many as fifty years.

† *Biometrika*, Vol. x. pp. 348—349.

On the other hand, taking the ratios

$$\frac{\sigma^2_{\Delta^{n+1}I_\phi}}{\sigma^2_{\Delta^n I_\phi}} \Big/ \left(4 - \frac{2}{n+1}\right) = \rho_1,$$

and

$$\frac{\sigma^2_{\Delta^{n+1}I_\tau}}{\sigma^2_{\Delta^n I_\tau}} \Big/ \left(4 - \frac{2}{n+1}\right) = \rho_2,$$

we find while

n	ρ_1	ρ_2	$r_{\Delta^n I_\phi \Delta^n I_\tau}$
2	·878	·748	+·542
3	·896	·818	+·567
4	·985	·893	+·547
5	·975	·977	+·529
6	1·004	1·018	+·583
7	1·014	1·025	+·539
8	1·016	1·023	+·557
9	1·017	1·018	No further values
10	1·016	1·020	given
11	1·011	1·019	Mean = ·552

or, the ratios become stable with the 7th to 11th differences, the average of the last five of the first column is 1·0154, and of the last six entries of the second column is 1·0205.

Supposing all three quantities stabilised at the 8th value of n, we have

$$4 - \frac{2}{n+1} = 3{\cdot}778,$$

and from the mean values of ρ_1 and ρ_2

$$\frac{\sigma^2_{\Delta^9 I_\phi}}{\sigma^2_{\Delta^8 I_\phi}} = 3{\cdot}836, \quad \frac{\sigma^2_{\Delta^9 I_\tau}}{\sigma^2_{\Delta^8 I_\tau}} = 3{\cdot}855,$$

hence

$$\frac{\{\Delta^9 I_\phi \Delta^9 I_\tau\}}{\{\Delta^8 I_\phi \Delta^8 I_\tau\}} = \frac{\cdot 552}{\cdot 552}\sqrt{3{\cdot}836 \times 3{\cdot}855} = 3{\cdot}845,$$

the ϵ's corresponding to these values are

$$\begin{array}{ccc} \text{to } 3{\cdot}836 & \text{to } 3{\cdot}855 & \text{to } 3{\cdot}845 \\ \epsilon' = -\cdot 4323, & \epsilon'' = -\cdot 5243, & \epsilon = -\cdot 4778^{*}. \end{array}$$

These represent the law of decadence equivalent to the actual correlations in their influence on the ratios. We have from our Table the following values for the function $2\phi(n, \epsilon) - 1$:

$$\begin{array}{ccc} \epsilon' & \epsilon'' & \epsilon \\ 2{\cdot}072{,}885, & 2{\cdot}402{,}779, & 2{\cdot}229{,}259. \end{array}$$

* The reader must remember that while ϵ' and ϵ'' and their powers are true correlations, ϵ is not, it and its powers must first be multiplied by ρ_0, i.e. in the present case $\rho_0 \epsilon = \cdot 552 \times -\cdot 4778 = -\cdot 2637$, and this is the correlation of X_p and Y_{p+1}.

Hence the value of the correlation coefficient for the deviations of I_4 and I_7 from their secular trends is

$$r = \cdot 552 \times \frac{\sqrt{2\cdot 072{,}885 \times 2\cdot 402{,}779}}{2\cdot 229{,}259}$$
$$= \cdot 553,$$

or, the correction is a very slight one.

Many criticisms may be made of the above method; it is undoubtedly only a suggestion, but it is, perhaps, the best we can at present use, if we wish to avoid the great labour and rather uncertain results of smoothing or of fitting high order parabolae to give the secular trends. It depends upon three assumptions:

(i) that the three ratios of $\dfrac{\sigma^2_{\Delta^{n+1}X}}{\sigma^2_{\Delta^n X}}$, $\dfrac{\sigma^2_{\Delta^{n+1}Y}}{\sigma^2_{\Delta^n Y}}$, $\dfrac{\{\Delta^{n+1}X\Delta^{n+1}Y\}}{\{\Delta^n X\Delta^n Y\}}$ to $\left(4 - \dfrac{2}{n+1}\right)$ approximate to finite limits;

(ii) that we can obtain these limits by averaging when the values of the above expressions begin to vary up and down;

(iii) that the series of correlations with geometrical decadence which give the same deviation from $4 - \dfrac{2}{n+1}$ may be used to correct for the unascertained correlations between non-corresponding values of X_p, of Y_p, and of X_p with Y_p.

Illustration (iii). The following results were obtained by K. Pearson and E. M. Elderton* for the relationship of death-rates, m_1 and m_2, in the first and second years of life for male and female infants:

	Male	Female
$r_7 = r_{\Delta^7 m_1\, \Delta^7 m_2} =$	$-\ \cdot 696,$	$-\cdot 729,$
$r_6 = r_{\Delta^6 m_1\, \Delta^6 m_2} =$	$-\ \cdot 688,$	$-\cdot 719,$
$r_5 = r_{\Delta^5 m_1\, \Delta^5 m_2} =$	$-\ \cdot 679,$	$-\cdot 705,$
${}_6R_1 = \dfrac{\sigma^2_{\Delta^7 m_1}}{\sigma^2_{\Delta^6 m_1}} =$	$3\cdot 759{,}913,$	$3\cdot 734{,}666,$
${}_5R_1 = \dfrac{\sigma^2_{\Delta^6 m_1}}{\sigma^2_{\Delta^5 m_1}} =$	$3\cdot 756{,}029,$	$3\cdot 733{,}655,$
${}_6R_2 = \dfrac{\sigma^2_{\Delta^7 m_2}}{\sigma^2_{\Delta^6 m_2}} =$	$3\cdot 858{,}841,$	$3\cdot 844{,}977,$
${}_5R_2 = \dfrac{\sigma^2_{\Delta^6 m_2}}{\sigma^2_{\Delta^5 m_2}} =$	$3\cdot 847{,}871,$	$3\cdot 827{,}945.$

* *Biometrika*, Vol. x. pp. 488—506, and Vol. xiv. pp. 281—310. It had not occurred to me when writing up the paper last referred to, that, while the hypothesis of geometrical decadence might be far from true as expressing the intercorrelations of the non-corresponding X's and Y's, it might still serve to make approximate corrections for such intercorrelations.

Clearly we shall have

$$ {}_6R_3 = \frac{\{\Delta^7 m_1 \Delta^7 m_2\}}{\{\Delta^6 m_1 \Delta^6 m_2\}} = \frac{r_7}{r_6}\sqrt{{}_6R_1\,{}_6R_2}, \text{ and } {}_5R_3 = \frac{\{\Delta^6 m_1 \Delta^6 m_2\}}{\{\Delta^5 m_1 \Delta^5 m_2\}} = \frac{r_6}{r_5}\sqrt{{}_5R_1\,{}_5R_2}, $$

whence we find with the above numerical values

$$ {}_6R_3 = 3{\cdot}853{,}335 \text{ and } {}_5R_3 = 3{\cdot}852{,}063 \text{ for males,} $$
$$ {}_6R_3 = 3{\cdot}842{,}124 \text{ and } {}_5R_3 = 3{\cdot}855{,}580 \text{ for females.} $$

Thus we see that ${}_6R_1$, ${}_5R_1$, ${}_6R_2$, ${}_5R_2$, ${}_6R_3$ and ${}_5R_3$ for both males and females exceed the limiting value $4 - \frac{2}{n+1}$ for seventh, sixth and fifth differences, and we are compelled to suppose correlations to exist between $X_p\,(= m_1)$ and $X_{p\pm s}$, $Y_p\,(= m_2)$ and $Y_{p\pm s}$, and X_p and $Y_{p\pm s}$. The existence of such correlations has been directly verified*. Their values are somewhat erratic and soon become, having regard to their probable errors, non-significant. Let us investigate what corrections would be made on the crude mortality correlations, such as $-{\cdot}696$ and $-{\cdot}729$, if we supposed the law of geometrical decadence to hold for the intercorrelations of the X's together, of the Y's together, and of the X's and Y's together. Even if such correlations be not truly geometrically decadent, such an inquiry may aid us in appreciating their general influence.

We have twelve ϵ's to find, namely for males: ${}_6\epsilon_1'$ for ${}_6R_1$, ${}_5\epsilon_1'$ for ${}_5R_1$, ${}_6\epsilon_1''$ for ${}_6R_2$, ${}_5\epsilon_1''$ for ${}_5R_2$ and again ${}_6\epsilon_1$ for ${}_6R_3$ and ${}_5\epsilon_1$ for ${}_5R_3$. From these we must again deduce from Table XLIV the corresponding six values of the function $2\phi(n, \epsilon) - 1$, in all cases using the appropriate column for n. We can, as soon as we have recognised that all the R-ratios are above the limiting value, proceed directly to the determination of the $2\phi(n, \epsilon) - 1$ functions without computing the ϵ's. But the ϵ's indicate a sort of average intensity for the X_p and X_{p+s}, the Y_p and Y_{p+s}, and finally by aid of $\rho_0 = r_{\Delta^n X \Delta^n Y}$ for the X_p and Y_{p+s} correlations.

Similarly for the females we shall have six corresponding ϵ's and their allied functions. We have ${}_6\epsilon_2'$, ${}_5\epsilon_2'$, ${}_6\epsilon_2''$, ${}_5\epsilon_2''$, ${}_6\epsilon_2$ and ${}_5\epsilon_2$.

We shall use linear interpolation only, and while working with the complete number of decimals in the Table, state our final results to three decimals only. We obtain the following results:

Male	(Values of $2\phi(n, \epsilon) - 1$)	*Female*	(Values of $2\phi(n, \epsilon) - 1$)
${}_6\epsilon_1' = -{\cdot}267{,}856$,	$1{\cdot}549{,}245$,	${}_6\epsilon_2' = -{\cdot}133{,}576$,	$1{\cdot}252{,}179$,
${}_6\epsilon_1'' = -{\cdot}637{,}475^-$,	$2{\cdot}683{,}733$,	${}_6\epsilon_2'' = -{\cdot}595{,}411$,	$2{\cdot}522{,}016$,
${}_6\epsilon_1 = -{\cdot}620{,}955$,	$2{\cdot}619{,}391$,	${}_6\epsilon_2 = -{\cdot}585{,}882$,	$2{\cdot}489{,}286$,
${}_5\epsilon_1' = -{\cdot}381{,}866$,	$1{\cdot}799{,}045$,	${}_5\epsilon_2' = -{\cdot}303{,}108$,	$1{\cdot}603{,}727$,
${}_5\epsilon_1'' = -{\cdot}652{,}259$,	$2{\cdot}611{,}364$,	${}_5\epsilon_2'' = -{\cdot}600{,}188$,	$2{\cdot}431{,}553$,
${}_5\epsilon_1 = -{\cdot}663{,}217$,	$2{\cdot}649{,}204$.	${}_5\epsilon_2 = -{\cdot}672{,}220$,	$2{\cdot}680{,}293$.

* See note on p. ccxv.

Now the correlation of X and Y corrected for geometrical decadence based on the nth differences is

$$_n r_{XY} = r_{\Delta^n m_1 \Delta^n m_2} \frac{\sqrt{(2\phi(n, \epsilon') - 1)(2\phi(n, \epsilon'') - 1)}}{2\phi(n, \epsilon) - 1}.$$

In our case the values of n are 5 and 6, and accordingly for the correlation $r_{m_1 m_2}$ of the death-rates in the first and second years of life freed from the secular trend, we find

	Males	*Females*	*Mean*
$n = 5$:	$-\cdot 556$,	$-\cdot 519$,	$-\cdot 537$,
$n = 6$:	$-\cdot 536$,	$-\cdot 513$,	$-\cdot 525$.

The values found by actually correlating m_1 and m_2 after removal of the secular trend by smoothing were*

Males	*Females*	*Mean*
$r_{m_1 m_2} = -\cdot 458$,	$r_{m_1 m_2} = -\cdot 490$,	$-\cdot 474$.

It would appear therefore that Table XLIV will lead to results of the same order as those given by the far more elaborate process of smoothing if we assume, not necessarily that the correlations are geometrically decadent, but that systems of geometrically decadent correlations based on the excess of the three ratios $_nR_1$, $_nR_2$ and $_nR_3$, above $4 - 2/(n+1)$ will give an equivalent corrective factor. Both processes confirm each other in indicating that a heavy mortality rate in the first year of life corresponds to a low rate in the second year. We cannot at present measure the relative accuracy of the two methods.

Tables XLV—XLVI.

Consideration of the Integral $\int_0^\theta \cos^{n+1}\theta\, d\theta$. (J. Wishart, *Biometrika*, Vol. XVII. pp. 68—78, 469—472.)

For the complete $\cos\theta$-integral, i.e. when the limit $= \frac{1}{2}\pi$, the value will be found in Table XXVI for $n = -1$ to 103.

For $n > 100$ other methods must be adopted both for the complete and incomplete $\cos\theta$-integral. Actually if we write $x = \sin^2\theta$,

$$\int_0^\theta \cos^{n+1}\theta\, d\theta = \tfrac{1}{2}\int_0^x (1-x)^{\frac{1}{2}n} x^{-\frac{1}{2}}\, dx = \tfrac{1}{2} B_x(\tfrac{1}{2}n + 1, \tfrac{1}{2}),$$

or the $\cos\theta$-integral is a special case of the incomplete B-function. Tables of the latter function will shortly be published, but since they do not range beyond $n = 100$, they will not be of service for high values of n.

The form of Pearson's Type II[a] curve is

$$y = y_0 \left(1 - \frac{x^2}{a^2}\right)^m,$$

and corresponds to symmetrical curves $\beta_1 = 0$ and $\beta_2 > 1{\cdot}8$ and $< 3{\cdot}0$.

* *Biometrika*, Vol. XIV. p. 305.

If we write $x = a\sin\theta$, the probability integral of this curve or

$$\tfrac{1}{2}(1+\alpha_x) = \int_{-a}^{x} y\,dx \Big/ \int_{-a}^{+a} y\,dx$$

$$= \tfrac{1}{2} + \tfrac{1}{2}\frac{\int_0^\theta \cos^{2m+1}\theta\,d\theta}{\int_0^{\pi/2}\cos^{2m+1}\theta\,d\theta} \quad \text{.........................(i).}$$

Hence $$\alpha_x = \int_0^\theta \cos^{2m+1}\theta\,d\theta \Big/ \int_0^{\pi/2}\cos^{2m+1}\theta\,d\theta.$$

Putting $m = \tfrac{1}{2}n$, we shall write

$$I_\theta(n+1) = \tfrac{1}{2}\int_0^\theta \cos^{n+1}\theta\,d\theta \Big/ \int_0^{\pi/2}\cos^{n+1}\theta\,d\theta \quad \text{..................(ii),}$$

whence the probability integral can be found by the addition of $\tfrac{1}{2}$.

Type VII Pearson curve takes the form

$$y = y_0 \frac{1}{\left(1+\dfrac{x^2}{a^2}\right)^m} \quad \text{...............................(iii),}$$

and is a symmetrical curve corresponding to $\beta_1 = 0$ and $\beta_2 > 3$.

Write $x = a\tan\theta$, and the probability integral of this curve becomes

$$\tfrac{1}{2}(1+\alpha_x) = \tfrac{1}{2} + \frac{\int_0^\theta \cos^{2m-2}\theta\,d\theta}{2\int_0^{\pi/2}\cos^{2m-2}\theta\,d\theta} \quad \text{.........................(iv).}$$

Writing $2m - 3 = n$, this is

$$\tfrac{1}{2} + I_\theta(n+1) \quad \text{...............................(ii } bis\text{).}$$

Lastly considering the Type I symmetrical U-curve,

$$y = y_0 \frac{1}{\left(1-\dfrac{x^2}{a^2}\right)^m} \quad \text{..................................(v),}$$

we note that for finite frequency m* must lie between 0 and $+1$, and that these values correspond to the limits of $\beta_2 = 1{\cdot}8$ and $1{\cdot}0$. Throughout $\beta_1 = 0$.

The probability integral is obtained by writing $x = a\sin\theta$, as in the first case, and

$$\tfrac{1}{2}(1+\alpha_x) = \tfrac{1}{2} + \frac{\int_0^\theta \cos^{1-2m}\theta\,d\theta}{2\int_0^{\pi/2}\cos^{1-2m}\theta\,d\theta} \quad \text{.........................(vi).}$$

* $m = \tfrac{1}{2}(9 - 5\beta_2)/(3 - \beta_2)$.

We may put $$I_\theta(1-2m) = \frac{B_x(1-m, \frac{1}{2})}{B(1-m, \frac{1}{2})}$$
$$= \frac{\Gamma(\frac{3}{2}-m)}{\Gamma(1-m)\,\Gamma(\frac{1}{2})} B_x(1-m, \tfrac{1}{2}) \quad \text{................(vii).}$$

$B_x(1-m, \frac{1}{2})$ involves the tabulation of the incomplete B-function for a *long* series of values of m between 0 and 1, a difficult task, and one, as far as we are aware, not yet attempted, but which we hope to undertake shortly.

The use of Tables XLV—XLVI is to obtain close approximations to $I_\theta(n+1)$, where n is so considerable that it falls outside the *Tables of the Incomplete* B-*Function*. The first method is to expand in terms of the even incomplete normal moment functions. A table of these is given in Part I of this work, pp. 22—23, up to $m_{10}(x)$, where the function $m_r(x)$ is defined by

$$m_r(x) = \frac{1}{\sqrt{2\pi}} \int_0^x x^r e^{-\frac{1}{2}x^2} dx/(r-1)(r-3)(r-5)\ldots 2 \text{ or } 1 \quad \text{.........(viii),}$$

according as r is odd or even. In order to obtain $I_\theta(n+1)$ to seven figure accuracy it was found needful to table $m_{12}(x)$. This is provided in Table XIII, where $m_{11}(x)$ is also given.

The formula for $I_\theta(n+1)$ is

$$I_\theta(n+1) = c_0 m_0(x) - c_4 m_4(x) - c_6 m_6(x) + c_8 m_8(x) + c_{10} m_{10}(x) - c_{12} m_{12}(x) - \ldots \quad \text{.........(ix).}$$

In this formula $$x = \sqrt{n} \sin\theta,$$

and the c's are provided by Table XLV for $n = 100$ to 400. They are functions of $1/n$ and its integer powers only.

Illustration (i). What is the probability that an individual drawn at random from the frequency distribution

$$y = \frac{y_0}{\left(1 + \frac{x^2}{a^2}\right)^{85\cdot67}} \quad \text{..................................(x)}$$

will lie between $x = \pm \frac{1}{10}a$? Actually in a curve of the above type (i.e. (iii) above) $a^2 = (2m-3)\sigma^2$, or for our particular case $a = 12\cdot974{,}596\sigma$, and we are seeking the chance that a single individual will lie between the limits

$$\pm 1\cdot297{,}460 \times \sigma.$$

Clearly $\tan\theta = \frac{1}{10}$, and therefore $\sin\theta = \frac{1}{\sqrt{101}} = \cdot0995{,}0372$. Again the x with which to enter the Tables of the incomplete normal moment functions $= \sqrt{n}\sin\theta$, which is the value for formula (vi), i.e. in the case of $I_\theta(n+1)$. Now $n = 2m - 3 = 168\cdot34$.

Accordingly $x = \sqrt{2m-3}\sin\theta = 12\cdot974{,}596 \times \cdot0995{,}0372$,

or this x for the normal moment functions

$$= 1\cdot291{,}02.$$

We have now two series of interpolations to make:

First, for the six incomplete normal moment functions for $x = 1{\cdot}291{,}02$, we shall content ourselves with the central difference formula

$$z_\theta = \phi z_0 + \theta z_1 - \tfrac{1}{6}\theta\phi\{(1+\phi)\,\delta^2 z_0 + (1+\theta)\,\delta^2 z_1\} \ldots\ldots\ldots\ldots\ldots \text{(xi)}.$$

Secondly, for the six coefficients from Table XLV, it will be adequate to use linear differences, n being $168{\cdot}34$,

$$z_\theta = \phi z_0 + \theta z_1.$$

First, we need $m_0(x)$, $m_4(x)$, $m_6(x)$, $m_8(x)$, $m_{10}(x)$ and $m_{12}(x)$.

Now $$m_0(x) = \frac{1}{\sqrt{2\pi}}\int_0^x e^{-\frac{1}{2}z^2}dz = \tfrac{1}{2}\alpha_x.$$

This can be found from Table II of Part I of this work.

$$\theta = {\cdot}102, \quad \phi = {\cdot}898, \quad \tfrac{1}{6}\theta\phi = {\cdot}015{,}266,$$
$$z_0 = {\cdot}901{,}4747, \quad z_1 = {\cdot}903{,}1995,$$
$$\delta^2 z_0 = -224, \quad \delta^2 z_1 = -223,$$
$$z_\theta = 0{\cdot}5 + m_0(1{\cdot}291{,}02) = {\cdot}9016{,}5063 - {\cdot}015{,}266\{1{\cdot}898(-223) + 1{\cdot}102(-224)\}$$
$$= {\cdot}9016{,}5063 + {\cdot}0000{,}0102 = {\cdot}9016{,}5165,$$

and $$m_0(1{\cdot}291{,}02) = {\cdot}4016{,}5165.$$

$m_4(x)$, $m_6(x)$, $m_8(x)$ and $m_{10}(x)$ are to be found from Table IX of Part I. We have

	$m_4(x)$	$m_6(x)$	$m_8(x)$	$m_{10}(x)$
z_0	·040,0559	·007,8427	·001,2160	·000,1558
z_1	·054,9214	·012,5028	·002,2617	·000,3386
$\delta^2 z_0$	28524	14699	4391	928
$\delta^2 z_1$	28872	18265	6503	1628

Here $\theta = {\cdot}9102$ and $\phi = {\cdot}0898$ and $\tfrac{1}{6}\theta\phi = {\cdot}0136{,}2266$.

Then $m_{12}(x)$ must be found from Table XIII of the present volume (Part II). We have

$$z_0 = {\cdot}000{,}0170, \quad z_1 = {\cdot}000{,}0432,$$
$$\delta^2 z_0 = 152, \quad \delta^2 z_1 = 315.$$

Substituting in the central difference formula (xi) above, we have*

$$m_0(x) = {\cdot}4016{,}5165, \quad m_8(x) = {\cdot}0021{,}4436,$$
$$m_4(x) = {\cdot}0534{,}6900, \quad m_{10}(x) = {\cdot}0003{,}1657,$$
$$m_6(x) = {\cdot}0120{,}1497, \quad m_{12}(x) = {\cdot}0000{,}398.$$

Secondly we proceed to determine the c's by linear interpolation from Table XLV. Here $\theta = {\cdot}17$, $\phi = {\cdot}83$, since the argument of n proceeds by two units.

We find

$$c_0 = 1{\cdot}004{,}4477, \quad c_8 = {\cdot}000{,}1136,$$
$$c_4 = {\cdot}004{,}4752, \quad c_{10} = {\cdot}000{,}0082,$$
$$c_6 = {\cdot}000{,}0886, \quad c_{12} = {\cdot}000{,}0057.$$

* The eight figures are only kept for ease in continuous working.

Clearly with n as high as 168·34, $c_{10}m_{10}(x)$ and $c_{12}m_{12}(x)$ contribute nothing to the value required.

Finally, substituting in formula (ix), there results

$$\begin{aligned} I_\theta(n+1) = I_\theta(169{\cdot}34) &= {\cdot}4034{,}3808 - {\cdot}0002{,}3928 \\ &\quad + {\cdot}0000{,}0024 - {\cdot}0000{,}0106 \\ &\quad + {\cdot}0000{,}0000 - {\cdot}0000{,}0000 \\ &= {\cdot}4034{,}3808 - {\cdot}0002{,}4010 \\ &= {\cdot}4031{,}9798. \end{aligned}$$

We must double this value to obtain the probability that a single individual on random sampling will lie between $\pm \frac{1}{10}a$. Hence

$$P_{\pm\frac{1}{10}a} = {\cdot}8063{,}9596.$$

Let us ask what the result would have been had we assumed that since $\beta_2 = 3{\cdot}036{,}071$, we might have used a normal curve. We have seen that the limits are $\pm 1{\cdot}297{,}460\sigma$. Hence from Table II of Part I we have $\frac{1}{2}(1+\alpha_x) = z_x$ and

$$z_0 = {\cdot}901{,}4747, \quad z_1 = {\cdot}903{,}1995,$$
$$\delta^2 z_0 = -224, \qquad \delta^2 z_1 = -223,$$
$$\theta = {\cdot}746, \quad \phi = {\cdot}254, \quad \tfrac{1}{6}\theta\phi = {\cdot}0315{,}8067,$$

and by the central difference formula

$$z_x = {\cdot}902{,}7635.$$

Therefore $\qquad \frac{1}{2}\alpha_x = {\cdot}402{,}7635,$

and $\qquad P_{\pm 1\cdot 297,460\sigma} = \alpha_x = {\cdot}805{,}5270.$

We see therefore that the leptokurtosis modifies the probability in the third decimal place, the value of it being reduced.

Dr Wishart in his paper has taken several cases of $I_\theta(n+1)$ when n lies between 100 and 400 and found that the present Tables give results for $I_\theta(n+1)$, checking to seven figures with those obtained by quadrature or by the expansion of the incomplete B-function $B_a(\frac{1}{2}n+1, \frac{1}{2})$. The labour is considerable, as twelve interpolations have to be made, six of them involving the use of second central differences. Further the limits of n in the Table are somewhat narrow. Accordingly Dr Wishart has provided a second table of functions $\phi_0(x)$, $\phi_1(x)$, $\phi_2(x)$, $\phi_3(x)$ and $\phi_4(x)$ (see Table XLVI), which give the $\cos\theta$-integral by means of the equation

$$\int_0^\theta \cos^p\theta\, d\theta = \sqrt{\frac{2\pi}{p}}\left\{\phi_0(x) - \frac{1}{p}\phi_1(x) + \frac{1}{p^2}\phi_2(x) - \frac{1}{p^3}\phi_3(x) + \frac{1}{p^4}\phi_4(x) - \dots\right\} \quad \text{.........(xii)},$$

where $p = n+1$ and $x = 2\sqrt{p}\tan\frac{1}{2}\theta$.

The great gain here is that the expansion may be used for values of p less than 100 even down as low as $p = 9$, provided that we are dealing with points within the range of three times the standard deviation on either side of the mean. The actual labour of computing is not really much shortened, for p will usually be fractional, and accordingly the determination of the numerical values of the inverse powers of p is troublesome*, and we have five interpolations to make, four to δ^2 and one to δ^4.

If we require $I_\theta(p)$, we have the formula

$$I_\theta(p) = \sqrt{\frac{p}{2}}\,\frac{\Gamma(\frac{1}{2}p)}{\Gamma(\frac{1}{2}(p+1))}\left\{\phi_0(x) - \frac{1}{p}\phi_1(x) + \frac{1}{p^2}\phi_2(x) - \frac{1}{p^3}\phi_3(x) + \frac{1}{p^4}\phi_4(x) - \dots\right\} \quad \text{.........(xiii)},$$

where as before $$x = 2\sqrt{p}\tan\frac{\theta}{2} = \frac{2\sqrt{p}\,(1-\cos\theta)}{\sin\theta}.$$

This involves two additional interpolations into the Table of the complete Γ-function, or since

$$\sqrt{\frac{p}{2}}\,\frac{\Gamma(\frac{1}{2}p)}{\Gamma(\frac{1}{2}(p+1))} = \sqrt{\frac{p-1}{p}}\,c_0 \quad \text{.....................(xiv)},$$

where c_0 is the coefficient provided for $n = p-1$ from 100 to 400 in Table XLV, one interpolation only if p lies between 101 and 401.

Illustration (ii). Let us first apply Table XLVI to the case given in Illustration (i). Here the problem was to find the probability that a single individual drawn at random would have a value differing from the mean by less than $\pm\frac{1}{10}a$, where the parent population was described by

$$y = \frac{y_0}{\left(1+\frac{x^2}{a^2}\right)^{85\cdot 67}}.$$

We found $$P_{\pm\frac{1}{10}a} = 2I_\theta(169\cdot 34),$$

where $\tan\theta = \frac{1}{10}$, $\sin\theta = \cdot 0995{,}0372$, $\cos\theta = \cdot 9950{,}3719$, and $p = 169\cdot 34$.

For interpolation in the ϕ-table we need

$$x = 2\sqrt{p}\tan\frac{\theta}{2} = \frac{2\sqrt{169\cdot 34}\,(\cdot 0049{,}6281)}{\cdot 0995{,}0372} = 1\cdot 298{,}070.$$

For the $\phi_s(x)$ tables we have

$$\theta = \cdot 9807,\quad \phi = \cdot 0193,\quad \tfrac{1}{6}\theta\phi = \cdot 0031{,}5458^5,$$
$$\tfrac{1}{120}\theta\phi(1+\theta)(1+\phi) = \cdot 0003{,}1845.$$

Hence, using the central difference formula

$$z_\theta = \phi z_0 + \theta z_1 - \tfrac{1}{6}\theta\phi\{(1+\phi)\delta^2 z_0 + (1+\theta)\delta^2 z_1\}$$
$$+ \tfrac{1}{120}\theta\phi(1+\theta)(1+\phi)\{(2+\phi)\delta^4 z_0 + (2+\theta)\delta^4 z_1\} \quad \text{.........(xv)},$$

we have $$\phi_0(x) = \cdot 4028{,}4692 + \cdot 0000{,}2139 + \cdot 0000{,}0005$$
$$= \cdot 4028{,}6836.$$

* Dr Wishart has provided (Table XLVIII) a table of the inverse powers of numbers 50 to 100 by units for $p^{-0\cdot 5}$, $p^{-1\cdot 0}$, $p^{-1\cdot 5}$, $p^{-2\cdot 0}$, $p^{-2\cdot 5}$, $p^{-3\cdot 0}$ for another purpose. But this does not reach far enough for our present aim and involves additional interpolations.

Similarly from (xi) as adequate for the remaining ϕ's we find

$$\phi_1(x) = \cdot 0449{,}6731, \quad \phi_2(x) = \cdot 0083{,}0420.$$

It is unnecessary to find $\phi_3(x)$ and $\phi_4(x)$, as by examining Table XLVI we see that quantities of their order divided by p^3 and p^4 are not significant to eight decimal places when p is 169·34. Accordingly we have

$$\phi_0(x) - \phi_1(x)/p + \phi_2(x)/p^2 = \cdot 4028{,}6836 - \cdot 0002{,}6554 + \cdot 0000{,}0029$$
$$= \cdot 4026{,}0311.$$

But $$I_\theta(169\cdot 34) = \sqrt{\frac{p-1}{p}}\, c_0 \times \cdot 4026{,}0311$$
$$= \cdot 9970{,}4299 \times c_0 \times \cdot 4026{,}0311,$$

and c_0 for $n = p - 1 = 168\cdot 34$ has already been found in Illustration (i) from Table XLV to have the value 1·004,4477. Hence

$$I_\theta(169\cdot 34) = \cdot 4031{,}9797,$$

practically identical with the value found in Illustration (i).

If second differences only are used for $\phi_0(x)$, and first only for $\phi_1(x)$ and $\phi_2(x)$, when p is large (over 100), then we obtain six-figure accuracy.

Illustration (iii). Let us apply Table XLVI to find the integral of a much lower power of cos θ. Required

$$\int_0^{30^\circ} \cos^{15}\theta\, d\theta.$$

Here we are taking a very low value of p, and $n = p - 1 = 14$ lies far outside the range of Table XLV. Hence that Table cannot be used either to determine or to check the value of the integral. We must use the second method, i.e. that of Table XLVI.

Now

$$\int_0^\theta \cos^p\theta\, d\theta = \sqrt{\frac{2\pi}{p}}\left\{\phi_0(x) - \frac{1}{p}\phi_1(x) + \frac{1}{p^2}\phi_2(x) - \frac{1}{p^3}\phi_3(x) + \frac{1}{p^4}\phi_4(x) - \dots\right\} \quad \text{.........(xvi)},$$

where $$x = 2\sqrt{p}\,\tan\tfrac{1}{2}\theta.$$

In our case $$x = 2\sqrt{15}\tan 15^\circ$$
$$= 2 \times 3\cdot 8729{,}8335 \times \cdot 267{,}9492$$
$$= 2\cdot 075{,}5256.$$

Therefore, for interpolation in Table XLVI,

$$\theta = \cdot 755{,}256, \quad \phi = \cdot 244{,}744, \quad \tfrac{1}{6}\theta\phi = \cdot 0308{,}0740,$$
$$\tfrac{1}{120}\theta\phi(1+\theta)(1+\phi) = \cdot 0033{,}6547.$$

To determine $\phi_0(x)$, we apply (xv) and find

$$\phi_0(x) = \cdot 4809{,}3983 + \cdot 0000{,}9145 - \cdot 0000{,}0020$$
$$= \cdot 4810{,}3108.$$

For the remaining ϕ's we need use only (xi) and have

$$\phi_1(x) = \cdot 0961{,}8806 + \cdot 0000{,}5064 = \cdot 0962{,}3870,$$
$$\phi_2(x) = \cdot 0262{,}5465 + \cdot 0000{,}3535 = \cdot 0262{,}9000,$$
$$\phi_3(x) = \cdot 0149{,}7249 + \cdot 0000{,}2276 = \cdot 0149{,}9525,$$
$$\phi_4(x) = \cdot 0064{,}0052 + \cdot 0000{,}2205 = \cdot 0064{,}2257.$$

We have $\phi_1(x)/15 \quad = \cdot 0064{,}1591, \quad \phi_2(x)/225 \quad = \cdot 0001{,}1684,$

$\phi_3(x)/3375 = \cdot 0000{,}0444, \quad \phi_4(x)/50625 = \cdot 0000{,}0013$

Hence

$$\int_0^\theta \cos^{15}\theta\, d\theta$$

$$= \sqrt{\frac{2\pi}{15}}\,(\cdot 4810{,}3108 - \cdot 0064{,}1591 + \cdot 0001{,}1684 - \cdot 0000{,}0444 + \cdot 0000{,}0013)$$

$$= \sqrt{\frac{2\pi}{15}} \times \cdot 4747{,}2770,$$

and since $$\sqrt{\frac{2\pi}{15}} = \cdot 6472{,}0864,$$

we have $$\int_0^\theta \cos^{15}\theta\, d\theta = \cdot 3072{,}4787.$$

The correct value of the integral may be found by putting $x = \sin^2\theta$, when it becomes

$$\tfrac{1}{2}\int_0^{\frac{1}{4}} (1-x)^7 x^{-\frac{1}{2}}\, dx\,;$$

and hence by expanding the binomial and integrating out we have

$$\int_0^\theta \cos^{15}\theta\, d\theta = \cdot 3072{,}4784,$$

or, only a difference of *three* in the eighth decimal place. But the method is better than this, for we have not for a small p, $\phi_1(x)$ exact enough by using only δ^2. If we proceed to δ^4, we have, for $\phi_1(x)$,

$$z_0 = \cdot 092{,}3170, \quad z_1 = \cdot 097{,}4425,$$
$$\delta^2 z_0 = -5381, \quad \delta^2 z_1 = -5549,$$
$$\delta^4 z_0 = +214, \quad \delta^4 z_1 = +189,$$

which by (xv) gives $\phi_1(x) = \cdot 0962{,}3904$ instead of $\cdot 0962{,}3870$. We have thus

$$\phi_1(x)/p = \cdot 0064{,}1594 \text{ instead of } \cdot 0064{,}1591,$$

and thus $$\int_0^\theta \cos^{15}\theta\, d\theta = \cdot 6472{,}0864 \times \cdot 4747{,}2767$$
$$= \cdot 3072{,}4784,$$

agreeing exactly with the correct value. The reader must therefore bear in mind that, if extreme accuracy be required, it is advisable for low values of p to proceed with the interpolation formula to δ^4 for $\phi_1(x)$ as well as for $\phi_0(x)$. It is not needful in the cases of $\phi_2(x)$, $\phi_3(x)$ and $\phi_4(x)$. We thus see that the present Table will give the area of any portion of either of the frequency curves

$$y = y_0\left(1 - \frac{x^2}{a^2}\right)^m, \quad y = y_0\frac{1}{\left(1 + \frac{x^2}{a^2}\right)^m},$$

if m be even as low as 7.

TABLES XLVII—XLVIII.

For ascertaining the values of Incomplete B*-functions for high values of the Powers.* (J. Wishart, *Biometrika*, Vol. XIX. pp. 1—38.)

The Incomplete B-function from 0 to x is:

$$B_x(p, q) = \int_0^x x^{p-1}(1-x)^{q-1}\,dx.$$

The Complete B-function is:

$$B(p, q) = \int_0^1 x^{p-1}(1-x)^{q-1}\,dx$$
$$= \Gamma(p)\,\Gamma(q)/\Gamma(p+q),$$

and their ratio is expressed by

$$I_x(p, q) = \frac{\Gamma(p+q)}{\Gamma(p)\,\Gamma(q)}\int_0^x x^{p-1}(1-x)^{q-1}\,dx \quad \text{..................(i).}$$

The value of the Incomplete B-function can always be obtained from a knowledge of $I_x(p, q)$ by using Tables of the Complete Γ-function.

The object of the present tables is to supplement the Tables of the Incomplete B-function, which will be published shortly. Those tables extend from values of p, $q = 0, 0$ to values $= 50, 50$. They thus exclude cases in which p and q are either or both greater than 50. Such cases require special consideration, which has been provided by H. E. Soper* and by J. Wishart in the paper referred to above.

We shall write our Incomplete B-function ratio in the form

$$I_x(l+1, m+1) = \frac{\Gamma(l+m+2)}{\Gamma(l)\,\Gamma(m)}\int_0^x x^l(1-x)^m\,dx \text{...............(ii),}$$

so that we are finding the probability integral of the curve of Type I

$$y = y_0 x^l (1-x)^m \text{..................................(iii),}$$

where the range is treated as the unit of abscissal measurement.

We place here one or two well-known results for this curve:

$$\text{Mean} = \bar{x} = (l+1)/(l+m+2) \text{.................................(iv),}$$
$$\text{Mode} = \breve{x} = l/(l+m) \text{..(v),}$$
$$\text{Standard Deviation} = \sigma = \sqrt{(l+1)(m+1)/\{(l+m+2)^2(l+m+3)\}} \text{...(vi).}$$

* *Tracts for Computers*, No. VII. Cambridge University Press.

The right-hand sides of these three values must be multiplied by b, if b, the range, be not taken as abscissal unit.

Let us write
$$n = l + m, \quad \epsilon = \frac{l}{m} + \frac{m}{l},$$
$$L = n/l, \quad M = n/m,$$
and
$$u = \sqrt{nLM}\,(x - \check{x}) \quad \text{.................................(vii).}$$

Then Wishart's Schlömilch-type of expansion for the Incomplete B-function ratio, i.e. for the probability integral of the curve (iii) above, is

$$\begin{aligned} I_x(l+1, m+1) = 1 - L^{l+1}M^{m+1}x^{l+1}(1-x)^{m+1} \\ \times \Bigg[\frac{1}{u}\Bigg\{B_0 - \frac{B_1}{u^2+\epsilon} + \frac{B_2}{(u^2+\epsilon)(u^2+2\epsilon)} - \frac{B_3}{(u^2+\epsilon)(u^2+2\epsilon)(u^2+3\epsilon)} \\ + \frac{B_4}{(u^2+\epsilon)(u^2+2\epsilon)(u^2+3\epsilon)(u^2+4\epsilon)} - \frac{B_5}{(u^2+\epsilon)(u^2+2\epsilon)(u^2+3\epsilon)(u^2+4\epsilon)(u^2+5\epsilon)} \\ + \dots\Bigg\} \\ - \Bigg\{\frac{C_1}{(u^2+\epsilon)(u^2+2\epsilon)} - \frac{C_2}{(u^2+\epsilon)(u^2+2\epsilon)(u^2+3\epsilon)} + \frac{C_3}{(u^2+\epsilon)(u^2+2\epsilon)(u^2+3\epsilon)(u^2+4\epsilon)} \\ - \frac{C_4}{(u^2+\epsilon)(u^2+2\epsilon)(u^2+3\epsilon)(u^2+4\epsilon)(u^2+5\epsilon)} + \dots\Bigg\}\Bigg] \quad \text{........................(viii).} \end{aligned}$$

Here
$$\left.\begin{aligned} B_0 &= {}_1B_0 + \frac{{}_2B_0}{n} + \frac{{}_3B_0}{n^2} \\ B_1 &= {}_1B_1 + \frac{{}_2B_1}{n} + \frac{{}_3B_1}{n^2} \\ B_2 &= {}_1B_2 + \frac{{}_2B_2}{n} + \frac{{}_3B_2}{n^2} \\ B_3 &= {}_1B_3 + \frac{{}_2B_3}{n} + \frac{{}_3B_3}{n^2} \\ B_4 &= {}_1B_4 + \frac{{}_2B_4}{n} + \frac{{}_3B_4}{n^2} \\ B_5 &= {}_1B_5 + \frac{{}_2B_5}{n} \end{aligned}\right\} \quad \text{...............................(ix),}$$

$$\left.\begin{aligned} C_1 &= \frac{{}_1C_1}{n^{0\cdot5}} + \frac{{}_2C_1}{n^{1\cdot5}} + \frac{{}_3C_1}{n^{2\cdot5}} \\ C_2 &= \frac{{}_1C_2}{n^{0\cdot5}} + \frac{{}_2C_2}{n^{1\cdot5}} + \frac{{}_3C_2}{n^{2\cdot5}} \\ C_3 &= \frac{{}_1C_3}{n^{0\cdot5}} + \frac{{}_2C_3}{n^{1\cdot5}} + \frac{{}_3C_3}{n^{2\cdot5}} \\ C_4 &= \frac{{}_1C_4}{n^{0\cdot5}} + \frac{{}_2C_4}{n^{1\cdot5}} \end{aligned}\right\} \quad \text{...............................(x).}$$

Numerically $\qquad {}_1B_0 = {}_1B_1 = 0{\cdot}3989{,}4228$ ....(xi)

for all values of ϵ, and Table XLVII gives the values of ${}_2B_0$, ${}_3B_0$, ${}_2B_1$, ${}_3B_1$, ${}_1B_2$, ${}_2B_2$, ${}_3B_2$, ${}_1B_3$, ${}_2B_3$, ${}_3B_3$, ${}_1B_4$, ${}_2B_4$, ${}_3B_4$, ${}_1B_5$, ${}_2B_5$; ${}_1C_1$, ${}_2C_1$, ${}_3C_1$, ${}_1C_2$, ${}_2C_2$, ${}_3C_2$, ${}_1C_3$, ${}_2C_3$, ${}_3C_3$, ${}_1C_4$, ${}_2C_4$ for values of ϵ from 2 to 10.

Table XLVIII gives the values of $\frac{1}{n^{0\cdot5}}, \frac{1}{n}, \frac{1}{n^{1\cdot5}}, \frac{1}{n^2}, \frac{1}{n^{2\cdot5}}, \frac{1}{n^3}$ for integer values of n from 50 to 200. This is convenient if n be an integer, but when, as is often the case, n is fractional it is probably shorter to find $\frac{1}{n^{0\cdot5}}, \frac{1}{n}, \frac{1}{n^2}$ and $\frac{1}{n^3}$ directly, and the other fractional powers by multiplication.

Certain precautions must be observed in using formula (viii). Namely:

(*a*) As given, it is for a value of $x > \breve{x}$, the mode.

(*b*) It assumes that l is greater than m; if l be less than m, then the sign before the C-series must be changed to plus.

(*c*) If, on the other hand, $x < \breve{x}$, and $l > m$, we obtain our value by working from the other end of the curve. In this case, for $l > m$, we have:

$$u = \sqrt{nLM}\left(\frac{l}{n} - x\right),$$

and our formula becomes

$$\begin{aligned} I_x(l+1, m+1) &= L^{l+1}M^{m+1}(1-x)^{l+1}x^{m+1} \\ &\times \left[\frac{1}{u}\left\{B_0 - \frac{B_1}{u^2+\epsilon} + \frac{B_2}{(u^2+\epsilon)(u^2+2\epsilon)} - \text{etc.}\right\}\right. \\ &\left. + \left\{\frac{C_1}{(u^2+\epsilon)(u^2+2\epsilon)} - \frac{C_2}{(u^2+\epsilon)(u^2+2\epsilon)(u^2+3\epsilon)} + \text{etc.}\right\}\right] \text{......(xii)}, \end{aligned}$$

where the C-series must be reversed in sign if l be $< m$.

In order that this formula may be effective ϵ must be fairly large, i.e. l and m must differ widely, or, if they be nearly equal, and therefore ϵ small, for example 2, 3 or 4, then u must be fairly considerable to give ample convergency in the B and C series, say *at least* 3 to 4. But looking to the value of u in (vii), this means

$$x - \breve{x} > u \times \sqrt{\frac{lm}{n^3}},$$

$$\frac{\text{Abscissa-Mode}}{\text{Standard Deviation}} > u\sqrt{\frac{lm}{(l+1)(m+1)}\,\frac{(n+2)^2(n+3)}{n^3}},$$

by (vi). Or, if l and m are considerable, the radical approaches unity, and consequently the distance from the mode of the point to which the area is taken must be 3 to 4 times the standard deviation.

For example, if $l = 20$, $m = 80$, then by (vi)

$$\sigma = {\cdot}03984.$$

ff 2

Hence unless $x - \breve{x} > 3\sigma$ to 4σ, ·12 to ·16 say, or x lie outside the range ·10 to ·30, or even ·06 to ·34, we cannot anticipate very good results from formula (viii) or (xii). It is for "tail" frequencies that these formulae will be found valuable.

We need accordingly formulae which will give areas on either side of the mode with reasonable approximation. One fairly good formula exists for finding such areas near the mode and on either side. It is the expansion in incomplete normal moment functions. If this gave satisfactory results for all cases up to a range of three to four times the standard deviation, we could by aid of it and of formula (viii) obtain the total area on one side (and therefore on the other) of the mode. Hence by subtraction we could from the normal moment formula find any area from terminal up to mode, i.e. in our notation $\frac{1}{2}(1 - \alpha_x)$.

The formula in question, if we take as before

$$\epsilon = l/m + m/l$$

and

$$u = \sqrt{(\epsilon + 2)\, n}\, (x - \breve{x}) = \sqrt{(\epsilon + 2)\, n}\left(x - \frac{l}{n}\right) = \sqrt{\frac{n^3}{lm}}\left(x - \frac{l}{n}\right),$$

is as follows:

$$i_x(l+1,\, m+1) = k_0\,[m_0(u) - k_3 m_3(u) - k_4 m_4(u) - k_5 m_5(u) + k_6 m_6(u) + k_7 m_7(u) + k_8 m_8(u) - k_9 m_9(u) - k_{10} m_{10}(u) + k_{12} m_{12}(u)] \quad \text{.........(xiii)},$$

where $i_x(l+1,\, m+1)$ is the ratio to the total area of the area of the frequency curve from mode to x, and

$$k_0 = \left(1 + \frac{1}{n}\right)\left(1 - \frac{1+\epsilon}{12n} + \frac{(1+\epsilon)^2}{288n^2}\right) = \sqrt{2\pi}\left(1 + \frac{1}{n}\right) B_0{}^*,$$

$$k_3 = \frac{2}{3}\sqrt{\frac{\epsilon - 2}{n}}, \quad k_4 = \frac{3}{4}\frac{\epsilon - 1}{n}, \quad k_5 = \frac{8}{5}\frac{\epsilon}{n}\sqrt{\frac{\epsilon - 2}{n}},$$

$$k_6 = \frac{5}{6}\left\{\frac{\epsilon - 2}{n} - \frac{3(\epsilon^2 - \epsilon - 1)}{n^2}\right\}, \quad k_7 = \frac{4(\epsilon - 1)}{n}\sqrt{\frac{\epsilon - 2}{n}},$$

$$k_8 = \frac{7}{32}\frac{47\epsilon^2 - 94\epsilon + 15}{n^2}, \quad k_9 = \frac{64}{27}\frac{\epsilon - 2}{n}\sqrt{\frac{\epsilon - 2}{n}},$$

$$k_{10} = \frac{105}{8}\frac{(\epsilon - 1)(\epsilon - 2)}{n^2}, \quad k_{12} = \frac{385}{72}\frac{(\epsilon - 2)^2}{n^2}.$$

It is to be noted that when x is $< \frac{l}{n}$, the quantity u becomes negative, and all even order normal moment functions remain of the same sign, but odd normal moment functions change sign, i.e.

$$m_{2s}(-u) = m_{2s}(u), \text{ but } m_{2s+1}(-u) = -m_{2s+1}(u).$$

* $B_0 = {}_1B_0 + \frac{{}_2B_0}{n} + \frac{{}_3B_0}{n^2}$, as provided for in Table XLVI.

When $\qquad x=1,\quad u=\sqrt{\dfrac{n^3}{lm}}\left(1-\dfrac{l}{n}\right)=\sqrt{\dfrac{nm}{l}}=u_1$, say,

$$x=0,\quad u=-\sqrt{\frac{nl}{m}}=u_0.$$

But $\qquad i_{u_0}(l+1, m+1)+i_{u_1}(l+1, m+1)$ should be $=1$.

Hence we have an useful criterion for the effectiveness of this formula. It will be found in many cases by no means satisfactory, if $x'=x-\dfrac{l}{n}$ be greater than 1 to 1·5 times the standard deviation.

Thus we are compelled to admit that while formula (xii) is good for areas at the tails and formula (xiii) for areas round the mode, neither is satisfactory for areas having a bounding ordinate between 1σ (or $1{\cdot}5\sigma$) and 3σ (or $2{\cdot}5\sigma$) from the mode, that is to say from the mathematical standpoint which may demand six to seven figure accuracy. We may also remark that, even with the present Tables, both formulae require very considerable arithmetical labour.

A method which can give good results when l and m are *small*, is due to Soper*. By taking our origin at one or other end of the curve, we can be certain that x is $\leq \frac{1}{2}$. We then represent the binomial $(1-x)^m$ by a quintic polynomial passing through the six points equally spaced from $x=0$ to $\frac{1}{2}$:

$$\left.\begin{array}{cccccc} y_0 & y_1 & y_2 & y_3 & y_4 & y_5 \\ 1 & (\cdot 9)^m & (\cdot 8)^m & (\cdot 7)^m & (\cdot 6)^m & (\cdot 5)^m \end{array}\right\} \qquad \text{(xiv)}.$$

The quintic† is

$$\begin{aligned} y_x = \tfrac{1}{120}\Big[\,&120y_0-\frac{x}{h}(274y_0-600y_1+600y_2-400y_3+150y_4-24y_5)\\ &+\left(\frac{x}{h}\right)^2(225y_0-770y_1+1070y_2-780y_3+305y_4-50y_5)\\ &-\left(\frac{x}{h}\right)^3(85y_0-355y_1+590y_2-490y_3+205y_4-35y_5)\\ &+\left(\frac{x}{h}\right)^4(15y_0-70y_1+130y_2-120y_3+55y_4-10y_5)\\ &-\left(\frac{x}{h}\right)^5(y_0-5y_1+10y_2-10y_3+5y_4-y_5)\Big], \end{aligned}$$

where in our particular case $\qquad h=\frac{1}{5}\times\frac{1}{2}=\frac{1}{10}$ ....(xv).

* *Loc. cit.* pp. 21—22. He suggests that when m is large, it may be possible to obtain a good result by fitting the quintic only to the range of integration (p. 23).

† The six y's may of course be calculated for other functions than $(1-x)^m$ and the integral $\int_0^x x^l f(x)\,dx$, i.e. the lth incomplete moment function of $y=f(x)$, thus determined.

Substituting, we have

$$\frac{\int_0^x x^l (1-x)^m \, dx}{B(l+1,\, m+1)} = \frac{\Gamma(l+m+2)}{\Gamma(l+1)\,\Gamma(m+1)} \int_0^x x^l (1-x)^m \, dx$$

$$= \frac{\Gamma(l+m+2)}{\Gamma(l+1)\,\Gamma(m+1)} \int_0^x x^l y_x dx, \text{ approximately}$$

$$= \frac{\Gamma(l+m+2)}{\Gamma(l+1)\,\Gamma(m+1)} \frac{x^{l+1}}{120} \left[\frac{1}{l+1}(120 y_0) - \frac{(10x)}{l+2} \times (274 y_0 - 600 y_1 + 600 y_2 - 400 y_3 + 150 y_4 - 24 y_5) + \frac{(10x)^2}{l+3}(225 y_0 - 770 y_1 + 1070 y_2 - 780 y_3 + 305 y_4 - 50 y_5) - \frac{(10x)^3}{l+4}(85 y_0 - 355 y_1 + 590 y_2 - 490 y_3 + 205 y_4 - 35 y_5) + \frac{(10x)^4}{l+5}(15 y_0 - 70 y_1 + 130 y_2 - 120 y_3 + 55 y_4 - 10 y_5) - \frac{(10x)^5}{l+6}(y_0 - 5 y_1 + 10 y_2 - 10 y_3 + 5 y_4 - y_5)\right] \quad \ldots\ldots\ldots\ldots(\text{xvi}).$$

Here the six series of y's in round brackets are functions of m only, and tables of these six functions for the argument m would render the labour of computing formula (xvi) relatively easy. This formula, however, is of little service when both l and m are large. It does not therefore provide solutions for the gap between Wishart's formulae, which we desire to fill.

We have already seen that fair approximations can be made for the interval $x - \breve{x} > 1{\cdot}5\sigma$ and $< 3\sigma$ by Camp's method*, which is by no means so laborious as the expansions already referred to.

In order to test the degree of approximation of Wishart's formulae (at least in a single case) the table opposite has been kindly computed for this work by E. C. Fieller.

Notes on the Table.

If the incomplete B-function—$B_x(l+1, m+1)$—be expressed by $\int_0^x x^l (1-x)^m dx$, then we have seen that $u = \left(x - \frac{l}{n}\right) \Big/ \sqrt{\frac{lm}{n^3}}$, where $n = l + m$. The expression $\sqrt{\frac{lm}{n^3}}$, when l and m are considerable, approximates to the standard deviation of the curve $y = y_0 x^l (1-x)^m$. Thus u is approximately the deviation from the mode of the bounding abscissa of the integral measured in terms of the standard deviation. If $x < \frac{l}{n}$, i.e. to the left of the mode, u is negative; it is positive if $x > \frac{l}{n}$, i.e. to right of the mode, the positive direction of the axis of x being from left to

* See pp. xxx—xl, above.

Table of the Errors made in evaluating the Incomplete B-function Ratio $I_x(21, 81)$ or portions of it to seven decimal places by Formulae A and B.

$u = \pm$ Distance from Mode $\times \sqrt{n^3/lm}$	To Left of Mode				To Right of Mode			
	Area of Tail		Area to Mode		Area of Tail		Area to Mode	
	Exact Value	Error Formula A	Exact Value	Error Formula B	Exact Value	Error Formula A	Exact Value	Error Formula B
0·0	·460 3985−	—	—	—	·539 6015+	—	—	—
0·1	·420 3484	2·127 6297	·040 0501	−1	·499 5505+	2·138 0185−	·040 0510	0
0·2	·380 7037	857 4540	·079 6948	−1	·459 8909	867 8832	·079 7106	−1
0·3	·341 8688	453 9036	·118 5297	−1	·420 9929	463 4281	·118 6087	−1
0·4	·304 2360	266 1895+	·156 1625−	−1	·383 1950−	274 9997	·156 4066	−1
0·5	·268 1733	163 8633	·192 2251	0	·346 7971	171 8781	·192 8044	0
0·6	·234 0126	103 3855−	·226 3858	0	·312 0554	110 5096	·227 5461	−1
0·7	·202 0391	65 9832	·258 3594	−1	·279 1786	72 1868	·260 4229	−1
0·8	·172 4824	42 2639	·207 9160	1	·248 3267	47 5577	·291 2748	−2
0·9	·145 5106	27 0267	·314 8878	4	·219 6116	31 4555+	·319 9899	−4
1·0	·121 2262	17 1908	·339 1722	7	·193 0989	20 8247	·346 5027	−8
1·1	·099 6654	10 8460	·360 7331	13	·168 8110	13 7714	·370 7905+	−13
1·2	·080 8002	6 7728	·379 5982	23	·146 7318	9 0841	·392 8698	−20
1·3	·064 5437	4 1782	·395 8548	34	·126 8110	5 9712	·412 7905+	−27
1·4	·050 7570	2 5443	·409 6414	47	·108 9701	3 9086	·430 6314	−37
1·5	·039 2591	1 5236	·421 1393	58	·093 1074	2 5464	·446 4941	−45
1·6	·029 8380	8971	·430 5614	64	·079 1039	1 6505−	·460 4976	−51
1·7	·022 2575+	5149	·438 1410	61	·066 8279	1 0642	·472 7736	−53
1·8	·016 2779	2951	·444 1206	46	·056 1404	6822	·483 4612	−47
1·9	·011 6565+	1641	·448 7419	14	·046 8986	4350−	·492 7029	−32
2·0	·008 1619	892	·452 2366	− 36	·038 9604	2757	·500 6411	− 6
2·1	·005 5795+	474	·454 8189	−103	·032 1867	1737	·507 4148	+ 30
2·2	·003 7177	244	·456 6808	−183	·026 4441	1084	·513 1574	+ 75
2·3	·002 4099	124	·457 9885+	−270	·021 6069	776	·517 9947	+125
2·4	·001 5167	60	·458 8817	−356	·017 5580	418	·522 0435+	+181
2·5	·000 9247	28	·459 4738	−431	·014 1902	257	·525 4114	+232
2·6	·000 5447	13	·459 8538	−485	·011 4061	157	·528 1954	+280
2·7	·000 3091	6	·460 0894	−510	·009 1188	95	·530 4827	+317
2·8	·000 1684	3	·460 2300	−502	·007 2509	57	·532 3506	+341
2·9	·000 0878	1	·460 3106	−462	·005 7347	34	·533 8668	+348
3·0	·000 0436	0	·460 3548	−393	·004 5113	20	·535 0902	+340
3·1	·000 0205+	0	·460 3779	−305	·003 5300	11	·536 0716	+316
3·2	·000 0091	0	·460 3893	−193	·002 7474	7	·536 8541	+280
3·3			·460 3947	− 83	·002 1270	4	·537 4746	+232
3·4	Will remain in accordance				·001 6379	2	·537 9636	+178
3·5			The error will sink to zero and then rise positively again		·001 2546	1	·538 3469	+122
3·6					·000 9560	1	·538 6455+	+ 67
3·7					·000 7246	0	·538 8770	+ 15
3·8					·000 5463	0	·539 0552	− 28
3·9					·000 4097	0	·539 1918	− 66
4·0					·000 3057	0	·539 2959	− 95
4·1					·000 2268	0	·539 3747	−114
4·2					·000 1674	0	·539 4341	−125
4·3					·000 1230	0	·539 4786	−131
4·4					·000 0898	0	·539 5117	−131
4·5					·000 0653	0	·539 5363	−128
4·6					·000 0472	0	·539 5544	−121
4·7					·000 0339	0	·539 5676	−114
4·8					·000 0242	0	·539 5773	−105
4·9					·000 0172	0	·539 5843	− 96
5·0					·000 0122	0	·539 5893	− 87
					Will remain in accordance		The error will sink to zero and then rise positively again	

right. The "exact" areas were found by quadrature, using Weddle's formula, two figures being finally dropped. The ordinates were computed to eight figures and thirty ordinates were used. We think the values are certainly exact to seven figures.

Formula A is Wishart's "Generalised Schlömilch Formula" (equations (viii) and (xii)) and Formula B is the Expansion in Incomplete Normal Moment Functions (equation (xiii)). See our pp. ccxxvi and ccxxviii. Formula B was "corrected" as suggested by Wishart (*Biometrika*, Vol. XIX. p. 26) by taking double the last term to represent the last term and the remainder of the series in the case of both the B and C series.

Neither Formula A nor Formula B nor the two combined enable us to find the area from either terminal to the mode, although this is needful if we require the incomplete B-function, i.e. the probability integral of a Type I curve in the ordinary sense. Accordingly, under Formula B for comparison with the "exact" value, we can only use the ratio to the total area of the area from the mode up to the ordinate corresponding to a given x (or u).

The extent of the present table for a single Incomplete B-function indicates that Formula A cannot be trusted to give even five-figure accuracy at 2·0 to 2·5 times the standard deviation from the mode; it becomes accurate at 3·0 times the standard deviation on the shorter range side of the mode, but is not accurate to the seventh figure till about 3·5 times the standard deviation from the mode on the longer range side.

Turning to Formula B, we see that precisely as in the case of the expansion in a tetrachoric series, the degree of accuracy is sinuous*, the error being sometimes positive and sometimes negative. Thus there are values of u for which the error is zero or very small, and if we happened to alight on one of these we might imagine the expansion a good one. We see, however, that it is not generally reliable beyond the distance of the standard deviation from the mode†. Accordingly Formulae A and B leave a gap of roughly one to three times the standard deviation where neither can invariably be safely applied; thus together they cannot give the total area on either side of the mode. They serve only to find areas for $\pm\sigma$ round the mode, or to find tail areas in excess of $\pm 3\sigma$ from the mode.

We are accordingly within the above range (supposing the l and m lie outside the values of the Tables of the Incomplete B-function) reduced to using either (i) a quadrature method—preferably Weddle's, or (ii) the method of continued fractions.

(i) We will indicate here first the process of obtaining an incomplete B-function by Weddle's quadrature formula.

* The two methods are closely related: see J. Henderson, *Biometrika*, Vol. XIV. pp. 157—158.

† This conclusion was reached by the present Editor when in 1908 he attempted to apply the tables of the Incomplete Normal Moment Function to the computing of Incomplete Γ- and B-functions. Its non-recognition renders nugatory a good deal of Laplace's work in the *Théorie analytique des probabilités*. Cf. *Biometrika*, Vol. VI. p. 68.

For the integral over a range divided into 6 equal intervals h by ordinates y_0, y_1, y_2, y_3, y_4, y_5, y_6, Weddle's approximation is

$$\frac{3h}{10}(y_0 + 5y_1 + y_2 + 6y_3 + y_4 + 5y_5 + y_6) \ldots \ldots\ldots\ldots\ldots (\text{xvii}),$$

from which we can find the weights to be attached to the successive ordinates when the range of integration is divided into any number of intervals that is a multiple of 6. For the case of 24 intervals, the Weddle weights are shown in the last column of the following table.

x	$1-x$	$22+\log x^{20}(1-x)^{80}$	$10^{22}x^{20}(1-x)^{80}$		Weighting Factor*
·120	·880	$\bar{1}$·1422 38696	·1387 5182	y_0	$1\times{}$·$3h$
·116	·884	$\bar{1}$·0053 40984	·1012 3740	y_1	$5\times{}$·$3h$
·112	·888	$\bar{2}$·8573 97718	·0720 1081	y_2	$1\times{}$·$3h$
·108	·892	$\bar{2}$·6976 63462	·0498 4980	y_3	$6\times{}$·$3h$
·104	·896	$\bar{2}$·5253 07562	·0335 2027	y_4	$1\times{}$·$3h$
·100	·900	$\bar{2}$·3394 00752	·0218 4745	y_5	$5\times{}$·$3h$
·096	·904	$\bar{2}$·1388 99100	·0137 6890	y_6	$2\times{}$·$3h$
·092	·908	$\bar{3}$·9226 24426	·0083 6805	y_7	$5\times{}$·$3h$
·088	·912	$\bar{3}$·6892 40508	·0048 8923	y_8	$1\times{}$·$3h$
·084	·916	$\bar{3}$·4372 23618	·0027 3668	y_9	$6\times{}$·$3h$
·080	·920	$\bar{3}$·1648 25924	·0014 6159	y_{10}	$1\times{}$·$3h$
·076	·924	$\bar{4}$·8700 29542	·0007 4136	y_{11}	$5\times{}$·$3h$
·072	·928	$\bar{4}$·5504 88024	·0003 5521	y_{12}	$2\times{}$·$3h$
·068	·932	$\bar{4}$·2034 51246	·0001 5974	y_{13}	$5\times{}$·$3h$
·064	·936	$\bar{5}$·8256 67376	·0000 6694	y_{14}	$1\times{}$·$3h$
·060	·940	$\bar{5}$·4132 53296	·0000 2590	y_{15}	$6\times{}$·$3h$
·056	·944	$\bar{6}$·9615 20084	·0000 0915	y_{16}	$1\times{}$·$3h$
·052	·948	$\bar{6}$·4647 33856	·0000 0292	y_{17}	$5\times{}$·$3h$
·048	·952	$\bar{7}$·9157 80620	·0000 0083	y_{18}	$2\times{}$·$3h$
·044	·956	$\bar{7}$·3056 84914	·0000 0020	y_{19}	$5\times{}$·$3h$
·040	·960	$\bar{8}$·6228 98466	·0000 0004	y_{20}	$1\times{}$·$3h$
·036	·964	$\bar{9}$·8522 12728	·0000 0001	y_{21}	$6\times{}$·$3h$
·032	·968	$\overline{10}$·9730 28150	·0000 0000	y_{22}	$1\times{}$·$3h$
·028	·972	$\overline{11}$·9564 61818	·0000 0000	y_{23}	$5\times{}$·$3h$
·024	·976	$\overline{12}$·7602 10250	·0000 0000	y_{24}	$1\times{}$·$3h$

In the case of a curve having high contact with the x-axis at one limit of integration, we may take our ordinates at any convenient interval and make their number up to a multiple of 6 by adding a small number of zero ordinates; a more convenient form of the Weddle approximation in this case is

$$\frac{3h}{10}\left[(y_0 + y_3 + y_6 + \ldots) + 5(y_1 + y_3 + y_5 + \ldots) + (y_2 + y_4 + y_6 + \ldots)\right] \ldots (\text{xviii}).$$

Illustration. We will calculate

$$I_{\cdot 12}(21, 81) = \int_0^{\cdot 12} x^{20}(1-x)^{80}\,dx \Big/ \int_0^1 x^{20}(1-x)^{80}\,dx$$

* Formulae of the nature of Weddle's, while very suitable for the quadrature of mathematical functions, are to be avoided in cases where the ordinates are determined by observation. They give unequal weights to the ordinates and thus may markedly emphasise large random errors.

by this method. We first compute the ordinates at intervals of $h = \cdot 004$ from $x = \cdot 12$ down towards the origin, arranging the work as in the table on p. ccxxxiii.

We have
$$y_0 + y_3 + y_6 + \dots + y_{21} = \cdot 2054{,}8915,$$
$$y_1 + y_3 + y_5 + \dots + y_{21} = \cdot 1849{,}6951,$$
$$y_2 + y_4 + y_6 + \dots + y_{22} = \cdot 1260{,}8297,$$
$$h = \cdot 004,$$

and using the approximation (xviii),

$$\int_0^{\cdot 12} x^{20}(1-x)^{80}\,dx = \cdot 1507{,}7036 \times 10^{-24}.$$

From E. S. Pearson's Tables of the Complete Γ-Function*, the value of

$$\log \frac{1}{\int_0^1 x^{20}(1-x)^{80}\,dx} = \log \Gamma(102) - \log \Gamma(21) - \log \Gamma(81)$$

is found to be 22·7334,7268,91, and

$$\frac{1}{\int_0^1 x^{20}(1-x)^{80}\,dx} = 5\cdot 4134{,}3204 \times 10^{22}.$$

Thus
$$I_{\cdot 12}(21, 81) = 10^{-2} \times \cdot 1507{,}7036 \times 5\cdot 4134{,}3204$$
$$= \cdot 0081{,}6185.$$

Had we taken ordinates at intervals of ·008, instead of ·004, we should have obtained the result

$$I_{\cdot 12}(21, 81) = \cdot 0081{,}617.$$

This method is not really very laborious.

(ii) Another method of determining the value of the Incomplete B-function Ratio, namely,

$$I_x(p, q) = \frac{B_x(p, q)}{B(p, q)} = \frac{\int_0^x x^{p-1}(1-x)^{q-1}\,dx}{\int_0^1 x^{p-1}(1-x)^{q-1}\,dx},$$

has been provided by J. H. Müller†; it consists in converting the Ratio into a continued fraction, and evaluating its convergents.

Let $t = \dfrac{x}{1-x}$, $k = p + q - 1$, $u_s = \dfrac{q-s}{p+s}$. Then

$$I_x(p, q) = C\left[\frac{b_1}{1+}\,\frac{b_2}{1+}\,\frac{b_3}{1+}\,\frac{b_4}{1+}\,\dots\right],$$

where
$$C = x^p(1-x)^{q-1}\frac{\Gamma(k+1)}{\Gamma(p+1)\,\Gamma(q)},$$

* *Tracts for Computers*, No. VIII. Cambridge University Press.

† See *Biometrika*, Vol. XXII. pp. 284—297.

and
$$b_1 = \quad 1,$$
$$b_2 = -u_1 t,$$
$$b_3 = \quad \frac{1 \times (k+1)}{(p+1)(p+2)} t,$$
$$b_4 = -\frac{(p+1)(p+2)}{(p+2)(p+3)} u_2 t,$$
$$b_5 = \quad \frac{2 \times (k+2)}{(p+3)(p+4)} t,$$
$$b_6 = -\frac{(p+2)(p+3)}{(p+4)(p+5)} u_3 t,$$
$$\dots\dots\dots\dots\dots\dots\dots\dots\dots$$
$$b_{2s} = -\frac{(p+s-1)(p+s)}{(p+2s-2)(p+2s-1)} u_s t,$$
$$b_{2s+1} = \quad \frac{s(k+s)}{(p+2s-1)(p+2s)} t,$$
$$u_1 = \frac{q-1}{p+1},$$
$$u_2 = \frac{q-2}{p+2},$$
$$\dots\dots\dots$$
$$u_s = \frac{q-s}{p+s}.$$

In applying this method, it is desirable since $I_x(p,q) = 1 - I_{1-x}(q,p)$ to select $I_x(p,q)$ or $I_{1-x}(q,p)$ for calculation, according as this or that integral avoids summing through the largest term in the binomial $(x+1-x)^{p+q+1}$ (see p. xxxv). The successive convergents are given by P_s/Q_s, where
$$P_1 = b, \quad P_2 = 1, \dots, P_s = P_{s-1} + b_s P_{s-2},$$
$$Q_1 = 1, \quad Q_2 = 1 + b_2, \dots, Q_s = Q_{s-1} + b_s Q_{s-2}.$$

One of the advantages of the method is that the true value of $I_x(p,q)$ always lies between $C\frac{P_{2s}}{Q_{2s}}$ and $C\frac{P_{2s+1}}{Q_{2s+1}}$, so that it is easy to judge the magnitude of the error made by stopping at any convergent.

Illustration. Evaluate $I_{\cdot 12}(21, 81)$.

Let us first find the constant C. We have
$$C = (\cdot 12)^{21} (\cdot 88)^{80} \Gamma(102)/\{\Gamma(22)\Gamma(81)\},$$
$$\begin{aligned}\log C &= 77\cdot 221{,}4199{,}420 - 101 + 159\cdot 974{,}3250{,}285 - 19\cdot 708{,}3439{,}116 \\ &\qquad - 118\cdot 854{,}7277{,}225 \\ &= 237\cdot 195{,}7449{,}705 - 239\cdot 563{,}0716{,}341 \\ &= \bar{3}\cdot 632{,}6733{,}364.\end{aligned}$$

Thus $C = \cdot 00429{,}21346$.

	b	P	Q	P/Q	$C\times P/Q$
1	1·00000 00000	1	1	1	·00429 21346
2	– ·49586 77686	1	·50413 22314	1·98360 65374	·00851 39063
3	·02748 83220	1·02748 83220	·53162 05534	1·93274 75498	·00829 56126
4	– ·42934 78261	·59814 04959	·31517 24758	1·89781 95808	·00814 56971
5	·04681 81818	·64624 56309	·34006 19835	1·90037 59969	·00815 66696
6	– ·37636 36364	·42112 72988	·22144 25244	1·90174 53849	·00816 25472
7	·06060 60606	·46029 37007	·24205 23416	1·90162 87868	·00816 20467
8	– ·33333 33333	·31991 79344	·16823 81668	1·90157 76294	·00816 18271
9	·07053 29154	·35238 37911	·18531 08241	1·90158 23431	·00816 18474
10	– ·29780 56426	·25711 04251	·13520 85487	1·90158 40904	·00816 18549
11	·07771 26100	·28449 50892	·14960 95365	1·90158 39221	·00816 18541
12	– ·26805 35191	·21557 57350	·11336 64092	1·90158 38688	·00816 18539

The actual value as found by quadrature is ·00816,185; thus the 9th or 10th convergent would suffice for seven-figure accuracy, and for many purposes the 6th or 7th would be close enough. The 11th and 12th convergents give the value most probably correct to the 9th figure, i.e. ·0081,61854. As we have noted the great advantage of the method is that the true value always lies between those given by the $(2s-1)$th and the $2s$th convergents. Its application is not really very laborious, certainly less so than Methods A and B just discussed, and far more exact. They fail in the region of 1·5 to 3·0 times the standard deviation from the mode. The above integral is taken within this region and the 7th or 8th convergent gives the result correct to at least 1 in the 7th decimal place.

The method of equation (xiii) provides the answer ·008,1583, being in error by ·000,0036 while the method of equation (xii) gives ·008,2511, or is in error by ·000,0892, i.e. in the fourth decimal place or the second significant figure. The reduction of the Incomplete B-function to a continued fraction seems likely therefore to supply the gap between the two methods discussed above and even to cover advantageously a good deal of the ground where they function adequately, since it involves no laborious interpolations*.

Table XLIX.

Values of the Differences of the Powers of Zero. Table of

$$q(p, s) = \Delta^p 0^{p+s}/\Gamma(p+s+1),$$

from $p = 1$ *to* 20 *and* $s = 0$ *to* 20. (K. Pearson and Ethel M. Elderton, *Biometrika*, Vol. XVII. p. 200; Ethel M. Elderton and Margaret Moul, *ibid.* Vol. XXII. pp. 306—308.)

These differences of the powers of zero are of service in a number of problems, and are required for the calculation of several formulae in the theory of probability.

* The continued fraction method is illustrated on numerous examples by Dr Müller (*loc. cit.*), but the Incomplete B-function covers such a wide range of curves of varying forms that it is not at present possible to assert that the continued fraction method will be found equally applicable to all cases.

The quantity tabled is the function

$$q(p, s) = \frac{\Delta^p 0^{p+s}}{\Gamma(p+s+1)} \quad \text{..............................(i)},$$

where

$$\Delta^p 0^{p+s} = p^s - p(p-1)^s + \frac{p(p-1)}{1 \, . \, 2}(p-2)^s - \frac{p(p-1)(p-2)}{1 \, . \, 2 \, . \, 3}(p-3)^s + \dots$$
$$\text{......(ii)}.$$

Illustration (i). Given a list of the names of n individuals, if u of these be pricked at random i times, what is the chance that all the names will have been pricked?

The answer to this problem in the language of the lottery is given by Laplace*. It is

$$P(n, u, i) = \Delta^n \left(\frac{t(t-1)(t-2)\dots(t-u+1)}{n(n-1)(n-2)\dots(n-u+1)} \right)^i \quad \text{............(iii)},$$

where t is to be put equal to zero after the differencing.

It is clear that by expanding in powers of t and then putting t zero, the required probability will be expressed in terms of the differences of zero.

For example, on a court of discipline of four members two are taken at random for a given sitting; what is the chance that all four will have served in six sittings?

$P(4, 2, 6) = \Delta^4 (t(t-1))^6/12^6$,

or with t put zero after differencing:

$$= (\Delta^4 0^{12} - 6\Delta^4 0^{11} + 15\Delta^4 0^{10} - 20\Delta^4 0^9 + 15\Delta^4 0^8 - 6\Delta^4 0^7 + \Delta^4 0^6)/12^6$$

$$= \frac{1925}{12} \times \cdot 030{,}638{,}779 - \frac{1925}{24} \times \cdot 087{,}632{,}275$$
$$+ \frac{875}{48} \times \cdot 225{,}562{,}169 - \frac{175}{72} \times \cdot 513{,}888{,}889$$
$$+ \frac{175}{864} \times 1\cdot 012{,}500{,}000 - \frac{35}{3456} \times 1\cdot 666{,}666{,}667$$
$$+ \frac{5}{20736} \times 2\cdot 166{,}666{,}667,$$

from the values of $q(p, s)$ in Table XLIX, paying regard to the factor $\Gamma(p+s+1)$.

Hence

$$\begin{aligned} P(4, 2, 6) = {} & \,4\cdot 9149{,}7080 - 7\cdot 0288{,}3872 \\ & + 4\cdot 1118{,}1037 - 1\cdot 2490{,}3549 \\ & + \cdot 2050{,}7813 - \cdot 0168{,}7886 \\ & + \cdot 0005{,}2244 \\ & \,9\cdot 2323{,}8174 - 8\cdot 2947{,}5307 \\ = {} & \cdot 9376{,}2867. \end{aligned}$$

Thus in about 100 trials there would be only six cases of all four members failing to serve at least once in sets of six sittings.

* *Théorie analytique des probabilités*, 1st Edn. 1812, p. 193, or, in any edition, Livre II. chap. ii.

Illustration (ii). If $u=1$, we see that the chance that in i drawings or prickings all individuals of a group of n will have been drawn or marked is

$$P(n, 1, i)=\frac{\Delta^n 0^i}{n^i} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\text{(iv)}.$$

Example. Five platoons of ten men are kept each at full strength, but each loses 10 °/$_\circ$ in every engagement. In how many engagements must they be concerned before the chances are about 7 to 3 that one or more of the platoons contains none of the original members?

Consider one platoon, the chance that after 19 engagements none of the original men will be left equals

$$\begin{aligned} P(10, 1, 19) &= \frac{\Delta^{10}0^{19}}{10^{19}} = \frac{19\,!}{10^{19}}\, q\,(10, 19) \\ &= \cdot012{,}1645 \times 14\cdot238{,}2675 \\ &= \cdot17320. \end{aligned}$$

This indicates that about one platoon in six would be denuded of its original men.

We next try 20 engagements and find

$$\begin{aligned} P(10, 1, 20) &= \frac{\Delta^{10}0^{20}}{10^{20}} = \frac{20\,!}{10^{20}}\, q\,(10, 20) \\ &= \cdot024{,}3290 \times 8\cdot826{,}386 \\ &= \cdot214{,}737. \end{aligned}$$

The chance therefore that a single platoon will not have lost all its original members is

$$\cdot785{,}263,$$

or the chance that out of five platoons none will have lost all its original members is

$$(\cdot785{,}263)^5 = \cdot298{,}590.$$

Hence the chance that one or more will have lost all its original members is

$$\cdot701{,}410,$$

or the odds are about 7 to 3.

Illustration (iii). In questions of the above kind we may meet with problems which involve higher values of n and i than are provided for in our Table. A somewhat lengthy series of approximations with a complicated formula is given by Laplace*, but provides in the case of high values of n, no better result than a very simple formula of De Moivre†. We have

$$\begin{aligned} P(n, 1, i) &= \Delta^n 0^i/n^i \\ &= 1 - n\left(1-\frac{1}{n}\right)^i + \frac{n(n-1)}{1\,.\,2}\left(1-\frac{2}{n}\right)^i - \frac{n(n-1)(n-2)}{1\,.\,2\,.\,3}\left(1-\frac{3}{n}\right)^i + \ldots. \end{aligned}$$

* *Loc. cit.* p. 200.

† *The Doctrine of Chances*, 3rd Edition, 1756, pp. 123—126, and Preface, pp. ix—x. De Moivre, following a suggestion of Halley, replaces an arithmetical by a geometrical series, which here seems equivalent to taking $\left(1-\frac{1}{n}\right)^s = 1-\frac{s}{n}$.

Now De Moivre neglects terms of the order $\frac{1}{n^2}$ or higher orders as compared with $\frac{1}{n}$. This enables him to write

$$P(n, 1, i) = 1 - n\left(1 - \frac{1}{n}\right)^i + \frac{n(n-1)}{1.2}\left(1 - \frac{1}{n}\right)^{2i} - \frac{n(n-1)(n-2)}{1.2.3}\left(1 - \frac{1}{n}\right)^{3i} + \dots,$$

as

$$P(n, 1, i) = \left\{1 - \left(\frac{n-1}{n}\right)^i\right\}^n \quad \text{.........................(v).}$$

Example. In an army corps of 10,000 men kept up to full strength, what is the number that must be lost before the odds are equal that all the original members of the corps have been replaced?

Here $$P(n, 1, i) = \tfrac{1}{2}, \quad \text{and} \quad n = 10{,}000.$$

Thus $$\tfrac{1}{2} = \left\{1 - \left(\frac{9999}{10{,}000}\right)^i\right\}^{10{,}000},$$

$$\therefore \quad i = \frac{\log 2^{\frac{1}{10{,}000}} - \log\left(2^{\frac{1}{10{,}000}} - 1\right)}{\log 10{,}000 - \log 9999}.$$

But $$\frac{1}{10{,}000}\log 2 = \cdot 00003{,}01030,$$

$$2^{\frac{1}{10{,}000}} = 1\cdot 00006{,}93181,$$

$$2^{\frac{1}{10{,}000}} - 1 = \cdot 00006{,}93181,$$

$$\log\left(2^{\frac{1}{10{,}000}} - 1\right) = \bar{5}\cdot 84034{,}66502 = -4\cdot 15915{,}33498,$$

$$\log 9999 = 3\cdot 99995{,}65684.$$

Hence $$i = \frac{\cdot 00003{,}01030 + 4\cdot 15915{,}33498}{4 - 3\cdot 99995{,}65684}$$

$$= \frac{4\cdot 15918{,}34528}{\cdot 00004{,}34316} = 95764\cdot 0.$$

Laplace* obtains for the same problem differently worded, and by processes of approximation which give little opportunity of judging the order of approximation, the answer

95767·4.

Assuming this agreement shows that both are practically correct, De Moivre's approximation involves far less arithmetic, and fewer ill-defined approximations than Laplace's formula†, and should accordingly be adopted for practical statistical work.

* *Loc. cit.* pp. 193—200.

† I have reworked Laplace's formula and find i to be

$$i = (\log n - \log\log k)\left(n - \tfrac{1}{2} + \tfrac{1}{2}\log k\right) + \tfrac{1}{2}\log k - \frac{1}{2n}(1 - 2\log k) \quad \text{..................(vi),}$$

where $\frac{1}{k}$ is the desired value of $P(n, 1, i)$.

[*Continued on next page*

We may now test De Moivre's formula (v) against Laplace's (vii) given in the footnote below for lower values of n. For $n = 100$, (v) gives $i = 495{\cdot}02$ and (vii^{bis}) 496·75. For most statistical purposes the shorter formula would in this case give an adequate answer.

Now let us take $i = 20$, $n = 10$. De Moivre's (v) gives us $P(10, 1, 20) = {\cdot}2736$. But Laplace's (vii) does not readily give us $1/k$, and so $P(10, 1, 20)$ for a given i. We are obliged to invert the problem and calculate i for given values of k. Taking $k = 3$, 4, 5, we find from Laplace's formula

$$P(10, 1, i) = {\cdot}3333, \quad {\cdot}2500, \quad {\cdot}2000,$$
$$i = 22{\cdot}80, \quad 20{\cdot}92, \quad 19{\cdot}74.$$

On the basis of the first difference between the values of i for ·25 and ·20, the difference between ·25 and ·3333 should be 2·00 for i, or we should by extrapolation have the value for i of 22·92, instead of 22·80. It seems therefore reasonable to interpolate for $i = 20{\cdot}00$ linearly. We find that $P(10, 1, 20) = {\cdot}211{,}017$, while the actual value found from our Table XLIX is ·214,737. Thus for n as low as 10, $i = 20$, Laplace's formula gives better results than does De Moivre's. For $n = 40$, $P(40, 1, i) = \frac{1}{2}$, Laplace's formula gives 161·94 and De Moivre's 160·52. Again this is not statistically a very great divergence. Thus we may conclude that when i is large, even when n is relatively small, there is not much difference between the two formulae, but that when i and n are both small Laplace's formula, if more laborious to compute, is the better.

It may be noted that for high values of n and i, the general formula (iii) has a De Moivre form of approximation

$$P(n, u, i) = \left\{1 - \left(\frac{n-u}{n}\right)^i\right\}^n.$$

Of course u must be of a lower order than n. This formula may sometimes be applied successfully with low values of n and i; for example, if we apply it to the example under Illustration (i) we find $P(4, 2, 6) = {\cdot}93895$ instead of the correct value ·93763. We hold, however, that for low values of n and i it is better to use Table XLIX, or when outside that table's range of values, to check by Laplace's formula as modified in the footnote, p. ccxxxix.

Laplace neglects the term $\frac{1}{2n}(1 - 2\log k)$, and says we may usually neglect the $(\log n - \log\log k)\,\frac{1}{2}\log k$ term, thus reducing the formula to

$$i = (\log n - \log\log k)(n - \tfrac{1}{2}) + \tfrac{1}{2}\log k.$$

It is a misfortune that all the logarithms in Laplace's formula are hyperbolic. Converted into logarithms to base 10, we have

$$i = 2{\cdot}302{,}5851\,(\log_{10} n - {\cdot}362{,}2157 - \log_{10}\log_{10} k)\,(n - {\cdot}5 + 1{\cdot}151{,}2925^5 \log_{10} k)$$
$$- \frac{1}{2n} + 2{\cdot}302{,}5851\left({\cdot}5 + \frac{1}{n}\right)\log_{10} k \quad \text{......(vii)}.$$

If $k = 2$, i.e. $P(n, 1, i) = \frac{1}{2}$, this becomes

$$i = 2{\cdot}302{,}5851\,(\log_{10} n + {\cdot}159{,}1745)\,(n - {\cdot}153{,}4264) + {\cdot}346{,}5736 - \frac{{\cdot}153{,}4264}{n} \quad \text{............(vii}^{bis}\text{)},$$

the last term being rarely of any importance.

When $n = 10{,}000$, we get Laplace's result 95767·4.

TABLES L^{a-d}.

Deviations to the $5\,^\circ/_\circ$ *and* $0{\cdot}5\,^\circ/_\circ$ *points in Type I Curves.* (E. S. Pearson, *Biometrika*, Vol. XVII. pp. 439—442.)

Suppose $y=f(x)$ is the frequency function of a variable x which lies between the limits a and b, so that $\int_a^b f(x)\,dx=1$. Let $\bar{x}$, σ_x, β_1 and β_2 in the usual notation represent the moment-coefficients of this distribution; let

$$P=\int_a^x f(x)\,dx \quad \text{and} \quad d=(x-\bar{x})/\sigma_x.$$

Values of P of ·05, ·95, ·005 and ·995 will be associated with values of d which we may call $d_{\cdot 05}$, $d_{\cdot 95}$, $d_{\cdot 005}$ and $d_{\cdot 995}$; these are the deviations from the mean measured in terms of the standard deviation as unit and up to the ordinates which cut off tail areas from the curve of $5\,^\circ/_\circ$ and $0{\cdot}5\,^\circ/_\circ$ respectively. Each value of β_1 and β_2 (within certain limits) is associated with a particular member of the Pearson system of frequency curves, and therefore with a set of four values of these d's. For the normal curve we know that $-d_{\cdot 05}=d_{\cdot 95}=1{\cdot}6449$ and $-d_{\cdot 005}=d_{\cdot 995}=2{\cdot}5758$, but for platykurtic, leptokurtic and skew curves the values may be modified very considerably. Tables L^{a-d} give the deviations for a large range of Type I curves,

$$y=y_0\left(1+\frac{x}{a_1}\right)^p\left(1-\frac{x}{a_2}\right)^q.$$

The lower limit of each table corresponds very nearly to the position of the Type III line; it is hoped to extend the tables so as to cover the Type VI and Type IV areas, but in the meantime Tables L^{a-d} will be found of use in many problems. They are entered with the β_1 and β_2 of the curve; if the skewness be positive (μ_3 and $\sqrt{\beta_1}$ positive), then $d_{\cdot 05}$ and $d_{\cdot 005}$ are negative, and $d_{\cdot 95}$ and $d_{\cdot 995}$ are positive. For curves which are negatively skew the signs must be reversed.

Illustration (i). The moment-coefficients of a frequency distribution will sometimes be known although the data themselves are not available. On the assumption that the distribution can be represented approximately by a Pearson curve, it is possible to obtain a good appreciation of the probable limits of frequency.

Suppose that we were given

$$\bar{x}=22{\cdot}8361,\quad \sigma_x=13{\cdot}5078,\quad \beta_1=\cdot 6783\ (\sqrt{\beta_1}\text{ is }+),\quad \beta_2=3{\cdot}7342.$$

Interpolation by aid of the tables, which may be done at sight, or by using the first order forward difference relation only, shows that

$$d_{\cdot 05}=-1{\cdot}35,\quad d_{\cdot 95}=+1{\cdot}87,\quad d_{\cdot 005}=-1{\cdot}69,\quad d_{\cdot 995}=+3{\cdot}27.$$

Hence, using the relations

$$x_{\cdot 05}=\bar{x}+d_{\cdot 05}\times\sigma_x,\ \text{etc.},$$

we find that $90\,^\circ/_\circ$ of the observations in the distribution should lie within the limits 4·60 and 48·10, and $99\,^\circ/_\circ$ between ·00 and 67·01.

The moment-coefficients are actually those of the distribution of 1086 observations of skin colour of white and negro crosses given as an example on p. lxvi of the Introduction to Part I of these *Tables.* Rough interpolation from the actual distribution, taking proportional parts of a frequency block, shows that 89·3 °/₀ of the observations lie between the inner pair of limits and 99·4 °/₀ between the outer, values which are in satisfactory agreement with the prediction.

Illustration (ii). The process of testing the hypothesis that a given sample has been drawn at random from a specified population, often consists in referring a frequency constant calculated from the observations to the theoretical distribution it would follow in repeated sampling were the hypothesis tested true. Similar problems will arise in comparing two samples.

It is known for example that if a proportion p of the individuals in a population possess a certain character A, and a proportion $q = 1 - p$ do not, then the number of individuals x bearing the character in a sample of n will vary in sampling according to the terms of the binomial series if the parent population be 'infinite,' but of the hypergeometrical series if the parent population be of 'finite' size. Good approximations to both these series may be obtained from the appropriate Type I curve if the size of the sample be not too small. The following example illustrates the position in the case of the binomial.

In an indefinitely large population 1/20 of the individuals possess a certain character C. A random sample of 100 is drawn; and the number of individuals, x, possessing character A is observed. Within what limits may x be "almost certainly" expected to lie?

The moment-coefficients of the binomial are as follows:

$$\text{Mean } x = np, \quad \sigma_x = \sqrt{npq}, \quad \beta_1 = \frac{1-4pq}{npq}, \quad \beta_2 = 3 + \frac{1-6pq}{npq}.$$

It is found that in the present case

$$\text{Mean } x = 5\cdot0000, \quad \sigma_x = 2\cdot1794, \quad \beta_1 = \cdot1705, \quad \beta_2 = 3\cdot1505.$$

Suppose that for the limits within which x is "almost certain" to fall, we take those given by $d_{\cdot005}$ and $d_{\cdot995}$, within which the chances are 99 to 1 that x will fall. The Tables, when entered with the above values of β_1 and β_2, give on interpolation

$$d_{\cdot005} = -2\cdot14, \quad d_{\cdot995} = +2\cdot92.$$

The corresponding limits for x are

$$x_{\cdot005} = 5\cdot0000 - 2\cdot14 \times 2\cdot1794 = 0\cdot34,$$
$$x_{\cdot995} = 5\cdot0000 + 2\cdot92 \times 2\cdot1794 = 11\cdot36.$$

The true binomial frequencies calculated to four places of decimals are as follows:

x	0	1	2	3	4	5	6	7
Frequency	·0059	·0312	·0812	·1396	·1781	·1800	·1500	·1060
x	8	9	10	11	12	13	14	15
Frequency	·0649	·0349	·0167	·0072	·0028	·0010	·0003	·0001

The Type I curve has really been fitted to a histogram representing the binomial; in this the frequencies corresponding to $x=0$ and $x=11$ are represented by blocks standing on bases $-0{\cdot}5$ to $+0{\cdot}5$ and $10{\cdot}5$ to $11{\cdot}5$ respectively. Dividing these blocks into proportional parts at the dichotomies $x_{\cdot 005}=0{\cdot}34$ and $x_{\cdot 995}=11{\cdot}36$, it will be found that $\cdot 0050$ of the histogram frequency lies below $0{\cdot}34$ and $\cdot 0052$ above $11{\cdot}36$, so that almost exactly 99 °/₀ of the frequency lies between the limits.

If it were assumed that the binomial might be represented by a normal curve with mean and standard deviation as before, we should have

$$-d_{\cdot 005}=2{\cdot}5758=+d_{\cdot 995},\quad x_{\cdot 005}=-{\cdot}61,\quad x_{\cdot 995}=10{\cdot}61,$$

and it would be found that none of the histogram lies below $x_{\cdot 005}$ while a proportion, $\cdot 0106$, lies above $x_{\cdot 995}$. The limits taken separately are therefore not as accurate as those found from the Type I curve, although taken together they do enclose nearly 99 °/₀ of the frequency.

Tables LI^{a-b}.

See this Introduction, pp. clxx and clxxiii.

Tables LII and LII^{bis}.

The distribution of the squared multiple correlation coefficient, R^2, in samples from an indefinitely large normal population, in which this squared coefficient is ρ^2 has been discussed by R. A. Fisher*, and the mean value of R^2, which we call $\overline{R^2}$, and its variance, $\sigma^2_{R^2}$, have been shown by J. Wishart† to be given by the equations:

$$\overline{R^2}=1-\frac{N-n}{N-2}\gamma_1 \quad\text{...(i)},$$

$$\sigma^2_{R^2}=\frac{(N-n)(N-n+2)}{(N-2)N}\gamma_2-(1-\overline{R^2})^2 \quad\text{..................(ii)},$$

where N is the size of the sample, n the total number of variates (i.e. R is the multiple correlation of one variate on $n-1$ other variates), and, F being the symbol for the hypergeometrical series:

$$\gamma_1=(1-\rho^2)F(1,1,\tfrac{1}{2}(N+1),\rho^2) \quad\text{......................(iii)},$$

$$\gamma_2=(1-\rho^2)^2F(2,2,\tfrac{1}{2}(N+3),\rho^2) \quad\text{......................(iv)}.$$

It will be seen that γ_1 and γ_2 involve only the size of the sample and ρ^2, but not the number of variates. γ_1 and γ_2 had already been computed for another purpose in the Biometric Laboratory and Tables of them were published as an appendix to Dr Wishart's paper‡. These are reproduced as Tables LII and LII^{bis} in the present work.

* *Proceedings Royal Society*, A, Vol. 121, pp. 654—673, 1928.

† *Biometrika*, Vol. xxii. pp. 353—361, 1931.

‡ *Ibid.* Vol. xxii. pp. 362—367, 1931.

Owing to the great range of values it is possible for N to take, the Tables only contain a series for N proceeding by units from 3* to 25, and then by values up to 400 admitting of logarithmic calculation. For values of $N > 400$, Hall's formulae*

$$\overline{R^2} = \rho^2 + (1-\rho^2)\frac{n-1-2\rho^2}{N} \quad \text{.........................(v)},$$

$$\sigma^2_{R^2} = \frac{4\rho^2(1-\rho^2)^2}{N} \quad \text{..(vi)},$$

will suffice, except when ρ is very small, when it is better to take the first few terms of Wishart's hypergeometrical expression for γ_2.

Illustration (i). For a sample of 400 from a normal population with five variates, and $\rho = \cdot 4$, what are the values of $\overline{R^2}$ and $\sigma^2_{R^2}$?

Here without interpolation we find from (i) and (ii) by aid of our Tables LII and LII^{bis}:

$$\overline{R^2} = \cdot 16776, \quad \sigma^2_{R^2} = \cdot 001{,}129,$$

and from Hall's formulae (v) and (vi):

$$\overline{R^2} = \cdot 16773, \quad \sigma^2_{R^2} = \cdot 001{,}086,$$

the two sets of results being close enough for most practical purposes.

Illustration (ii). Dr Wishart† gives the following example: $N = 101$, $n = 7$ and $\rho^2 = \cdot 5$. What will $\overline{R^2}$ be?

We take $\rho = \cdot 7071$, and first interpolate for ρ corresponding to $N = 100$ and $N = 200$.

We shall use Everett's Central Difference formula to δ^2 terms (see p. xlv) with

$$\theta = \cdot 071, \quad \phi = \cdot 929.$$

For $N = 100$ we have from Table LII:

$$z_0 = \cdot 509{,}8429, \quad z_1 = \cdot 360{,}9965, \quad \delta^2 z_0 = -\cdot 020{,}5732, \quad \delta^2 z_1 = -\cdot 020{,}9530.$$

Hence:

$$\begin{aligned} z_\theta &= \cdot 929 \times \cdot 509{,}8429 + \cdot 071 \times \cdot 360{,}9965 \\ &\qquad - \tfrac{1}{6}(\cdot 929 \times \cdot 071)\{1\cdot 929(-\cdot 020{,}5732) + 1\cdot 071(-\cdot 020{,}9530)\} \\ &= \cdot 499{,}9578, \end{aligned}$$

which is γ_1 for $N = 100$.

Similarly for $N = 200$:

$$\begin{aligned} z_\theta &= \cdot 929 \times \cdot 509{,}9355 + \cdot 071 \times \cdot 360{,}5013 - \cdot 010{,}993 \\ &\qquad \times \{1\cdot 929 \times (-\cdot 020{,}2884) + 1\cdot 071(-\cdot 020{,}4733)\} \\ &= \cdot 499{,}9970, \end{aligned}$$

which is γ_1 for $N = 200$.

Clearly linear interpolation will suffice to find γ_1 for $N = 101$, and we have

$$\gamma_1 = \cdot 499{,}9582.$$

* *Biometrika*, Vol. XIX. pp. 100—109, 1927. † *Biometrika*, Vol. XXII. pp. 357 and 360.

Hence by (i):

$$\overline{R^2} = 1 - \tfrac{94}{99} \times \cdot 499{,}9582 = \cdot 525{,}2922,$$

which agrees with the value $R^2 = \cdot 5253$ given by Dr Wishart from the hypergeometrical series.

Now turning to Table LII^{bis} to find γ_2, we have for $N = 100$, and $\theta = \cdot 071$, $\phi = \cdot 929$ as before:

$$z_0 = \cdot 265{,}0540,\ z_1 = \cdot 133{,}7050,\ \delta^2 z_0 = + \cdot 016{,}6294,\ \delta^2 z_1 = + \cdot 035{,}4198.$$

Hence:

$$\begin{aligned} z_\theta &= \cdot 929 \times \cdot 265{,}0540 + \cdot 071 \times \cdot 133{,}7050 - \cdot 010{,}993 \\ &\qquad \times \{1\cdot 929 \times (\cdot 016{,}6294) + 1\cdot 071 \times (\cdot 035{,}4198)\} \\ &= \cdot 254{,}9586, \end{aligned}$$

which is γ_2 for $N = 100$.

Similarly for $N = 200$:

$$\begin{aligned} z_\theta &= \cdot 929 \times \cdot 262{,}5877 + \cdot 071 \times \cdot 131{,}6374 - \cdot 010{,}993 \\ &\qquad \times \{1\cdot 929 \times (\cdot 017{,}8219) + 1\cdot 071 \times (\cdot 036{,}2360)\} \\ &= \cdot 252{,}4857 = \gamma_2. \end{aligned}$$

Interpolating for $N = 101$, linearly we find:

$$\gamma_2 = \cdot 254{,}9339.$$

Then by formula (ii)

$$\begin{aligned} \sigma^2_{R^2} &= \tfrac{94}{99} \times \tfrac{96}{101} \times \cdot 254{,}9339 - (\cdot 474{,}7078)^2 \\ &= \cdot 0047{,}2806, \end{aligned}$$

or

$$\sigma_{R^2} = \cdot 0688.$$

Illustration (iii). In a sample of 24, the multiple correlation coefficient for four variables was found to be ·5836. What is the best value to give to the multiple correlation in the sampled population?

We cannot at present solve this problem fully. In any single sample we are more likely to have found a coefficient at the mode of the distribution than elsewhere. But as this modal value has not so far been tabled, we are compelled to adopt the mean as the best substitute for it. Accordingly in this case we have:

$$\overline{R^2} = (\cdot 5836)^2 = 1 - \frac{24-4}{24-2} \times \gamma_1,$$

or

$$\gamma_1 = \tfrac{22}{20} \times 1\cdot 5836 \times \cdot 4164 = \cdot 725{,}3521.$$

For $N = 24$, this value of γ_1 lies between the ·5 and ·6 values of ρ. We can now apply the inverse interpolation formula (iv) of p. xiv of Part I of this book of Tables. We have

$$\begin{aligned} u_0 &= \cdot 732{,}2999, \\ u_1 &= \cdot 630{,}8217,\ \Delta u_0 = - \cdot 101{,}4782, \\ u_2 &= \cdot 508{,}4988,\ \Delta u_1 = - \cdot 122{,}3229,\ \Delta^2 u_0 = - \cdot 020{,}8447. \end{aligned}$$

Accordingly since $u_0(\theta) = \cdot 725{,}3521,$

$$\theta' = (u_0(\theta) - u_0)\,\Delta u_0 = \cdot 068{,}4659,$$

$$\tfrac{1}{2}\theta'(1-\theta') = \cdot 0318{,}8916$$

and

$$\theta = \cdot 068{,}4659 + \cdot 0318{,}8916 \times \frac{(-\cdot 020{,}8447)}{(-\cdot 101{,}4782)}$$
$$= \cdot 075{,}0163.$$

Thus $\rho = \cdot 5 + \theta = \cdot 5750,$

and this is the best value at present available for the multiple correlation in the parent population.

Illustration (iv). Suppose $\rho = \cdot 3$, $N = 315$ and $n = 5$. We require $\overline{R^2}$ and σ_{R^2}.

This is about as unfavourable an example as we can call upon the Tables to supply the answer to.

Consider:

$$\begin{aligned}\log\ 25 &= \log 25 + 0 \times \log 2,\\ \log\ 50 &= \log 25 + 1 \times \log 2,\\ \log 100 &= \log 25 + 2 \times \log 2,\\ \log 200 &= \log 25 + 3 \times \log 2,\\ \log 400 &= \log 25 + 4 \times \log 2.\end{aligned}$$

We need

$$\log 315 = \log 25 + \left(\frac{\log 12\cdot 6}{\log 2}\right)\log 2$$
$$= \log 25 + 3\cdot 655{,}3516 \log 2.$$

Now write down the γ_1 values for 25, 50, 100, 200, 400 from Table LII in inverse order and difference them. We find:

	u	Δu	$\Delta^2 u$	$\Delta^3 u$	$\Delta^4 u$
400	·908,1271,				
200	·906,2394,	− ·001,8877,			
100	·902,4191,	− ·003,8203,	− ·001,9326,		
50	·894,5964,	− ·007,8227,	− ·004,0024,	− ·002,0698,	
25	·878,1999,	− ·016,3965,	− ·008,5738,	− ·004,5714,	− ·002,5016.

The differences are thus slightly diverging but the forward difference formula will suffice.

We have $\theta = 4 - 3\cdot 655{,}3516 = \cdot 344{,}6484$ and accordingly:

$$u_\theta = \cdot 908{,}1271 - \cdot 344{,}6484 \times \cdot 001{,}8877 + \cdot 112{,}9329 \times \cdot 001{,}9326$$
$$- \cdot 062{,}3146 \times \cdot 002{,}0698 + \cdot 041{,}3668 \times \cdot 002{,}5016$$
$$= \cdot 908{,}1271 - \cdot 000{,}6506 + \cdot 000{,}2183 - \cdot 000{,}1290 + \cdot 000{,}1035.$$

Clearly the required value is greater than ·907,5658 and less than ·907,6693. Taking it equal to the mean of these we have: $\gamma_1 = \cdot 907{,}6175$. Hence by formula (i):

$$\overline{R^2} = 1 - \tfrac{310}{313} \times \cdot 907{,}6175 = \cdot 101{,}0817.$$

We now proceed in the same way with Table LII^{bis}.

Our difference scheme is now:

	u	Δu	$\Delta^2 u$	$\Delta^3 u$	$\Delta^4 u$
400	·825,4397,				
200	·822,7588,	− ·002,6809,			
100	·817,3368,	− ·005,4220,	− ·002,7411,		
50	·806,2600,	− ·011,0768,	− ·005,6548,	− ·002,9137,	
25	·783,2410,	− ·023,0190,	− ·011,9422,	− ·006,2874,	− ·003,3737.

$\theta = \cdot 344{,}6484$ as before, so that our coefficients of the differences remain the same and we have:

$$u_\theta = \cdot 825{,}4397 - \cdot 344{,}6484 \times \cdot 002{,}6809 + \cdot 112{,}9329 \times \cdot 002{,}7411$$
$$- \cdot 062{,}3146 \times \cdot 002{,}9137 + \cdot 041{,}3668 \times \cdot 003{,}3737$$
$$= \cdot 825{,}4397 - \cdot 000{,}9240 + \cdot 000{,}3096 - \cdot 000{,}1816 + \cdot 000{,}1396.$$

Thus γ_2 lies between ·824,7833 and ·824,6437.

Taking as before the mean of these values we have:

$$\gamma_2 = \cdot 824{,}7135.$$

Hence by equation (ii):

$$\sigma^2_{R^2} = \tfrac{310}{313} \times \tfrac{312}{315} \times \cdot 824{,}7135 - (\cdot 898{,}9183)^2,$$
$$= \cdot 000{,}97566,$$

or
$$\sigma_{R^2} = \cdot 03124.$$

These values for $\overline{R^2}$ and σ_{R^2} agree to the above five decimal places exactly with those calculated from the hypergeometrical series (iii) and (iv). These results are interesting as showing how by aid of a logarithmic interpolation it is possible to cover by five values alone the range from 25 to 400 with sufficient accuracy for most statistical purposes.

Table LIII.

This is a reproduction of Glaisher's Table of the Inverse Factorials. It has been found of service in calculations by the arithmometer, especially in the work of computing new tables. It facilitates much calculation which has otherwise to be done by more laborious logarithmic work.

Table LIV.

Tables of reciprocals of integer numbers to seven decimals are common, but these frequently prove inadequate for the needs of computers, especially when preparing new tables. The present Table was computed for use in calculating certain constants of the Incomplete B-function Tables and possibly deserves preservation.

Table LV.

In the early editions of Barlow's *Tables* a table of the higher powers of numbers was provided, which was omitted in later editions. This table had been found of much service, and a copy was made of it for lithographic reproduction in the present work. Since this was done an excellent new edition of Barlow by Dr Comrie has appeared which supersedes the more recent editions; it contains this table of the higher powers. As Table LV had already been prepared and supplements that on pp. 38—39 of Part I of this work, I have still thought it worth while to include it in the present issue. It has the advantage of providing all the powers together.

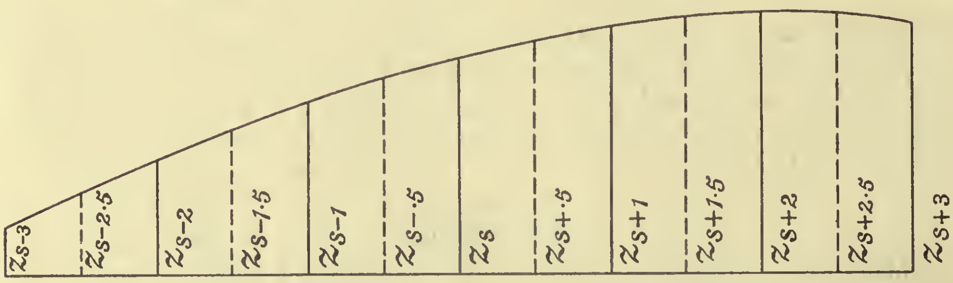
Table LVI.

This list of constants to a large number of figures has proved valuable to computers in the Biometric Laboratory, and other workers may find it so also, as search for the *loci* where such quantities have been published can be protracted.

APPENDIX.

On certain Interpolation Formulae enabling one to interchange ordinates or rearrange areas.

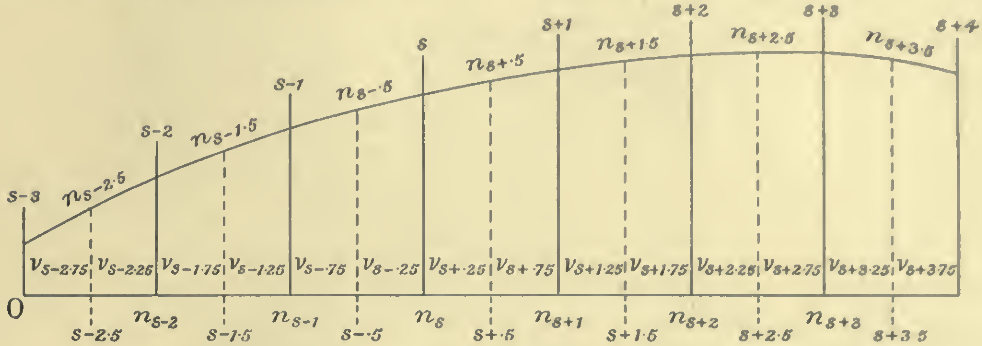
(i) Given z_{s-2}, z_{s-1}, z_s, z_{s+1}, z_{s+2}, z_{s+3}, to find $z_{s+\cdot5}$ and for use near the boundaries of a curve or table $z_{s-1\cdot5}$, $z_{s-\cdot5}$, $z_{s+1\cdot5}$, $z_{s+2\cdot5}$.



By a Lagrangian formula for interpolation, we have:

$$z_{s-1\cdot5} = \tfrac{1}{256}(\ \ 63z_{s-2} + 315z_{s-1} - 210z_s + 126z_{s+1} - \ \ 45z_{s+2} + \ \ 7z_{s+3}),$$
$$z_{s-\cdot5} = \tfrac{1}{256}(-7z_{s-2} + 105z_{s-1} + 210z_s - \ \ 70z_{s+1} + \ \ 21z_{s+2} - \ \ 3z_{s+3}),$$
$$z_{s+\cdot5} = \tfrac{1}{256}(\ \ 3z_{s-2} - \ \ 25z_{s-1} + 150z_s + 150z_{s+1} - \ \ 25z_{s+2} + \ \ 3z_{s+3}),$$
$$z_{s+1\cdot5} = \tfrac{1}{256}(-3z_{s-2} + \ \ 21z_{s-1} - \ \ 70z_s + 210z_{s+1} + 105z_{s+2} - \ \ 7z_{s+3}),$$
$$z_{s+2\cdot5} = \tfrac{1}{256}(\ \ 7z_{s-2} - \ \ 45z_{s-1} + 126z_s - 210z_{s+1} + 315z_{s+2} + 63z_{s+3}).$$

(ii) Given the areas $n_{s-2\cdot5}$, $n_{s-1\cdot5}$, $n_{s-\cdot5}$, $n_{s+\cdot5}$, $n_{s+1\cdot5}$, $n_{s+2\cdot5}$, where the subscript indicates the mid-ordinate of the corresponding area, to find the areas n_{s-2}, n_{s-1}, n_s, n_{s+1}, n_{s+2}, n_{s+3}, defined by the subscript mid-ordinates, all the n's being on unit bases, and the areas $\nu_{s-2\cdot75}$, $\nu_{s-2\cdot25}$, $\nu_{s-1\cdot75}$, $\nu_{s-1\cdot25}$, $\nu_{s-\cdot75}$, $\nu_{s-\cdot25}$, $\nu_{s+\cdot25}$, $\nu_{s+\cdot75}$, $\nu_{s+1\cdot25}$, $\nu_{s+1\cdot75}$, $\nu_{s+2\cdot25}$, $\nu_{s+2\cdot75}$, where the subscripts refer to the corresponding mid-ordinates, but the bases are only the half units.



On the assumption that it will be adequate to consider that the sixth differences of the areas (or frequencies), for a range of six or seven bases, are negligible, we may take any area N from O to the ordinate at x as given by

$$N_x = a_0 + a_1 x + a_2 x^2 + a_3 x^3 + a_4 x^4 + a_5 x^5 \quad \ldots\ldots\ldots\ldots\ldots\ldots(\text{i}),$$

and determine the six a's by the first six areas $n_{s-2\cdot5}$, $n_{s-1\cdot5}$, ... $n_{s+2\cdot5}$.

We thus find:

$$\left.\begin{aligned}
a_0 &= \tfrac{1}{120}(\ \ 120n_{s-2\cdot5} - \ \ 600n_{s-1\cdot5} + 1200n_{s-\cdot5} - 1200n_{s+\cdot5} + 600n_{s+1\cdot5} - 120n_{s+2\cdot5})\\
a_1 &= \tfrac{1}{120}(\ 1044n_{s-1\cdot5} - 2466n_{s-\cdot5} + 2614n_{s+\cdot5} - 1346n_{s+1\cdot5} + 274n_{s+2\cdot5})\\
a_2 &= \tfrac{1}{120}(-580n_{s-1\cdot5} + 1725n_{s-\cdot5} - 1995n_{s+\cdot5} + 1075n_{s+1\cdot5} - 225n_{s+2\cdot5})\\
a_3 &= \tfrac{1}{120}(\ \ 155n_{s-1\cdot5} - \ \ 530n_{s-\cdot5} + \ \ 680n_{s+\cdot5} - \ \ 390n_{s+1\cdot5} + \ \ 85n_{s+2\cdot5})\\
a_4 &= \tfrac{1}{120}(-\ \ 20n_{s-1\cdot5} + \ \ \ 75n_{s-\cdot5} - \ \ 105n_{s+\cdot5} + \ \ \ 65n_{s+1\cdot5} - \ \ 15n_{s+2\cdot5})\\
a_5 &= \tfrac{1}{120}(\qquad n_{s-1\cdot5} - \quad 4n_{s-\cdot5} + \quad 6n_{s+\cdot5} - \quad 4n_{s+1\cdot5} + \quad n_{s+2\cdot5})
\end{aligned}\right\}\ldots(\text{ii}).$$

It is clear that equation (i) with the use of the values of the coefficients in (ii) will enable us to rearrange our areas (frequencies) round the ordinates s and $s+1$ with a fair degree of approximation. All we have to do is to evaluate N_x for the two values of x, say x_1 and x_2, corresponding to the ordinates bounding the area and the required area $= N_{x_2} - N_{x_1}$. For example, the frequency between z_s and z_{s+1} can be broken up into subfrequencies on $\frac{1}{2}$ or $\frac{1}{5}$ the original bases, or, we can in cases where we know or suspect the frequency to be distributed over half the unit base at the terminals, rearrange our frequencies to suit this. (See the case of Cloudiness dealt with on p. cci.) Of course, wherever possible we should work on the mid-range between z_s and z_{s+1}, but this is not possible when we approach the terminals of the total range, and accordingly for the case of halving the subranges and altering the centres of the same subranges we have given the values suitable for terminal subranges.

(*a*) *Halving the Subranges.*

We have, if ν denote the area on the half-subrange:

$$\begin{aligned}
\nu_{s-2\cdot75} &= \tfrac{1}{256}(256n_{s-2\cdot5} - 437n_{s-1\cdot5} + 718n_{s-\cdot5} - 668n_{s+\cdot5} + 322n_{s+1\cdot5} - 63n_{s+2\cdot5}),\\
\nu_{s-2\cdot25} &= \tfrac{1}{256}(\qquad + 437n_{s-1\cdot5} - 718n_{s-\cdot5} + 668n_{s+\cdot5} - 322n_{s+1\cdot5} + 63n_{s+2\cdot5}),\\
\nu_{s-1\cdot75} &= \tfrac{1}{256}(\qquad + 193n_{s-1\cdot5} - 122n_{s-\cdot5} + 88n_{s+\cdot5} - 38n_{s+1\cdot5} + 7n_{s+2\cdot5}),\\
\nu_{s-1\cdot25} &= \tfrac{1}{256}(\qquad + 63n_{s-1\cdot5} + 122n_{s-\cdot5} - 88n_{s+\cdot5} + 38n_{s+1\cdot5} - 7n_{s+2\cdot5}),\\
\nu_{s-\cdot75} &= \tfrac{1}{256}(\qquad + 7n_{s-1\cdot5} + 158n_{s-\cdot5} - 52n_{s+\cdot5} + 18n_{s+1\cdot5} - 3n_{s+2\cdot5}),\\
\nu_{s-\cdot25} &= \tfrac{1}{256}(\qquad - 7n_{s-1\cdot5} + 98n_{s-\cdot5} + 52n_{s+\cdot5} - 18n_{s+1\cdot5} + 3n_{s+2\cdot5}),\\
\nu_{s+\cdot25} &= \tfrac{1}{256}(\qquad - 3n_{s-1\cdot5} + 22n_{s-\cdot5} + 128n_{s+\cdot5} - 22n_{s+1\cdot5} + 3n_{s+2\cdot5}),\\
\nu_{s+\cdot75} &= \tfrac{1}{256}(\qquad + 3n_{s-1\cdot5} - 22n_{s-\cdot5} + 128n_{s+\cdot5} + 22n_{s+1\cdot5} - 3n_{s+2\cdot5}),\\
\nu_{s+1\cdot25} &= \tfrac{1}{256}(\qquad + 3n_{s-1\cdot5} - 18n_{s-\cdot5} + 52n_{s+\cdot5} + 98n_{s+1\cdot5} - 7n_{s+2\cdot5}),\\
\nu_{s+1\cdot75} &= \tfrac{1}{256}(\qquad - 3n_{s-1\cdot5} + 18n_{s-\cdot5} - 52n_{s+\cdot5} + 158n_{s+1\cdot5} + 7n_{s+2\cdot5}),\\
\nu_{s+2\cdot25} &= \tfrac{1}{256}(\qquad - 7n_{s-1\cdot5} + 38n_{s-\cdot5} - 88n_{s+\cdot5} + 122n_{s+1\cdot5} + 63n_{s+2\cdot5}),\\
\nu_{s+2\cdot75} &= \tfrac{1}{256}(\qquad + 7n_{s-1\cdot5} - 38n_{s-\cdot5} + 88n_{s+\cdot5} - 122n_{s+1\cdot5} + 193n_{s+2\cdot5}),\\
\nu_{s+3\cdot25} &= \tfrac{1}{256}(\qquad + 63n_{s-1\cdot5} - 322n_{s-\cdot5} + 668n_{s+\cdot5} - 718n_{s+1\cdot5} + 437n_{s+2\cdot5}),\\
\nu_{s+3\cdot75} &= \tfrac{1}{256}(\qquad - 63n_{s-1\cdot5} + 322n_{s-\cdot5} - 668n_{s+\cdot5} + 718n_{s+1\cdot5} - 437n_{s+2\cdot5} + 256n_{s+3\cdot5}).
\end{aligned}$$

(*b*) We have for the areas on the whole subrange round the bounding ordinates of the original areas:

$$\begin{aligned}
n_{s-2} &= \tfrac{1}{128}(+315n_{s-1\cdot5} - 420n_{s-\cdot5} + 378n_{s+\cdot5} - 180n_{s+1\cdot5} + 35n_{s+2\cdot5}),\\
n_{s-1} &= \tfrac{1}{128}(+35n_{s-1\cdot5} + 140n_{s-\cdot5} - 70n_{s+\cdot5} + 28n_{s+1\cdot5} - 5n_{s+2\cdot5}),\\
n_{s} &= \tfrac{1}{128}(-5n_{s-1\cdot5} + 60n_{s-\cdot5} + 90n_{s+\cdot5} - 20n_{s+1\cdot5} + 3n_{s+2\cdot5}),\\
n_{s+1} &= \tfrac{1}{128}(+3n_{s-1\cdot5} - 20n_{s-\cdot5} + 90n_{s+\cdot5} + 60n_{s+1\cdot5} - 5n_{s+2\cdot5}),\\
n_{s+2} &= \tfrac{1}{128}(-5n_{s-1\cdot5} + 28n_{s-\cdot5} - 70n_{s+\cdot5} + 140n_{s+1\cdot5} + 35n_{s+2\cdot5}),\\
n_{s+3} &= \tfrac{1}{128}(+35n_{s-1\cdot5} - 180n_{s-\cdot5} + 378n_{s+\cdot5} - 420n_{s+1\cdot5} + 315n_{s+2\cdot5}).
\end{aligned}$$

By means of the first and last results of (*a*) and the present results (*b*), we can redistribute our areas (or frequencies) into terminal half-subranges and intermediate whole ranges.

TABLES I—LVI

TABLE I.

Table of Ordinates of the Normal Curve for each Permille of Frequency.

Per-mille	·000	·001	·002	·003	·004	·005	·006	·007	·008	·009	·010	
·00	·00000	·00337	·00634	·00915−	·01185−	·01446	·01700	·01949	·02192	·02431	·02665+	·99
·01	·02665+	·02896	·03123	·03348	·03569	·03787	·04003	·04216	·04427	·04635+	·04842	·98
·02	·04842	·05046	·05249	·05449	·05648	·05845+	·06040	·06233	·06425+	·06615+	·06804	·97
·03	·06804	·06992	·07177	·07362	·07545+	·07727	·07908	·08087	·08265−	·08442	·08617	·96
·04	·08617	·08792	·08965+	·09137	·09309	·09479	·09648	·09816	·09983	·10149	·10314	·95
·05	·10314	·10478	·10641	10803	·10964	·11124	·11284	·11442	·11600	·11756	·11912	·94
·06	·11912	12067	·12222	·12375−	·12528	·12679	·12830	·12981	·13130	·13279	·13427	·93
·07	·13427	·13574	·13720	·13866	·14011	·14156	·14299	·14442	·14584	·14726	·14867	·92
·08	·14867	·15007	·15146	·15285+	·15423	·15561	·15698	·15834	·15970	·16105−	·16239	·91
·09	·16239	·16373	·16506	·16639	·16770	·16902	·17033	·17163	·17292	·17421	·17550	·90
·10	·17550	·17678	·17805−	·17932	·18058	·18184	·18309	·18433	·18557	·18681	·18804	·89
·11	·18804	·18926	·19048	·19169	·19290	·19410	·19530	·19649	·19768	·19886	·20004	·88
·12	·20004	·20121	·20238	·20354	·20470	·20585+	·20700	·20814	·20928	·21042	·21155−	·87
·13	·21155−	·21267	·21379	·21490	·21601	·21712	·21822	·21932	·22041	·22149	·22258	·86
·14	·22258	·22365+	·22473	·22580	·22686	·22792	·22898	·23003	·23108	·23212	·23316	·85
·15	·23316	·23419	·23522	·23625−	·23727	·23829	·23930	·24031	·24131	·24232	·24331	·84
·16	·24331	·24430	·24529	·24627	·24726	·24823	·24921	·25017	·25114	·25210	·25305+	·83
·17	·25305+	·25401	·25495+	·25590	·25684	·25778	·25871	·25964	·26056	·26148	·26240	·82
·18	·26240	·26331	·26422	·26513	·26603	·26693	·26782	·26871	·26960	·27049	·27137	·81
·19	·27137	·27224	·27311	·27398	·27485−	·27571	·27657	·27742	·27827	·27912	·27996	·80
·20	·27996	·28080	·28164	·28247	·28330	·28413	·28495−	·28577	·28658	·28739	·28820	·79
·21	·28820	·28901	·28981	·29060	·29140	·29219	·29298	·29376	·29454	·29532	·29609	·78
·22	·29609	·29686	·29763	·29840	·29916	·29991	·30067	·30142	·30216	·30291	·30365−	·77
·23	·30365−	·30439	·30512	·30585−	·30658	·30730	·30802	·30874	·30945+	·31017	·31087	·76
·24	·31087	·31158	·31228	·31298	·31367	·31436	·31505+	·31574	·31642	·31710	·31778	·75
·25	·31778	·31845−	·31912	·31979	·32045−	·32111	·32177	·32242	·32307	·32372	·32437	·74
·26	·32437	·32501	·32565−	·32628	·32691	·32754	·32817	·32879	·32941	·33003	·33065−	·73
·27	·33065−	·33126	·33187	·33247	·33307	·33367	·33427	·33486	·33545−	·33604	·33662	·72
·28	·33662	·33720	·33778	·33836	·33893	·33950	·34007	·34063	·34119	·34175−	·34230	·71
·29	·34230	·34286	·34341	·34395+	·34449	·34503	·34557	·34611	·34664	·34717	·34769	·70
·30	·34769	·34822	·34874	·34925+	·34977	·35028	·35079	·35129	·35180	·35230	·35279	·69
·31	·35279	·35329	·35378	·35427	·35475+	·35524	·35572	·35620	·35667	·35714	·35761	·68
·32	·35761	·35808	·35854	·35900	·35946	·35991	·36037	·36082	·36126	·36171	·36215−	·67
·33	·36215−	·36259	·36302	·36346	·36389	·36431	·36474	·36516	·36558	·36600	·36641	·66
·34	·36641	·36682	·36723	·36764	·36804	·36844	·36884	·36923	·36962	·37001	·37040	·65
·35	·37040	·37078	·37116	·37154	·37192	·37229	·37266	·37303	·37340	·37376	·37412	·64
·36	·37412	·37447	·37483	·37518	·37553	·37588	·37622	·37656	·37690	·37724	·37757	·63
·37	·37757	·37790	·37823	·37855+	·37888	·37920	·37951	·37983	·38014	·38045−	·38076	·62
·38	·38076	·38106	·38136	·38166	·38196	·38225+	·38254	·38283	38312	·38340	·38368	·61
·39	·38368	·38396	·38423	·38451	·38478	·38504	·38531	·38557	·38583	·38609	·38634	·60
·40	·38634	·38659	·38684	·38709	·38734	·38758	·38782	·38805+	·38829	·38852	·38875−	·59
·41	·38875−	·38897	·38920	·38942	·38964	·38986	·39007	·39028	·39048	·39069	·39089	·58
·42	·39089	·39109	·39129	·39149	·39168	·39187	·39206	·39224	·39243	·39261	·39279	·57
·43	·39279	·39296	·39313	·39330	·39347	·39364	·39380	·39396	·39411	·39427	·39442	·56
·44	·39442	·39457	·39472	·39486	·39501	·39514	·39528	·39542	·39555−	·39568	·39580	·55
·45	·39580	·39593	·39605+	·39617	·39629	·39640	·39651	·39662	·39673	·39683	·39694	·54
·46	·39694	·39703	·39713	·39723	·39732	·39741	·39749	·39758	·39766	·39774	·39781	·53
·47	·39781	·39789	·39796	·39803	·39809	·39816	·39822	·39828	·39834	·39839	·39844	·52
·48	·39844	·39849	·39854	·39858	·39862	·39866	·39870	·39873	·39876	·39879	·39882	·51
·49	·39882	·39884	·39886	·39888	·39890	·39891	·39892	·39893	·39894	·39894	·39894	·50
	·010	·009	·008	·007	·006	·005	·004	·003	·002	·001	·000	Per-mille

TABLE II.

Tables of Normal Curve Functions to each Permille of Frequency.

$\frac{1}{2}(1+a_x)$	x	z	$\frac{\frac{1}{2}(1+a_x)}{z}$	$\frac{\frac{1}{2}(1-a_x)}{z}$	$\frac{z}{\frac{1}{2}(1+a_x)}$	$\frac{z}{\frac{1}{2}(1-a_x)}$	$\frac{1}{2}(1-a_x)$
·500	·00000 00000	·39894 22804	1·25331 41373	1·25331 41373	·79788 45608	·79788 45608	·500
·501	·00250 66309	·39894 10271	1·25582 47109	1·25081 14386	·79628 94752	·79948 10162	·499
·502	·00501 32775^5	·39893 72671	1·25834 32067	1·24831 65676	·79469 57513	·80107 88497	·498
·503	·00751 99557	·39893 10005$^+$	1·26086 96726	1·24582 94777	·79310 33808	·80267 80695$^-$	·497
·504	·01002 66811	·39892 22272	1·26340 41566	1·24335 01223	·79151 23556	·80427 86839	·496
·505	·01253 34696	·39891 09471	1·26594 67072	1·24087 84556	·78992 26676	·80588 07013	·495
·506	·01504 03367	·39889 71602	1·26849 73733	1·23841 44317	·78833 43088	·80748 41300^5	·494
·507	·01754 72984	·39888 08664	1·27105 62042	1·23595 80052	·78674 72711	·80908 89786	·493
·508	·02005 43703^5	·39886 20656	1·27362 32492	1·23350 91311^5	·78516 15465$^-$	·81069 52553	·492
·509	·02256 15684	·39884 07576^5	1·27619 85585$^+$	1·23106 77647	·78357 71270	·81230 29687	·491
·510	·02506 89083	·39881 69424	1·27878 21824	1·22863 38615$^+$	·78199 40047^5	·81391 21274	·490
·511	·02757 64057^5	·39879 06198	1·28137 41714	1·22620 73774	·78041 21718	·81552 27398	·489
·512	·03008 40766	·39876 17895$^+$	1·28397 45769	1·22378 82686	·77883 16202	·81713 48146	·488
·513	·03259 19367	·39873 04516	1·28658 34500	1·22137 64915$^+$	·77725 23422	·81874 83605$^+$	·487
·514	·03510 00018	·39869 66056	1·28920 08429	1·21897 20032	·77567 43300	·82036 33860	·486
·515	·03760 82877	·39866 02515$^-$	1·29182 68076	1·21657 47606	·77409 75757	·82197 99000	·485
·516	·04011 68102	·39862 13890	1·29446 13969	1·21418 47212	·77252 20716	·82359 79111	·484
·517	·04262 55852	·39858 00178	1·29710 46639	1·21180 18427	·77094 78100	·82521 74281	·483
·518	·04513 46285$^+$	·39853 61377	1·29975 66619	1·20942 60831	·76937 47832	·82683 84600	·482
·519	·04764 39560	·39848 97484	1·30241 74450$^-$	1·20705 74008	·76780 29835$^-$	·82846 10154^5	·481
·520	·05015 35835$^-$	·39844 08497	1·30508 70673	1·20469 57544	·76623 24032	·83008 51035$^+$	·480
·521	·05266 35269	·39838 94412	1·30776 55836	1·20234 11027	·76466 30348^5	·83171 07331	·479
·522	·05517 38022	·39833 55225$^+$	1·31045 30490	1·19999 34050	·76309 48707	·83333 79132	·478
·523	·05768 44251	·39827 90934	1·31314 95191	1·19765 26206	·76152 79033	·83496 66529	·477
·524	·06019 54118	·39822 01535^5	1·31585 50498^5	1·19531 87094	·75996 21251	·83659 69612	·476
·525	·06270 67780	·39815 87025$^-$	1·31856 96978	1·19299 16313	·75839 75285^5	·83822 88473	·475
·526	·06521 85397^5	·39809 47399	1·32129 35197	1·19067 13466	·75683 41062	·83986 23204	·474
·527	·06773 07130^5	·39802 82653	1·32402 65729	1·18835 78159	·75527 18506	·84149 73896	·473
·528	·07024 33138^5	·39795 92783	1·32676 89153	1·18605 10000^5	·75371 07543	·84313 40642	·472
·529	·07275 63582	·39788 77785$^-$	1·32952 06050	1·18375 08600^5	·75215 08100	·84477 23535$^-$	·471
·530	·07526 98622	·39781 37654	1·33228 17008	1·18145 73573	·75059 20102	·84641 22669	·470
·531	·07778 38417	·39773 72386	1·33505 22618	1·17917 04534	·74903 43477	·84805 38137	·469
·532	·08029 83130	·39765 81976	1·33783 23476	1·17689 01103	·74747 78150$^-$	·84969 70034	·468
·533	·08281 32920	·39757 66418	1·34062 20183^5	1·17461 62900	·74592 24049	·85134 18454	·467
·534	·08532 87949^5	·39749 25708	1·34342 13346^5	1·17234 89549^5	·74436 81101^5	·85298 83494	·466
·535	·08784 48380	·39740 59840^5	1·34623 03576	1·17008 80678	·74281 49235$^-$	·85463 65248	·465
·536	·09036 14372	·39731 68810	1·34904 91487	1·16783 35914	·74126 28376	·85628 63814	·464
·537	·09287 86088^5	·39722 52610	1·35187 77700	1·16558 54888	·73971 18454	·85793 79287	·463
·538	·09539 63691	·39713 11235$^+$	1·35471 62841	1·16334 37235^5	·73816 19397	·85959 11765^e	·462
·539	·09791 47343	·39703 44680	1·35756 47542	1·16110 82591	·73661 31132^5	·86124 61346	·461
·540	·10043 37206	·39693 52939	1·36042 32436^5	1·15887 90594	·73506 53590	·86290 28127^5	·460
·541	·10295 33443	·39683 36004	1·36329 18167	1·15665 60885$^-$	·73351 86698^5	·86456 12209	·459
·542	·10547 36218	·39672 93870	1·36617 05379	1·15443 93106^5	·73197 30387	·86622 13689	·458
·543	·10799 45695$^-$	·39662 26529	1·36905 94725$^+$	1·15222 86905$^+$	·73042 84584	·86788 32668	·457
·544	·11051 62036	·39651 33976	1·37195 86861^5	1·15002 41928	·72888 49220	·86954 69245$^+$	·456
·545	·11303 85407	·39640 16203	1·37486 82450	1·14782 57825$^+$	·72734 24225$^+$	·87121 23523	·455
·546	·11556 15972	·39628 73203	1·37778 82159^5	1·14563 34250$^-$	·72580 09529	·87287 95601	·454
·547	·11808 53895$^-$	·39617 04968	1·38071 86662	1·14344 70856	·72426 05061	·87454 85581^5	·453
·548	·12060 99342	·39605 11492	1·38365 96638	1·14126 67300	·72272 10753	·87621 93567	·452
·549	·12313 52478	·39592 92767	1·38661 12770	1·13909 23241	·72118 26534	·87789 19661	·451
·550	·12566 13469	·39580 48785$^-$	1·38957 35750$^+$	1·13692 38341	·71964 52336	·87956 63966	·450
·551	·12818 82481^5	·39567 79538	1·39254 66273	1·13476 12262	·71810 88090	·88124 26587	·449
·552	·13071 59682	·39554 85017	1·39553 05041	1·13260 44671	·71657 33727	·88292 07628	·448
·553	·13324 45236^5	·39541 65215$^+$	1·39852 52762	1·13045 35234	·71503 89178	·88460 07193	·447
·554	·13577 39313	·39528 20124	1·40153 10149	1·12830 83622	·71350 54375$^+$	·88628 25390	·446
·555	·13830 42080	·39514 49734	1·40454 77923	1·12616 89506	·71197 29250$^+$	·88796 62323	·445
·556	·14083 53704	·39500 54037	1·40757 56808	1·12403 52559	·71044 13735$^+$	·88965 18101	·444
·557	·14336 74355$^-$	·39486 33023^5	1·41061 47537	1·12190 72458	·70891 07762	·89133 92829^5	·443
·558	·14590 04200^5	·39471 86685$^-$	1·41366 50849	1·11978 48880	·70738 11263	·89302 86618	·442
·559	·14843 43411	·39457 15012	1·41672 67486^5	1·11766 81505^5	·70585 24172	·89471 99574	·441
·560	·15096 92155$^+$	·39442 17995$^-$	1·41979 98202	1·11555 70016	·70432 46420	·89641 31807	·440

TABLE II.—(*continued*).

$\frac{1}{2}(1+a_x)$	x	z	$\frac{\frac{1}{2}(1+a_x)}{z}$	$\frac{\frac{1}{2}(1-a_x)}{z}$	$\frac{z}{\frac{1}{2}(1+a_x)}$	$\frac{z}{\frac{1}{2}(1-a_x)}$	$\frac{1}{2}(1-a_x)$
·560	·15096 92155+	·39442 17995−	1·41979 98202	1·11555 70016	·70432 46420	·89641 31807	·440
·561	·15350 50604	·39426 95624	1·42288 43752	1·11345 14094	·70279 77940	·89810 83427	·439
·562	·15604 18928	·39411 47890^s	1·42598 04900	1·11135 13427	·70127 18666	·89980 54544^s	·438
·563	·15857 97298	·39395 74783	1·42908 82417	1·10925 67702	·69974 68531	·90150 45270	·437
·564	·16111 85885+	·39379 76292^s	1·43220 77080	1·10716 76608	·69822 27469	·90320 55717	·436
·565	·16365 84862^s	·39363 52408	1·43533 89672^s	1·10508 39836	·69669 95412	·90490 85995	·435
·566	·16619 94402	·39347 03119	1·43848 20985+	1·10300 57080^s	·69517 72295+	·90661 36219	·434
·567	·16874 14676	·39330 28416	1·44163 71815^s	1·10093 28035	·69365 58052	·90832 06502^s	·433
·568	·17128 45859	·39313 28286	1·44480 42968	1·09886 52398	·69213 52617	·91002 96959	·432
569	·17382 88125+	·39296 02720	1·44798 35253	1·09680 29867	·69061 55923	·91174 07703^s	·431
·570	·17637 41648	·39278 51706	1·45117 49491	1·09474 60143	·68909 67906	·91345 38852	·430
·571	·17892 06603	·39260 75233	1·45437 86507	1·09269 42927	·68757 88499	·91516 90520	·429
·572	·18146 83166	·39242 73289	1·45759 47133	1·09064 77921	·68606 17638	·91688 62825+	·428
·573	·18401 71512	·39224 45863	1·46082 32211	1·08860 64842	·68454 55258	·91860 55885−	·427
·574	·18656 71819	·39205 92942	1·46406 42588	1·08657 03384	·68303 01293	·92032 69817	·426
·575	·18911 84263	·39187 14515	1·46731 79120	1·08453 93263	·68151 55678^s	·92205 04741^s	·425
·576	·19167 09023	·39168 10569^s	1·47058 42669	1·08251 34187	·68000 18350−	·92377 60777	·424
·577	·19422 46276	·39148 81093	1·47386 34107	1·08049 25870	·67848 89242^s	·92550 38045−	·423
·578	·19677 96203	·39129 26073	1·47715 54311^s	1·07847 68027	·67697 68292	·92723 36665+	·422
·579	·19933 58981	·39109 45496	1·48046 04169^s	1·07646 60372	·67546 55434	·92896 56761	·421
·580	·20189 34792	·39089 39350	1·48377 84575^s	1·07446 02624	·67395 50604	·93069 98453	·420
·581	·20445 23816	·39069 07622	1·48710 96432	1·07245 94501	·67244 53739	·93243 61867	·419
·582	·20701 26234	·39048 50298	1·49045 40649	1·07046 35724	·67093 64774	·93417 47125	·418
·583	·20957 42230	·39027 67365	1·49381 18147	1·06847 26016	·66942 83645+	·93591 54353	·417
·584	·21213 71984	·39006 58809	1·49718 29851	1·06648 65099^s	·66792 10290	·93765 83676	·416
·585	·21470 15680^s	·38985 24617	1·50056 76699	1·06450 52701	·66641 44644	·93940 35221	·415
·586	·21726 73504	·38963 64773	1·50396 59634	1·06252 88547	·66490 86644	·94115 09114	·414
·587	·21983 45638^s	·38941 79265	1·50737 79610	1·06055 72366	·66340 36226^s	·94290 05484	·413
·588	·22240 32270	·38919 68077	1·51080 37588	1·05859 03888	·66189 93328	·94465 24459	·412
·589	·22497 33584	·38897 31195	1·51424 34539	1·05662 82845−	·66039 57887	·94640 66169	·411
·590	·22754 49767	·38874 68605−	1·51769 71442	1·05467 08968	·65889 29839	·94816 30744	·410
·591	·23011 81007	·38851 80291	1·52116 49287	1·05271 81994	·65739 09122	·94992 18315	·409
·592	·23269 27492	·38828 66238	1·52464 69070	1·05077 01657	·65588 95672	·95168 29014	·408
·593	·23526 89411^s	·38805 26431	1·52814 31800	1·04882 67694	·65438 89428	·95344 62975−	·407
·594	·23784 66954	·38781 60854	1·53165 38493	1·04688 79845+	·65288 90326	·95521 20330	·406
·595	·24042 60312	·38757 69492	1·53517 90175−	1·04495 37850^e	·65138 98305+	·95698 01214	·405
·596	·24300 69674	·38733 52328	1·53871 87881	1·04302 41450−	·64989 13302	·95875 05762	·404
·597	·24558 95234	·38709 09347	1·54227 32658	1·04109 90387	·64839 35254	·96052 34111	·403
·598	·24817 37185−	·38684 40532	1·54584 25561	1·03917 84407	·64689 64100	·96229 86398	·402
·599	·25075 95719	·38659 45867	1·54942 67655−	1·03726 23254^s	·64539 99778	·96407 62760	·401
·600	·25334 71031	·38634 25335−	1·55302 60015−	1·03535 06677	·64390 42225−	·96585 63337	·400
·601	·25593 63317^s	·38608 78919	1·55664 03728	1·03344 34421^s	·64240 91380	·96763 88269	·399
·602	·25852 72773	·38583 06603	1·56026 99889	1·03154 06239	·64091 47180	·96942 37695−	·398
·603	·26111 99595^s	·38557 08368	1·56391 49605+	1·02964 21879	·63942 09565	·97121 11758	·397
·604	·26371 43982	·38530 84198	1·56757 53994	1·02774 81096	·63792 78473	·97300 10600	·396
·605	·26631 06132	·38504 34074	1·57125 14183^s	1·02585 83640	·63643 53841	·97479 34364^s	·395
·606	·26890 86244	·38477 57979	1·57494 31312	1·02397 29269	·63494 35609^s	·97658 83196	·394
·607	·27150 84520	·38450 55895+	1·57865 06529^s	1·02209 17737	·63345 23716	·97838 57240	·393
·608	·27411 01160^s	·38423 27804	1·58237 40997^s	1·02021 48801	·63196 18099	·98018 56643	·392
·609	·27671 36367^s	·38395 73687	1·58611 35888	1·01834 22220	·63047 18698	·98198 81552	·391
·610	·27931 90345−	·38367 93525+	1·58986 92385−	1·01647 37754	·62898 25451	·98379 32116	·390
·611	·28192 63296	·38339 87300	1·59364 11683	1·01460 95163	·62749 38298	·98560 08483	·389
·612	·28453 55427	·38311 54992	1·59742 94991	1·01274 94210	·62600 57177	·98741 10804^s	·388
·613	·28714 66943	·38282 96583	1·60123 43526	1·01089 34657	·62451 82027	·98922 39231^s	·387
·614	·28975 98052^s	·38254 12052	1·60505 58520	1·00904 16268	·62303 12788	·99103 93916	·386
·615	·29237 48962^s	·38225 01380	1·60889 41216	1·00719 38810	·62154 49398	·99285 75013	·385
·616	·29499 19882	·38195 64547	1·61274 92870	1·00535 02049	·62005 91797	·99467 82675	·384
·617	·29761 11022^s	·38166 01533	1·61662 14749	1·00351 05752	·61857 39924	·99650 17058	·383
·618	·30023 22594	·38136 12318	1·62051 08135	1·00167 49688	·61708 93719	·99832 78320	·382
·619	·30285 54809	·38105 96881	1·62441 74319	0·99984 33628	·61560 53120	1·00015 66618	·381
·620	·30548 07881	·38075 55202	1·62834 14610	0·99801 57342	·61412 18067	1·00198 82110	·380

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TABLE II.—(*continued*).

$\frac{1}{2}(1+\alpha_x)$	x	z	$\frac{\frac{1}{2}(1+\alpha_x)}{z}$	$\frac{\frac{1}{2}(1-\alpha_x)}{z}$	$\frac{z}{\frac{1}{2}(1+\alpha_x)}$	$\frac{z}{\frac{1}{2}(1-\alpha_x)}$	$\frac{1}{2}(1-\alpha_x)$
·620	·30548 07881	·38075 55202	1·62834 14610	0·99801 57342	·61412 18067	1·00198 82110	·380
·621	·30810 82025$^-$	·38044 87258^5	1·63228 30326^5	·99619 20602	·61263 88500	1·00382 24956^5	·379
·622	·31073 77455	·38013 93031	1·63624 22801	·99437 23182	·61115 64358	1·00565 95319	·378
·623	·31336 94389	·37982 72496	1·64021 93381	·99255 64855$^-$	·60967 45580	1·00749 93359	·377
·624	·31600 33044	·37951 25634^5	1·64421 43425	·99074 45397	·60819 32107	1·00934 19241	·376
·625	·31863 93640	·37919 52423	1·64822 74308	·98893 64585$^-$	·60671 23877	1·01118 73128	·375
·626	·32127 76396	·37887 52840	1·65225 87417	·98713 22195	·60523 20830^5	1·01303 55187	·374
·627	·32391 81533	·37855 26863	1·65630 84155	·98533 18006	·60375 22907	1·01488 65584	·373
·628	·32656 09274	·37822 74469	1·66037 65938	·98353 51798	·60227 30046	1·01674 04487	·372
·629	·32920 59843	·37789 95637	1·66446 34196	·98174 23349	·60079 42189	1·01859 72066^5	·371
·630	·33185 33464	·37756 90342	1·66856 90374	·97995 32443	·59931 59273	1·02045 68492	·370
·631	·33450 30364	·37723 58562	1·67269 35937	·97816 78860	·59783 81239	1·02231 93935	·369
·632	·33715 50769^5	·37690 00273	1·67683 72357	·97638 62385$^+$	·59636 08028	1·02418 48569	·368
·633	·33980 94910	·37656 15453	1·68100 01126^5	·97460 82802	·59488 39578	1·02605 32568	·367
·634	·34246 63014	·37622 04076$^-$	1·68518 23752	·97283 39894	·59340 75829	1·02792 46108	·366
·635	·34512 55314	·37587 66118^5	1·68938 41755	·97106 33450$^-$	·59193 16722	1·02979 89366	·365
·636	·34778 72042	·37553 01557	1·69360 56675	·96929 63254	·59045 62196	1·03167 62519	·364
·637	·35045 13432	·37518 10366	1·69784 70067	·96753 29096	·58898 12192	1·03355 65747	·363
·638	·35311 79719	·37482 92522	1·70210 83501^5	·96577 30764	·58750 66648	1·03543 99231	·362
·639	·35578 71140	·37447 47998	1·70638 98566	·96401 68047	·58603 25506	1·03732 63153^5	·361
·640	·35845 87932	·37411 76771	1·71069 16865	·96226 40737	·58455 88705$^-$	1·03921 57697	·360
·641	·36113 30335$^-$	·37375 78814	1·71501 40021	·96051 48623	·58308 56184	1·04110 83047	·359
·642	·36380 98589	·37339 54102	1·71935 69672	·95876 91499	·58161 27884	1·04300 39390	·358
·643	·36648 92938	·37303 02608	1·72372 07475$^-$	·95702 69158	·58014 03745	1·04490 26914	·357
·644	·36917 13624	·37266 24307	1·72810 55103	·95528 81392^5	·57866 83707	1·04680 45806	·356
·645	·37185 60893	·37229 19172	1·73251 14250	·95355 27998	·57719 67709	1·04870 96259	·355
·646	·37454 34991	·37191 87176	1·73693 86626	·95182 08770	·57572 55691	1·05061 78464	·354
·647	·37723 36166	·37154 28293	1·74138 73959	·95009 23505$^-$	·57425 47594	1·05252 92615$^-$	·353
·648	·37992 64669	·37116 42495$^-$	1·74585 77998	·94836 71999	·57278 43356	1·05444 38906	·352
·649	·38262 20750	·37078 29755$^-$	1·75035 00510	·94664 54051	·57131 42919	1·05636 17534	·351
·650	·38532 04663	·37039 90044	1·75486 43280^5	·94492 69459	·56984 46222	1·05828 28698	·350
·651	·38802 16661	·37001 23336	1·75940 08115$^+$	·94321 18022	·56837 53204	1·06020 72596	·349
·652	·39072 57000	·36962 29601^5	1·76395 96841	·94149 99541	·56690 63806	1·06213 49429^5	·348
·653	·39343 25939^5	·36923 08812	1·76854 11302	·93979 13816	·56543 77967	1·06406 59402	·347
·654	·39614 23737	·36883 60940	1·77314 53365^6	·93808 60649	·56396 95627	1·06600 02717	·346
·655	·39885 50655$^-$	·36843 85955$^+$	1·77777 24917	·93638 39842	·56250 16725^5	1·06793 79580	·345
·656	·40157 06954^5	·36803 83829	1·78242 27866	·93468 51198	·56103 41203	1·06987 90200	·344
·657	·40428 92901	·36763 54531	1·78709 64141	·93298 94521	·55956 68998	1·07182 34785^5	·343
·658	·40701 08761	·36722 98033	1·79179 35692	·93129 69615$^+$	·55810 00050$^+$	1·07377 13547	·342
·659	·40973 54801	·36682 14304	1·79651 44493	·92960 76285^5	·55663 34300	1·07572 26697^5	·341
·660	·41246 31293	·36641 03313	1·80125 92538	·92792 14338	·55516 71687	1·07767 74451	·340
·661	·41519 38506	·36599 65031	1·80602 81844	·92623 83578	·55370 12150$^-$	1·07963 57024	·339
·662	·41792 76715$^-$	·36557 99426	1·81082 14452	·92455 83814	·55223 55628	1·08159 74633	·338
·663	·42066 46195$^-$	·36516 06467	1·81563 92425$^+$	·92288 14853	·55077 02062	1·08356 27499	·337
·664	·42340 47222	·36473 86123	1·82048 17850$^+$	·92120 76502^5	·54930 51390	1·08553 15842^5	·336
·665	·42614 80077	·36431 38362	1·82534 92838	·91953 68572^5	·54784 03552	1·08750 39887	·335
·666	·42889 45039	·36388 63152	1·83024 19523	·91786 90872	·54637 58487	1·08947 99857	·334
·667	·43164 42392	·36345 60461	1·83516 00066	·91620 43211^5	·54491 16134	1·09145 95979^5	·333
·668	·43439 72421^5	·36302 30256^5	1·84010 36651	·91454 25401	·54344 76432	1·09344 28483	·332
·669	·43715 35413	·36258 72505$^+$	1·84507 31486^5	·91288 37253	·54198 39320	1·09542 97599	·331
·670	·43991 31655^5	·36214 87175$^-$	1·85006 86809	·91122 78578	·54052 04738	1·09742 03559	·330
·671	·44267 61441	·36170 74231	1·85509 04880	·90957 49189	·53905 72624	1·09941 46598	·329
·672	·44544 25062	·36126 33640	1·86013 87987	·90792 48898^5	·53759 42917	1·10141 26952	·328
·673	·44821 22813^5	·36081 65369	1·86521 38445$^-$	·90627 77521	·53613 15556	1·10341 44860	·327
·674	·45098 54993	·36036 69383	1·87031 58595$^+$	·90463 34869^5	·53466 90480	1·10542 00562	·326
·675	·45376 21901	·35991 45648	1·87544 50808	·90299 20759	·53320 67626	1·10742 94301	·325
·676	·45654 23838	·35945 94128	1·88060 17480	·90135 35005$^+$	·53174 46934^5	1·10944 26320	·324
·677	·45932 61108	·35900 14788	1·88578 61038	·89971 77423	·53028 28343	1·11145 96868	·323
·678	·46211 34017	·35854 07594	1·89099 83936	·89808 47828	·52882 11790	1·11348 06191	·322
·679	·46490 42874^5	·35807 72508	1·89623 88659	·89645 46038	·52735 97214	1·11550 54543	·321
·680	·46769 87991	·35761 09496	1·90150 77721	·89482 71869	·52589 84553	1·11753 42174	·320

TABLE II.—(*continued*).

$\frac{1}{2}(1+\alpha_x)$	x	z	$\frac{\frac{1}{2}(1+\alpha_x)}{z}$	$\frac{\frac{1}{2}(1-\alpha_x)}{z}$	$\frac{z}{\frac{1}{2}(1+\alpha_x)}$	$\frac{z}{\frac{1}{2}(1-\alpha_x)}$	$\frac{1}{2}(1-\alpha_x)$
·680	·46769 87991	·35761 09496	1·90150 77721	·89482 71869	·52589 84553	1·11753 42174	·320
·681	·47049 69679	·35714 18520	1·90680 53665^{+}	·89320 25138	·52443 73744^{s}	1·11956 69342	·319
·682	·47329 88254	·35666 99544	1·91213 19067	·89158 05665^{-}	·52297 64727	1·12160 36302	·318
·683	·47610 44034^{s}	·35619 52531	1·91748 76533	·88996 13266	·52151 57439	1 12364 43316	·317
·684	·47891 37341	·35571 77443^{s}	1·92287 28700	·88834 47762	·52005 51818	1·12568 90644	·316
·685	·48172 68495^{s}	·35523 74244	1·92828 78239	·88673 08971	·51859 47801	1·12773 78552	·315
·686	·48454 37824	·35475 42894	1·93373 27850^{+}	·88511 96713	·51713 45326	1·12979 07305^{e}	·314
·687	·48736 45654^{s}	·35426 83355^{+}	1·93920 80271	·88351 10808	·51567 44331	1·13184 77173	·313
·688	·49018 92317	·35377 95589^{s}	1·94471 38270	·88190 51076	·51421 44752	1·13390 88428	·312
·689	·49301 78145	·35328 79558	1·95025 04650^{+}	·88030 17338^{s}	·51275 46528	1·13597 41343	·311
·690	·49585 03473	·35279 35220	1·95581 82250^{-}	·87870 09417	·51129 49594	1·13804 36194	·310
·691	·49868 68641	·35229 62538	1·96141 73938	·87710 27130	·50983 53890	1·14011 73262^{s}	·309
·692	·50152 73993	·35179 61469	1·96704 82640	·87550 70308	·50837 59348	1·14219 52821	·308
·693	·50437 19864	·35129 31975^{s}	1·97271 11280	·87391 38763	·50691 65910	1·14427 75164^{s}	·307
·694	·50722 06606	·35078 74016	1·97840 62849	·87232 32323	·50545 73510	1·14636 40575^{+}	·306
·695	·51007 34570	·35027 87549	1·98413 40370	·87073 50810	·50399 82085^{-}	1·14845 49341	·305
·696	·51293 04106	·34976 72533	1·98989 46898	·86914 94047	·50253 91570	1·15055 01753	·304
·697	·51579 15570	·34925 28927	1·99568 85530	·86756 61859	·50108 01903	1·15264 98108	·303
·698	·51865 69321	·34873 56688	2·00151 59402^{s}	·86598 54068	·49962 13020	1·15475 38701	·302
·699	·52152 65718	·34821 55774	2·00737 71692	·86440 70500^{-}	·49816 24855^{+}	1·15686 23833	·301
·700	·52440 05127	·34769 26142	2·01327 25614^{s}	·86283 10978	·49670 37346	1·15897 53807	·300
·701	·52727 87914	·34716 67749	2·01920 24429	·86125 75327	·49524 50427	1·16109 28927	·299
·702	·53016 14450^{+}	·34663 80552	2·02516 71435^{-}	·85968 63373	·49378 64034	1·16321 49502	·298
·703	·53304 85109	·34610 64506	2·03116 69975^{+}	·85811 74940	·49232 78102	1·16534 15844	·297
·704	·53594 00266	·34557 19567	2·03720 23436	·85655 09854	·49086 92566	1·16747 28265^{+}	·296
·705	·53883 60303	·34503 45690	2·04327 35248	·85498 67941	·48941 07362	1·16960 87085^{-}	·295
·706	·54173 65601	·34449 42831	2·04938 08886	·85342 49026	·48795 22423	1·17174 92622	·294
·707	·54464 16548	·34395 10944	2·05552 47871	·85186 52936^{s}	·48649 37685^{+}	1·17389 45200	·293
·708	·54755 13533	·34340 49982	2·06170 55769	·85030 79498	·48503 53082^{s}	1·17604 45145^{+}	·292
·709	·55046 56950^{+}	·34285 59901	2·06792 36194	·84875 28537	·48357 68549	1·17819 92787	·291
·710	·55338 47196	·34230 40653	2·07417 92809	·84719 99880	·48211 84018	1·18035 88458	·290
·711	·55630 84670	·34174 92191	2·08047 29324^{s}	·84564 93354	·48065 99425^{-}	1·18252 32494	·289
·712	·55923 69776	·34119 14468	2·08680 49500	·84410 08786	·47920 14702	1·18469 25235^{e}	·288
·713	·56217 02922^{s}	·34063 07435^{+}	2·09317 57146	·84255 46004	·47774 29783	1·18686 67022	·287
·714	·56510 84520	·34006 71046	2·09958 56124	·84101 04834	·47628 44602	1·18904 58202	·286
·715	·56805 14983	·33950 05250^{e}	2·10603 50348^{s}	·83946 85104	·47482 59091	1·19122 99123	·285
·716	·57099 94731	·33893 09999	2·11252 43786	·83792 86641	·47336 73183	1·19341 90138	·284
·717	·57395 24186	·33835 85244	2·11905 40456	·83639 09273^{s}	·47190 86812	1·19561 31604	·283
·718	·57691 03773	·33778 30934	2·12562 44436	·83485 52829	·47044 99908	1·19781 23880	·282
·719	·57987 33924	·33720 47020	2·13223 59855^{+}	·83332 17134	·46899 12406	1·20001 67329	·281
·720	·58284 15073	·33662 33449	2·13888 90902^{s}	·83179 02018	·46753 24235^{+}	1·20222 62319	·280
·721	·58581 47657	·33603 90172	2·14558 41823	·83026 07307	·46607 35329	1·20444 09220	·279
·722	·58879 32119	·33545 17137	2·15232 16921	·82873 32831	·46461 45619	1·20666 08406	·278
·723	·59177 68906	·33486 14291	2·15910 20561	·82720 78417	·46315 55035^{+}	1·20888 60255^{-}	·277
·724	·59476 58468	·33426 81581	2·16592 57168	·82568 43893	·46169 63510	1·21111 65150	·276
·725	·59776 01260	·33367 18956	2·17279 31227	·82416 29086	·46023 70974	1·21335 23476	·275
·726	·60075 97742^{s}	·33307 26361	2·17970 47290	·82264 33826	·45877 77357	1·21559 35624	·274
·727	·60376 48378	·33247 03742	2·18666 09970	·82112 57939	·45731 82589	1·21784 01987	·273
·728	·60677 53635^{+}	·33186 51046	2·19366 23945^{-}	·81961 01254	·45585 86602	1·22009 22963	·272
·729	·60979 13987	·33125 68217	2·20070 93961	·81809 63599	·45439 89323	1·22234 98955^{-}	·271
·730	·61281 29910	·33064 55199^{s}	2·20780 24832	·81658 44801	·45293 90684	1·22461 30368	·270
·731	·61584 01887	·33003 11938	2·21494 21439	·81507 44688	·45147 90613	1·22688 17614	·269
·732	·61887 30405^{+}	·32941 38377	2·22212 88733	·81356 63088	·45001 89039	1·22915 61108	·268
·733	·62191 15956	·32879 34458^{s}	2·22936 31739	·81205 99829	·44855 85891^{s}	1·23143 61268	·267
·734	·62495 59035^{-}	·32817 00125^{+}	2·23664 55558	·81055 54739	·44709 81097	1·23372 18515^{+}	·266
·735	·62800 60144	·32754 35321	2·24397 65343	·80905 27641	·44563 74586^{s}	1·23601 33287	·265
·736	·63106 19790^{s}	·32691 39986	2·25135 66356	·80755 18367	·44417 66285^{+}	1·23831 06007^{s}	·264
·737	·63412 38485^{+}	·32628 14062	2·25878 63913	·80605 26742	·44271 56122	1·24061 37117	·263
·738	·63719 16745^{e}	·32564 57489	2·26626 63414^{s}	·80455 52594	·44125 44023	1·24292 27058	·262
·739	·64026 55092	·32500 70208	2·27379 70340	·80305 95749^{s}	·43979 29916^{s}	1·24523 76277	·261
·740	·64334 54054	·32436 52159	2·28137 90252	·80156 56034^{s}	·43833 13728	1·24755 85226	·260

TABLE II.—(*continued*).

$\frac{1}{2}(1+\alpha_x)$	x	z	$\frac{\frac{1}{2}(1+\alpha_x)}{z}$	$\frac{\frac{1}{2}(1-\alpha_x)}{z}$	$\frac{z}{\frac{1}{2}(1+\alpha_x)}$	$\frac{z}{\frac{1}{2}(1-\alpha_x)}$	$\frac{1}{2}(1-\alpha_x)$
·740	·64334 54054	·32436 52159	2·28137 90252	·80156 56034^5	·43833 13728	1·24755 85226	·260
·741	·64643 14163	·32372 03280	2·28901 28792	·80007 33275^5	·43686 95384	1·24988 54362	·259
·742	·64952 35958	·32307 23510	2·29669 91689	·79858 27299	·43540 74811	1·25221 84147	·258
·743	·65262 19983^5	·32242 12787	2·30443 84756	·79709 37930	·43394 51934	1·25455 75047	·257
·744	·65572 66788	·32176 71049	2·31223 13893^5	·79560 64996	·43248 26679	1·25690 27535^e	·256
·745	·65883 76927	·32110 98232	2·32007 85092	·79412 08320	·43101 98970	1·25925 42088	·255
·746	·66195 50963	·32044 94274	2·32798 04433	·79263 67729	·42955 68732	1·26161 19188	·254
·747	·66507 89462	·31978 59109	2·33593 78089	·79115 43047	·42809 35889	1·26397 59324	·253
·748	·66820 92997	·31911 92673	2·34395 12327	·78967 34099	·42663 00365$^+$	1·26634 62989	·252
·749	·67134 62149	·31844 94901	2·35202 13511^5	·78819 40709	·42516 62084	1·26872 30682	·251
·750	·67448 97502	·31777 65727	2·36014 88104	·78671 62701	·42370 20969	1·27110 62907	·250
·751	·67763 99649	·31710 05084	2·36833 42667	·78523 99899	·42223 76942^5	1·27349 60176	·249
·752	·68079 69188	·31642 12905$^+$	2·37657 83864	·78376 52125$^+$	·42077 29927	1·27589 23004	·248
·753	·68396 06724	·31573 89123	2·38488 18461	·78229 19203	·41930 79844	1·27829 51914	·247
·754	·68713 12868	·31505 33669	2·39324 53332	·78082 00954	·41784 26616^5	1·28070 47434	·246
·755	·69030 88240	·31436 46474	2·40166 95461	·77934 97202	·41637 70164	1·28312 10098	·245
·756	·69349 33463	·31367 27469	2·41015 51936	·77788 07768	·41491 10409	1·28554 40446	·244
·757	·69668 49171	·31297 76583^5	2·41870 29962	·77641 32471	·41344 47270	1·28797 39027	·243
·758	·69988 36002	·31227 93747	2·42731 36859	·77494 71134	·41197 80669	1·29041 06392	·242
·759	·70308 94604	·31157 78888	2·43598 80062	·77348 23577	·41051 10524	1·29285 43102	·241
·760	·70630 25629	·31087 31933^5	2·44472 67125$^+$	·77201 89619	·40904 36755$^-$	1·29530 49723	·240
·761	·70952 29739	·31016 52812	2·45353 05727	·77055 69078^5	·40757 59280	1·29776 26828	·239
·762	·71275 07602^5	·30945 41449^5	2·46240 03667	·76909 61775$^+$	·40610 78018	1·30022 74998	·238
·763	·71598 59896	·30873 97772	2·47133 68874	·76763 67527	·40463 92886	1·30269 94818	·237
·764	·71922 87305$^-$	·30802 21705$^-$	2·48034 09405$^+$	·76617 86151	·40317 03802	1·30517 86884	·236
·765	·72247 90519	·30730 13172	2·48941 33450$^-$	·76472 17465	·40170 10682^5	1·30766 51796	·235
·766	·72573 70241	·30657 72098	2·49855 49332	·76326 61284	·40023 13444	1·31015 90163	·234
·767	·72900 27178	·30584 98406	2·50776 65515$^-$	·76181 17425$^-$	·39876 12002^5	1·31266 02600	·233
·768	·73227 62048	·30511 92018	2·51704 90599^5	·76035 85702	·39729 06273	1·31516 89732	·232
·769	·73555 75574	·30438 52859	2·52640 33306	·75890 65921	·39581 96175$^+$	1·31768 52202	·231
·770	·73884 68492	·30364 80841	2·53583 02605^e	·75745 57921	·39434 81611	1·32020 90609^5	·230
·771	·74214 41544	·30290 75892	2·54533 07461^5	·75600 61490	·39287 62506	1·32274 05641	·229
·772	·74544 95482	·30216 37930	2·55490 57096	·75455 76448	·39140 38770	1·32527 97939	·228
·773	·74876 31066	·30141 66874	2·56455 60860	·75311 02607	·38993 10315$^+$	1·32782 68166	·227
·774	·75208 49067	·30066 62640^5	2·57428 28263	·75166 39777	·38845 77055$^-$	1·33038 16993	·226
·775	·75541 50264	·29991 25148	2·58408 68980	·75021 87769^5	·38698 38900	1·33294 45101	·225
·776	·75875 35445$^+$	·29915 54312	2·59396 92891	·74877 46390	·38550 95763	1·33551 53178^5	·224
·777	·76210 05410	·29839 50049	2·60393 09886^5	·74733 15450$^-$	·38403 47553	1·33809 41922	·223
·778	·76545 60967	·29763 12273	2·61397 30268	·74588 94755$^+$	·38255 94181	1·34068 12039	·222
·779	·76882 02935$^-$	·29686 40898	2·62409 64360	·74444 84112	·38108 35556	1·34327 64244	·221
·780	·77219 32142	·29609 35838	2·63430 22705$^-$	·74300 83327	·37960 71587	1·34587 99262	·220
·781	·77557 49428	·29531 97004	2·64459 16031^5	·74156 92203^5	·37813 02182	1·34849 17828	·219
·782	·77896 55644	·29454 24309	2·65496 55259	·74013 10545$^+$	·37665 27250$^-$	1·35111 20684	·218
·783	·78236 51649	·29376 17663	2·66542 51499	·73869 38155$^-$	·37517 46696	1·35374 08586	·217
·784	·78577 38315$^+$	·29297 76976	2·67597 16064	·73725 74834	·37369 60428	1·35637 82295^e	·216
·785	·78919 16527	·29219 02156	2·68660 60467	·73582 20383	·37221 68352	1·35902 42586	·215
·786	79261 87177	·29139 93112	2·69732 96430	·73438 74600	·37073 70371	1·36167 90242	·214
·787	·79605 51173	·29060 49750^5	2·70814 35886	·73295 37286	·36925 66392	1·36434 26059	·213
·788	·79950 09431	·28980 71978	2·71904 90987	·73152 08235^e	·36777 56317	1·36701 50840	·212
·789	·80295 62883	·28900 59700	2·73004 74105$^+$	·73008 87245$^-$	·36629 40051	1·36969 65402^5	·211
·790	·80642 12470	·28820 12820	2·74113 97841	·72865 74109^5	·36481 17494	1·37238 70573	·210
·791	·80989 59177	·28739 31243	2·75232 75027	·72722 68623	·36332 88549^5	1·37508 67190	·209
·792	·81338 03882	·28658 14869	2·76361 18733^5	·72579 70576^5	·36184 53118	1·37779 56103	·208
·793	·81687 47655$^-$	·28576 63602	2·77499 42277	·72436 79762	·36036 11099^5	1·38051 38173	·207
·794	·82037 91459^5	·28494 77341	2·78647 59220	·72293 95969	·35887 62394	1·38324 14275$^+$	·206
·795	·82389 36303	·28412 55985$^+$	2·79805 83380	·72151 18985$^-$	·35739 06900	1·38597 85294	·205
·796	·82741 83207	·28329 99434	2·80974 28839	·72008 48597	·35590 44515$^+$	1·38872 52128	·204
·797	·83095 33205^5	·28247 07584^5	2·82153 90045^e	·71865 84591	·35441 75137	1·39148 15687	·203
·798	·83449 87348	·28163 80333	2·83342 41319	·71723 26750$^+$	·35292 98663	1·39424 76896	·202
·799	·83805 46698^5	·28080 17575$^-$	2·84542 37865$^-$	·71580 74857	·35144 14987	1·39702 36690	·201
·800	·84162 12335^5	·27996 19204	2·85753 14772	·71438 28693	·34995 24005$^+$	1·39980 96021	·200

TABLE II.—(*continued*).

$\frac{1}{2}(1+a_x)$	x	z	$\frac{\frac{1}{2}(1+a_x)}{z}$	$\frac{\frac{1}{2}(1-a_x)}{z}$	$\frac{z}{\frac{1}{2}(1+a_x)}$	$\frac{z}{\frac{1}{2}(1-a_x)}$	$\frac{1}{2}(1-a_x)$
·800	·84162 12335^{5}	·27996 19204	2·85753 14772	·71438 28693	·34995 24005^{+}	1·39980 96021	·200
·801	·84519 85353	·27911 85114	2·86974 87526	·71295 88037	·34846 25611	1·40260 55856^{5}	·199
·802	·84878 66859	·27827 15197	2·88207 71913	·71153 52667	·34697 19697	1·40541 17158	·198
·803	·85238 57979	·27742 09344	2·89451 84029	·71011 22358	·34548 06157	1·40822 80934	·197
·804	·85599 59855^{-}	·27656 67444	2·90707 40288	·70868 96886	·34398 84881	1·41105 48186	·196
·805	·85961 73642	·27570 89387	2·91974 57427	·70726 76023	·34249 55760	1·41389 19933^{5}	·195
·806	·86325 00516	·27484 75059	2·93253 52517	·70584 59539	·34100 18684	1·41673 97213	·194
·807	·86689 41666	·27398 24348	2·94544 42969	·70442 47203	·33950 73541	1·41959 81077	·193
·808	·87054 98302	·27311 37138	2·95847 46547	·70300 38783^{5}	·33801 20220	1·42246 72591^{5}	·192
·809	·87421 71648^{5}	·27224 13312	2·97162 81372	·70158 34044^{5}	·33651 58606	1·42534 72840	·191
·810	·87789 62950	·27136 52755^{-}	2·98490 65933	·70016 32750	·33501 88586	1·42823 82927	·190
·811	·88158 73470	·27048 55347	2·99831 19097	·69874 34660	·33352 10045^{+}	1·43114 03951	·189
·812	·88529 04488	·26960 20968	3·01184 60119	·69732 39535^{6}	·33202 22867	1·43405 37063	·188
·813	·88900 57306	·26871 49497	3·02551 08652	·69590 47131^{5}	·33052 26934	1·43697 83407	·187
·814	·89273 33243	·26782 40812	3·03930 84755^{5}	·69448 57205^{-}	·32902 22128	1·43991 44151	·186
·815	·89647 33640	·26692 94789	3·05324 08909	·69306 69507	·32752 08330	1·44286 20482	·185
·816	·90022 59857	·26603 11303	3·06731 02020	·69164 83789	·32601 85420	1·44582 13603	·184
·817	·90399 13276	·26512 90227	3·08151 85439^{5}	·69022 99799	·32451 53277	1·44879 24738	·183
·818	·90776 95299	·26422 31433^{5}	3·09586 80970^{5}	·68881 17282	·32301 11777	1·45177 55129	·182
·819	·91156 07351	·26331 34793	3·11036 10881	·68739 35982	·32150 60797	1·45477 06039	·181
·820	·91536 50879	·26240 00175^{-}	3·12499 97917	·68597 55640	·32000 00213	1·45777 78750^{-}	·180
·821	·91918 27352	·26148 27447	3·13978 65314^{5}	·68455 75994	·31849 29899	1·46079 74564	·179
·822	·92301 38263	·26056 16475^{+}	3·15472 36815^{+}	·68313 96780	·31698 49727	1·46382 94806	·178
·823	·92685 85128	·25963 67125^{+}	3·16981 36678	·68172 17730	·31547 59569	1·46687 40821	·177
·824	·93071 69489	·25870 79259	3·18505 89695^{+}	·68030 38576	·31396 59295^{+}	1·46993 13974	·176
·825	·93458 92911	·25777 52740	3·20046 21205^{+}	·67888 59043^{5}	·31245 48776	1·47300 15656	·175
·826	·93847 56984	·25683 87427	3·21602 57109^{5}	·67746 78858	·31094 27877	1·47608 47280	·174
·827	·94237 63326	·25589 83178^{5}	3·23175 23888	·67604 97742	·30942 96467	1·47918 10280	·173
·828	·94629 13579^{5}	·25495 39852	3·24764 48616	·67463 15413	·30791 54411	1·48229 06117	·172
·829	·95022 09415^{+}	·25400 57303	3·26370 58979	·67321 31587	·30640 01571^{5}	1·48541 36274	·171
·830	·95416 52531	·25305 35384	3·27993 83292^{5}	·67179 45976	·30488 37812	1·48855 02260	·170
·831	·95812 44654	·25209 73948	3·29634 50520	·67037 58289	·30336 62994	1·49170 05610	·169
·832	·96209 87539	·25113 72844^{5}	3·31292 90293	·66895 68232	·30184 76977	1·49486 47884	·168
·833	·96608 82971	·25017 31922	3·32969 32922	·66753 75508	·30032 79618	1·49804 30671^{5}	·167
·834	·97009 32766	·24920 51027	3·34664 09431	·66611 79815^{-}	·29880 70776	1·50123 55585^{5}	·166
·835	·97411 38770	·24823 30005^{-}	3·36377 51567	·66469 80848^{5}	·29728 50305^{-}	1·50444 24270	·165
·836	·97815 02862	·24725 68697	3·38109 91825^{-}	·66327 78300^{5}	·29576 18059	1·50766 38396	·164
·837	·98220 26953	·24627 66945^{5}	3·39861 63471	·66185 71859	·29423 73889	1·51089 99665^{5}	·163
·838	·98627 12987	·24529 24589	3·41633 00565^{6}	·66043 61207	·29271 17648	1·51415 09809	·162
·839	·99035 62942	·24430 41465^{-}	3·43424 37985^{-}	·65901 46026	·29118 49183	1·51741 70589	·161
·840	·99445 78832	·24331 17408	3·45236 11450^{-}	·65759 25990	·28965 68343	1·52069 83799	·160
·841	·99857 62706	·24231 52251	3·47068 57548^{5}	·65617 00773	·28812 74972	1·52399 51265^{+}	·159
·842	1·00271 16650^{+}	·24131 45826	3·48922 13765^{+}	·65474 70041	·28659 68914	1·52730 74847	·158
·843	1·00686 42788	·24030 97961	3·50797 18507	·65332 33459	·28506 50012	1·53063 56436	·157
·844	1·01103 43281	·23930 08482	3·52694 11133	·65189 90683	·28353 18107	1·53397 97962	·156
·845	1·01522 20332	·23828 77215^{+}	3·54613 31983	·65047 41370	·28199 73036	1·53734 01388	·155
·846	1·01942 76182	·23727 03982	3·56555 22410	·64904 85167	·28046 14636	1·54071 68714	·154
·847	1·02365 13115^{+}	·23624 88602	3·58520 24816	·64762 21720	·27892 42742	1·54411 01976	·153
·848	1·02789 33458	·23522 30895^{-}	3·60508 82671	·64619 50667	·27738 57187	1·54752 03255^{-}	·152
·849	1·03215 39579	·23419 30674	3·62521 40578	·64476 71646	·27584 57802	1·55094 74659	·151
·850	1·03643 33895^{-}	·23315 87753	3·64558 44265^{+}	·64333 84282	·27430 44415^{-}	1·55439 18351	·150
·851	1·04073 18864	·23212 01943	3·66620 40662	·64190 88200	·27276 16854	1·55785 36527	·149
·852	1·04504 96998	·23107 73050^{-}	3·68707 77942	·64047 83023	·27121 74941	1·56133 31419	·148
·853	1·04938 70848	·23003 00883	3·70821 05495^{+}	·63904 68356	·26967 18502^{5}	1·56483 05324	·147
·854	1·05374 43022	·22897 85242	3·72960 74067	·63761 43810	·26812 47356^{5}	1·56834 60565^{-}	·146
·855	1·05812 16178	·22792 25929^{5}	3·75127 35746	·63618 08986	·26657 61321	1·57187 99514	·145
·856	1·06251 93023	·22686 22742	3·77321 44003	·63474 63477	·26502 60213	1·57543 24599	·144
·857	1·06693 76321	·22579 75475	3·79543 53775^{+}	·63331 06873	·26347 43845^{-}	1·57900 38288	·143
·858	1·07137 68892	·22472 83920	3·81794 21493	·63187 38755^{+}	·26192 12028	1·58259 43099	·142
·859	1·07583 73609	·22365 47867	3·84074 05129	·63043 58699	·26036 64571	1·58620 41608	·141
·860	1·08031 93408	·22257 67101	3·86383 64255^{-}	·62899 66274	·25881 01280	1·58983 36437	·140

TABLE II.—(*continued*).

$\frac{1}{2}(1+\alpha_x)$	x	z	$\frac{\frac{1}{2}(1+\alpha_x)}{z}$	$\frac{\frac{1}{2}(1-\alpha_x)}{z}$	$\frac{z}{\frac{1}{2}(1+\alpha_x)}$	$\frac{z}{\frac{1}{2}(1-\alpha_x)}$	$\frac{1}{2}(1-\alpha_x)$
·860	1·08031 93408	·22257 67101	3·86383 64255^{-}	·62899 66274	·25881 01280	1·58983 36437	·140
·861	1·08482 31279	·22149 41407	3·88723 60109	·62755 61040	·25725 21960	1·59348 30267^{5}	·139
·862	1·08934 90279	·22040 70565^{-}	3·91094 55647	·62611 42551	·25569 26409	1·59715 25832	·138
·863	1·09389 73525^{-}	·21931 54352	3·93497 15591	·62467 10355^{-}	·25413 14429	1·60084 25927	·137
·864	1·09846 84202	·21821 92542	3·95932 06524	·62322 63990	·25256 85813	1·60455 33399	·136
·865	1·10306 25561	·21711 84907	3·98399 96923	·62178 02988	·25100 40354^{5}	1·60828 51160	·135
·866	1·10768 00920	·21601 31213	4·00901 57241	·62033 26871	·24943 77844	1·61203 82188	·134
·867	1·11232 13671	·21490 31226	4·03437 59995^{+}	·61888 35155	·24786 98069	1·61581 29518	·133
·868	1·11698 67277	·21378 84706	4·06008 79819	·61743 27346	·24630 00813	1·61960 96255^{-}	·132
·869	1·12167 65277	·21266 91410	4·08615 93548	·61598 02940	·24472 85857	1·62342 85573	·131
·870	1·12639 11289	·21154 51092	4·11259 80324	·61452 61428	·24315 52980	1·62727 00710	·130
·871	1·13113 09007	·21041 63503	4·13941 21638	·61307 02286	·24158 01955^{5}	1·63113 44986	·129
·872	1·13589 62211	·20928 28389	4·16661 01464	·61161 24985^{5}	·24000 32556	1·63502 21789	·128
·873	1·14068 74762	·20814 45492^{5}	4·19420 06320	·61015 28984	·23842 44550	1·63893 34586	·127
·874	1·14550 50613	·20700 14552	4·22219 25411	·60869 13732	·23684 37702	1·64286 86918	·126
·875	1·15034 93802	·20585 35302	4·25059 50669^{5}	·60722 78667	·23526 11774	1·64682 82416	·125
·876	1·15522 08464	·20470 07474	4·27941 76924	·60576 23218	·23367 66523	1·65081 24789	·124
·877	1·16011 98829^{5}	·20354 30793	4·30867 01991	·60429 46801	·23209 01702	1·65482 17829	·123
·878	1·16504 69221	·20238 04983	4·33836 26756	·60282 48820	·23050 17065^{-}	1·65885 65433	·122
·879	1·17000 24074	·20121 29760	4·36850 55383^{5}	·60135 28670^{5}	·22891 12355^{-}	1·66291 71569	·121
·880	1·17498 67920	·20004 04838	4·39910 95366^{5}	·59987 85732	·22731 87316	1·66700 40317	·120
·881	1·18000 05403	·19886 29927	4·43018 57685^{+}	·59840 19370	·22572 41687	1·67111 75854	·119
·882	1·18504 41279	·19768 04728	4·46174 57036	·59692 28946	·22412 75201	1·67525 82437	·118
·883	1·19011 80420	·19649 28942	4·49380 11811	·59544 13796	·22252 87590	1·67942 64461	·117
·884	1·19522 27816	·19530 02264	4·52636 44411^{5}	·59395 73249	·22092 78579	1·68362 26411	·116
·885	1·20035 88581	·19410 24382	4·55944 81355^{+}	·59247 06617	·21932 47889	1·68784 72888	·115
·886	1·20552 67961	·19289 94980	4·59306 53476	·59098 13201	·21771 95237	1·69210 08600	·114
·887	1·21072 71329	·19169 13738	4·62722 96054	·58948 92282	·21611 20336	1·69638 38390	·113
·888	1·21596 04197	·19047 80328	4·66195 49084	·58799 43128	·21450 22892	1·70069 67215^{+}	·112
·889	1·22122 72221	·18925 94418	4·69725 57433	·58649 64989	·21289 02607	1·70504 00163	·111
·890	1·22652 81200	·18803 55670	4·73314 71070	·58499 57099	·21127 59180	1·70941 42455	·110
·891	1·23186 37089	·18680 63740	4·76964 45309	·58349 18674	·20965 92301	1·71381 99448	·109
·892	1·23723 45993	·18557 18278	4·80676 41009	·58198 48911	·20804 01657	1·71825 76648	·108
·893	1·24264 14187	·18433 18928	4·84452 24882	·58047 46990	·20641 86929^{5}	1·72272 79702	·107
·894	1·24808 48112	·18308 65328	4·88293 69721	·57896 12070	·20479 47794	1·72723 14413	·106
·895	1·25356 54386	·18183 57108	4·92202 54712	·57744 43290	·20316 83919	1·73176 86740	·105
·896	1·25908 39805^{+}	·18057 93893	4·96180 65699	·57592 39769	·20153 94969	1·73634 02813	·104
·897	1·26464 11358	·17931 75299	5·00229 95540	·57440 00603	·19990 80601	1·74094 68925^{5}	·103
·898	1·27023 76225^{+}	·17805 00939	5·04352 44402	·57287 24865	·19827 40466	1·74558 91556	·102
·899	1·27587 41794	·17677 70413	5·08550 20158^{5}	·57134 11608^{5}	·19663 74208	1·75026 77359	·101
·900	1·28155 15658	·17549 83319	5·12825 38719	·56980 59858	·19499 81465^{+}	1·75498 33188	·100
·901	1·28727 05633	·17421 39243	5·17180 24462^{5}	·56826 68615^{-}	·19335 61868	1·75973 66093^{5}	·099
·902	1·29303 19763	·17292 37766	5·21617 10643^{5}	·56672 36855^{-}	·19171 15040	1·76452 83330	·098
·903	1·29883 66327	·17162 78460	5·26138 39837	·56517 63526	·19006 40598	1·76935 92369	·097
·904	1·30468 53854^{5}	·17032 60887	5·30746 64436	·56362 47551	·18841 38149	1·77423 00902	·096
·905	1·31057 91123	·16901 84602	5·35444 47090	·56206 87816	·18676 07295	1·77914 16864	·095
·906	1·31651 87185^{5}	·16770 49152	5·40234 61337	·56050 83185^{e}	·18510 47629	1·78409 48421	·094
·907	1·32250 51368	·16638 54072	5·45119 92086	·55894 32485^{+}	·18344 58734	1·78909 03999	·093
·908	1·32853 93290	·16505 98890	5·50103 36292	·55737 34514	·18178 40187	1·79412 92278	·092
·909	1·33462 22868	·16372 83123	5·55188 03522	·55579 88031	·18011 91554	1·79921 22228	·091
·910	1·34075 50338	·16239 06278	5·60377 16730^{5}	·55421 91764^{5}	·17845 12393	1·80434 03088	·090
·911	1·34693 86262	·16104 67852^{5}	5·65674 12916^{5}	·55263 44401	·17678 02253	1·80951 44410	·089
·912	1·35317 41546	·15969 67332^{5}	5·71082 43946	·55104 44591	·17510 60672	1·81473 56051^{5}	·088
·913	1·35946 27455^{-}	·15834 04193	5·76605 77398	·54944 90946	·17342 87177	1·82000 48191	·087
·914	1·36580 55627	·15697 77897	5·82247 97405^{5}	·54784 82032	·17174 81287	1·82532 31356	·086
·915	1·37220 38091	·15560 87897	5·88013 05635	·54624 16370^{5}	·17006 42510	1·83069 16430	·085
·916	1·37865 87286	·15423 33632	5·93905 22329	·54462 92441	·16837 70340	1·83611 14665^{-}	·084
·917	1·38517 16082	·15285 14529	5·99928 87383^{5}	·54301 08673	·16668 64263	1·84158 37698	·083
·918	1·39174 37794	·15146 30002	6·06088 61488	·54138 63444^{5}	·16499 23749^{5}	1·84710 97586	·082
·919	1·39837 66208	·15006 79451	6·12389 27423	·53975 55083	·16329 48260	1·85269 06805^{+}	·081
·920	1·40507 15603	·14866 62263	6·18835 91389	·53811 81860	·16159 37242	1·85832 78284	·080

TABLE II.—(*continued*).

$\frac{1}{2}(1+\alpha_x)$	x	z	$\frac{\frac{1}{2}(1+\alpha_x)}{z}$	$\frac{\frac{1}{2}(1-\alpha_x)}{z}$	$\frac{z}{\frac{1}{2}(1+\alpha_x)}$	$\frac{z}{\frac{1}{2}(1-\alpha_x)}$	$\frac{1}{2}(1-\alpha_x)$
·920	1·40507 15603	·14866 62263	6·18835 91389	·53811 81860	·16159 37242	1·85832 78284	·080
·921	1·41183 00774	·14725 77808	6·25433 84457	·53647 41989	·15988 90128	1·86402 25420	·079
·922	1·41865 37061	·14584 25444	6·32188 64133	·53482 33625^{+}	·15818 06339	1·86977 62104	·078
·923	1·42554 40371	·14442 04512	6·39106 16025^{+}	·53316 54858	·15646 85278	1·87559 02747^{5}	·077
·924	1·43250 27208	·14299 14335^{5}	6·46192 55649^{5}	·53150 03711	·15475 26337	1·88146 62309	·076
·925	1·43953 14708	·14155 54224	6·53454 30392	·52982 78140	·15303 28891	1·88740 56318	·075
·926	1·44663 20671	·14011 23467	6·60898 21635^{-}	·52814 76027	·15130 92297	1·89341 00901	·074
·927	1·45380 63589	·13866 21337	6·68531 46959	·52645 95176	·14958 15897	1·89948 12832	·073
·928	1·46105 62691	·13720 47087	6·76361 62673	·52476 33311	·14784 99017	1·90562 09547^{5}	·072
·929	1·46838 37982	·13573 99953	6·84396 66452^{5}	·52305 88071	·14611 40961	1·91183 09192	·071
·930	1·47579 10282	·13426 79144	6·92645 00320	·52134 57013	·14437 41015^{+}	1·91811 30629	·070
·931	1·48328 01274	·13278 83859	7·01115 53337^{5}	·51962 37573	·14262 98452	1·92446 93607	·069
·932	1·49085 33552	·13130 13263	7·09817 65869^{5}	·51789 27123^{5}	·14088 12514	1·93090 18570	·068
·933	1·49851 30679	·12980 66504	7·18761 32490^{5}	·51615 22912	·13912 82426	1·93741 26921	·067
·934	1·50626 17234	·12830 42705^{-}	7·27957 06377	·51440 22078	·13737 07393	1·94400 40980	·066
·935	1·51410 18877^{5}	·12679 40964	7·37416 03637^{5}	·51264 21643	·13560 86592^{5}	1·95067 84061	·065
·936	1·52203 62418	·12527 60353	7·47150 08155^{+}	·51087 18506	·13384 19181	1·95743 80517^{5}	·064
·937	1·53006 75881	·12374 99916	7·57171 76848	·50909 09436	·13207 04286	1·96428 55812	·063
·938	1·53819 88586	·12221 58668	7·67494 45411	·50729 91061	·13029 41011	1·97122 36586	·062
·939	1·54643 31223	·12067 35595^{5}	7·78132 34603	·50549 59862	·12851 28430	1·97825 50747	·061
·940	1·55477 35946	·11912 29652	7·89100 57227	·50368 12163	·12672 65587	1·98538 27531	·060
·941	1·56322 36470	·11756 39758	8·00415 25763	·50185 44123	·12493 51497	1·99260 97598	·059
·942	1·57178 68165^{+}	·11599 64802	8·12093 60702	·50001 51720^{5}	·12313 85140	1·99993 93136	·058
·943	1·58046 68184	·11442 03633	8·24153 99938	·49816 30749	·12133 65464	2·00737 47942	·057
·944	1·58926 75570^{5}	·11283 55063	8·36616 08906	·49629 76799^{5}	·11952 91380	2·01491 97556	·056
·945	1·59819 31399	·11124 17865^{5}	8·49500 91988	·49441 85248	·11771 61762	2·02257 79372	·055
·946	1·60724 78919	·10963 90770	8·62831 05085^{+}	·49252 51242	·11589 75444	2·03035 32773	·054
·947	1·61643 63711	·10802 72462	8·76630 69580	·49061 69681	·11407 31216	2·03824 99283	·053
·948	1·62576 33863	·10640 61581	8·90925 87998	·48869 35207	·11224 27828	2·04627 22703	·052
·949	1·63523 40154	·10477 56715^{5}	9·05744 61226	·48675 42173	·11040 63978	2·05442 49323	·051
·950	1·64485 36270	·10313 56404	9·21117 08093	·48479 84636^{5}	·10856 38320	2·06271 28074	·050
·951	1·65462 79023	·10148 59128	9·37075 87012	·48282 56323	·10671 49451	2·07114 10766	·049
·952	1·66456 28611	·09982 63310	9·53656 20484	·48083 50613	·10485 95914	2·07971 52299	·048
·953	1·67466 48890	·09815 67313	9·70896 22581	·47882 60505^{+}	·10299 76195	2·08844 10924	·047
·954	1·68494 07677	·09647 69433	9·88837 29856	·47679 78588^{5}	·10112 88714	2·09732 48546^{5}	·046
·955	1·69539 77100	·09478 67895^{-}	10·07524 36616	·47474 97013	·09925 31827	2·10637 30998	·045
·956	1·70604 33967	·09308 60850^{-}	10·27006 34581	·47268 07449	·09737 03818	2·11559 28409	·044
·957	1·71688 60181^{5}	·09137 46371	10·47336 58131	·47059 01044^{5}	·09548 02895^{+}	2·12499 15596	·043
·958	1·72793 43222	·08965 22444	10·68573 35964	·46847 68383^{5}	·09358 27186	2·13457 72476	·042
·959	1·73919 76650^{5}	·08791 86967	10·90780 50013	·46633 99426	·09167 74731	2·14435 84571	·041
·960	1·75068 60710	·08617 37741	11·14028 03288	·46417 83470	·08976 43480	2·15434 43514^{5}	·040
·961	1·76241 02977	·08441 72460	11·38392 97729	·46199 09065^{-}	·08784 31280	2·16454 47690	·039
·962	1·77438 19102^{5}	·08264 88710	11·63960 24344	·45977 63955^{+}	·08591 35873	2·17497 02893	·038
·963	1·78661 33654	·08086 83956	11·90823 67514	·45753 34993	·08397 54886	2·18563 23123^{5}	·037
·964	1·79911 81067	·07907 55532	12·19087 26685^{5}	·45526 08050^{5}	·08202 85821	2·19654 31438	·036
·965	1·81191 06729	·07727 00634	12·48866 58227	·45295 67915	·08007 26046	2·20771 60974	·035
·966	1·82500 68211	·07545 16306^{5}	12·80290 42138	·45061 98170^{5}	·07810 72781	2·21916 56074	·034
·967	1·83842 36691	·07361 99429	13·13502 78467	·44824 81064^{5}	·07613 23091	2·23090 73605^{-}	·033
·968	1·85217 98586^{5}	·07177 46702	13·48665 20044	·44583 97357	·07414 73866	2·24295 84444	·032
·969	1·86629 57434	·06991 54633	13·85959 49232	·44339 26136	·07215 21809	2·25533 75253	·031
·970	1·88079 36081	·06804 19514	14·25591 09446	·44090 44622	·07014 63417	2·26806 50475^{-}	·030
·971	1·89569 79240	·06615 37406	14·67793 03948	·43837 27924	·06812 94960	2·28116 34692	·029
·972	1·91103 56476^{5}	·06425 04111	15·12830 78674	·43579 48768	·06610 12460	2·29465 75399	·028
·973	1·92683 65733	·06233 15149	15·61008 10466	·43316 77166	·06406 11664	2·30857 46275^{-}	·027
·974	1·94313 37511^{5}	·06039 65726	16·12674 29263	·43048 80042	·06200 88014	2·32294 51001	·026
·975	1·95996 39846	·05844 50698	16·68233 10053	·42775 20771	·05994 36613	2·33780 27919	·025
·976	1·97736 84283	·05647 64533	17·28153 84696	·42495 58640	·05786 52185	2·35318 55534	·024
·977	1·99539 33102	·05449 01262	17·92985 38697	·42209 48199	·05577 29030	2·36913 59215^{-}	·023
·978	2·01409 08121	·05248 54425^{+}	18·63373 82856	·41916 38469	·05366 60967	2·38570 19334	·022
·979	2·03352 01492^{5}	·05046 17007	19·40085 22490	·41615 71984	·05154 41274	2·40293 81298	·021
·980	2·05374 89105^{-}	·04841 81359	20·24034 96517	·41306 83602	·04940 62611	2·42090 67947^{5}	·020

TABLE II.—(*continued*).

$\frac{1}{2}(1+\alpha_x)$	x	z	$\frac{\frac{1}{2}(1+\alpha_x)}{z}$	$\frac{\frac{1}{2}(1-\alpha_x)}{z}$	$\frac{z}{\frac{1}{2}(1+\alpha_x)}$	$\frac{z}{\frac{1}{2}(1-\alpha_x)}$	$\frac{1}{2}(1-\alpha_x)$
·980	2·05374 89105$^-$	·04841 81359	20·24034 96517	·41306 83602	·04940 62611	2·42090 67947^5	·020
·981	2·07485 47343	·04635 39107	21·16326 29328	·40988 99039	·04725 16929	2·43967 95103	·019
·982	2·09692 74292	·04426 81043	22·18301 45166	·40661 33007	·04507 95359	2·45933 91270	·018
·983	2·12007 16897	·04215 96988	23·31610 58315$^-$	·40322 86868	·04288 88086	2·47998 22848	·017
·984	2·14441 06210	·04002 75629	24·58306 04688	·39972 45605$^-$	·04067 84176	2·50172 26833	·016
·985	2·17009 03776^5	·03787 04310	26·00973 83286	·39608 73857	·03844 71380	2·52469 53982	·015
·986	2·19728 63766	·03568 68772	27·62920 37219^5	·39230 10670^5	·03619 35874	2·54906 26562	·014
·987	2·22621 17693	·03347 52823	29·48444 14167	·38834 62395	·03391 61928	2·57502 17157	·013
·988	2·25712 92445^5	·03123 37903	31·63240 80738	·38419 92877	·03161 31481	2·60281 58617	·012
·989	2·29036 78779	·02896 02511	34·15025 63952	·37983 09609	·02928 23570	2·63275 00991	·011
·990	2·32634 78740	·02665 21422	37·14523 17976	·37520 43616	·02692 13558	2·66521 42202	·010
·991	2·36561 81268	·02430 64606	40·77105 32107	·37027 19262	·02452 72055$^-$	2·70071 78486	·009
·992	2·40891 55459	·02191 95666	45·25636 91596	·36497 07190	·02209 63373	2·73994 58309	·008
·993	2·45726 33903	·01948 69510	50·95717 64741	·35921 47385$^-$	·01962 43212	2·78385 01399	·007
·994	2·51214 43279	·01700 28705$^+$	58·46071 69201	·35288 15911	·01710 55035$^+$	2·83381 17525$^-$	·006
·995	2·57582 93035$^+$	·01445 97430	68·81173 46310	·34578 76112	·01453 24051	2·89194 86054	·005
·996	2·65206 98079	·01184 70585$^+$	84·07150 14744	·33763 65521	·01189 46371	2·96176 46364^5	·004
·997	2·74778 13854	·00914 91911	108·97138 1780	·32789 78389	·00917 67213	3·04973 03779	·003
·998	2·87816 17391	·00634 01932	157·40845 1465$^+$	·31544 77985$^+$	·00635 28990	3·17009 66203	·002
·999	3·09023 23062	·00336 70901	296·69535 9238	·29699 23516	·00337 04605$^+$	3·36709 00771	·001

Note. We believe that x and z may be taken as correct to the figures tabled. They were worked of course to more figures than are shown. The possibility of error in the ratio $\frac{1}{2}(1+\alpha_x)/z$ is greater, and may amount to five units in the tenth decimal. It seemed better to leave the last two figures standing with this warning rather than destroy the symmetry of the table by cutting them out. We feel compelled however to show only twelve figures in the last three entries of this ratio.

A more extended system of symbols than heretofore has been adopted in this table to indicate the nature of the last figure. 5^+ and 5^- signify as usual that the real number exceeds 5 and falls short of 5. The symbol 5^e denotes that the number is exactly 5 *to the extent of the calculations*, i.e. ·63719,16745^e denotes that x for $\frac{1}{2}(1+\alpha_x) = \cdot 738$ was found to be ·63719,16745,00. It does not necessarily indicate that the value terminated at the tenth or twelfth decimal. Another innovation has been made. Consider ·60075,97742^5; the usual interpretation of this would be that the number as actually worked was terminated by 5, 50 or 500 as the case might be, and the computer was unable to settle whether to enter it as ·60075,97742 or ·60075,97743. In the present table there may be doubt as to the correctness of the twelfth figure and the affixed 5 has been used when the final figures are 48, 49, 50, 51 or 52. Thus ·60075,97742,48 or ·60075,97742,51 would not be printed as usual ·60075,97742 and ·60075,97743, but as ·60075,97742^5, precisely as ·60075,97742,50 is written ·60075,97742^5. This seems safer when we cannot be sure of one or two units in the twelfth decimal place, and is more accurate when the 5 is actually put on the machine in computing.

We have to thank most heartily Dr W. F. Sheppard for the original loan to the Laboratory of his twelve figure tables of $\frac{1}{2}(1+\alpha_x)$ to argument x, and more recently for extracts ($x = 2{\cdot}1$ to $3{\cdot}1$) from his sixteen figure table of $\log_e \frac{1}{2}(1-\alpha_x)$ to argument x by intervals of ·1. We have also to thank Mr Frank Robbins for determining a large number of the values of x.

TABLE III.

Table of Ratio: Area to Bounding Ordinate of Normal Curve

$$\left(\text{The Ratio } \mathcal{R}_x = e^{\frac{1}{2}x^2}\int_x^\infty e^{-\frac{1}{2}x^2}\,dx.\right)$$

x	$\mathcal{R}_x$	$-\Delta$	x	$\mathcal{R}_x$	$-\Delta$
·00	1·25331	993	·40	·93567	623
·01	1·24338	982	·41	·92944	615
·02	1·23356	969	·42	·92329	609
·03	1·22387	957	·43	·91720	602
·04	1·21430	946	·44	·91118	596
·05	1·20484	934	·45	·90522	590
·06	1·19550	923	·46	·89932	583
·07	1·18627	911	·47	·89349	577
·08	1·17716	900	·48	·88772	571
·09	1·16816	890	·49	·88201	565
·10	1·15926	878	·50	·87636	558
·11	1·15048	869	·51	·87078	553
·12	1·14179	858	·52	·86525	548
·13	1·13321	847	·53	·85977	541
·14	1·12474	838	·54	·85436	536
·15	1·11636	827	·55	·84900	530
·16	1·10809	818	·56	·84370	525
·17	1·09991	808	·57	·83845	519
·18	1·09183	799	·58	·83326	514
·19	1·08384	790	·59	·82812	509
·20	1·07594	780	·60	·82303	504
·21	1·06814	771	·61	·81799	498
·22	1·06043	762	·62	·81301	494
·23	1·05281	754	·63	·80807	488
·24	1·04527	745	·64	·80319	484
·25	1·03782	736	·65	·79835	478
·26	1·03046	728	·66	·79357	474
·27	1·02318	719	·67	·78883	469
·28	1·01599	712	·68	·78414	465
·29	1·00887	703	·69	·77949	460
·30	1·00184	696	·70	·77489	455
·31	0·99488	687	·71	·77034	451
·32	·98801	680	·72	·76583	446
·33	·98121	673	·73	·76137	442
·34	·97448	665	·74	·75695	438
·35	·96783	657	·75	·75257	433
·36	·96126	651	·76	·74824	430
·37	·95475	643	·77	·74394	425
·38	·94832	636	·78	·73969	421
·39	·94196	629	·79	·73548	417

TABLE III.—(*continued*).

x	$\mathcal{R}_x$	$-\Delta$	x	$\mathcal{R}_x$	$-\Delta$
·80	·73131	413	1·30	·56487	265
·81	·72718	409	1·31	·56222	262
·82	·72309	405	1·32	·55960	261
·83	·71904	401	1·33	·55699	258
·84	·71503	397	1·34	·55441	256
·85	·71106	394	1·35	·55185	254
·86	·70712	390	1·36	·54931	252
·87	·70322	387	1·37	·54679	249
·88	69935	382	1·38	·54430	248
·89	·69553	380	1·39	·54182	246
·90	·69173	375	1·40	·53936	244
·91	·68798	373	1·41	·53692	242
·92	·68425	368	1·42	·53450	240
·93	·68057	366	1·43	·53210	238
·94	·67691	362	1·44	·52972	237
·95	·67329	358	1·45	·52735	234
·96	·66971	356	1·46	·52501	233
·97	·66615	352	1·47	·52268	230
·98	·66263	349	1·48	·52038	229
·99	·65914	346	1·49	·51809	227
1·00	·65568	343	1·50	·51582	226
1·01	·65225	340	1·51	·51356	223
1·02	·64885	336	1·52	·51133	222
1·03	·64549	334	1·53	·50911	221
1·04	·64215	330	1·54	·50690	218
1·05	·63885	328	1·55	·50472	217
1·06	·63557	325	1·56	·50255	215
1·07	·63232	322	1·57	·50040	214
1·08	·62910	319	1·58	·49826	212
1·09	·62591	317	1·59	·49614	210
1·10	·62274	313	1·60	·49404	209
1·11	·61961	311	1·61	·49195	207
1·12	·61650	308	1·62	·48988	206
1·13	·61342	306	1·63	·48782	204
1·14	·61036	303	1·64	·48578	202
1·15	·60733	300	1·65	·48376	201
1·16	·60433	298	1·66	·48175	200
1·17	·60135	295	1·67	·47975	198
1·18	·59840	292	1·68	·47777	197
1 19	·59548	291	1·69	·47580	195
1·20	·59257	287	1·70	·47385	193
1·21	·58970	286	1·71	·47192	193
1·22	·58684	282	1·72	·46999	191
1·23	·58402	281	1·73	·46808	189
1·24	·58121	278	1·74	·46619	188
1·25	·57843	276	1·75	·46431	187
1·26	·57567	273	1·76	·46244	186
1·27	·57294	272	1·77	·46058	184
1·28	·57022	268	1·78	·45874	182
1·29	·56754	267	1·79	·45692	182

TABLE III.—(*continued*).

x	$\mathcal{R}_x$	$-\Delta$	x	$\mathcal{R}_x$	$-\Delta$
1·80	·45510	180	2·30	·37858	129
1·81	·45330	179	2·31	·37729	128
1·82	·45151	178	2·32	·37601	127
1·83	·44973	176	2·33	·37474	126
1·84	·44797	175	2·34	·37348	126
1·85	·44622	174	2·35	·37222	125
1·86	·44448	173	2·36	·37097	124
1·87	·44275	171	2·37	·36973	123
1·88	·44104	170	2·38	·36850	123
1·89	·43934	169	2·39	·36727	122
1·90	·43765	168	2·40	·36605	121
1·91	·43597	167	2·41	·36484	120
1·92	·43430	165	2·42	·36364	120
1·93	·43265	165	2·43	·36244	119
1·94	·43100	163	2·44	·36125	118
1·95	42937	162	2·45	·36007	118
1·96	·42775	161	2·46	·35889	116
1·97	·42614	160	2·47	·35773	116
1·98	·42454	159	2·48	·35657	116
1·99	·42295	158	2·49	·35541	114
2·00	·42137	157	2·50	·35427	114
2·01	·41980	155	2·51	·35313	114
2·02	·41825	155	2·52	·35199	112
2·03	·41670	154	2·53	·35087	112
2·04	·41516	152	2·54	·34975	112
2·05	·41364	152	2·55	·34863	110
2·06	·41212	150	2·56	·34753	110
2·07	·41062	150	2·57	·34643	110
2·08	·40912	148	2·58	·34533	108
2·09	·40764	148	2·59	·34425	109
2·10	·40616	146	2·60	·34316	107
2·11	·40470	146	2·61	·34209	107
2·12	·40324	145	2·62	·34102	106
2·13	·40179	143	2·63	·33996	106
2·14	·40036	143	2·64	·33890	105
2·15	·39893	142	2·65	·33785	104
2·16	·39751	141	2·66	·33681	104
2·17	·39610	140	2·67	·33577	103
2·18	·39470	139	2·68	·33474	103
2·19	·39331	138	2·69	·33371	102
2·20	·39193	138	2·70	·33269	101
2·21	·39055	136	2·71	·33168	101
2·22	·38919	136	2·72	·33067	100
2·23	·38783	134	2·73	·32967	100
2·24	·38649	134	2·74	·32867	98
2·25	·38515	133	2·75	·32768	98
2·26	·38382	132	2·76	·32669	98
2·27	·38250	132	2·77	·32571	97
2·28	·38118	130	2·78	·32474	97
2·29	·37988	130	2·79	·32377	97

TABLE III.—(*continued*).

x	$\mathcal{R}_x$	$-\Delta$	x	$\mathcal{R}_x$	$-\Delta$
2·80	·32280	96	3·30	·28064	74
2·81	·32184	95	3·31	·27990	73
2·82	·32089	95	3·32	·27917	73
2·83	·31994	94	3·33	·27844	72
2·84	·31900	94	3·34	·27772	73
2·85	·31806	93	3·35	·27699	72
2·86	·31713	93	3·36	·27627	71
2·87	·31620	92	3·37	·27556	71
2·88	·31528	92	3·38	·27485	71
2·89	·31436	91	3·39	·27414	71
2·90	·31345	91	3·40	·27343	70
2·91	·31254	90	3·41	·27273	70
2·92	·31164	90	3·42	·27203	69
2·93	·31074	89	3·43	·27134	69
2·94	·30985	89	3·44	·27065	69
2·95	·30896	88	3·45	·26996	69
2·96	·30808	88	3·46	·26927	68
2·97	·30720	88	3·47	·26859	68
2·98	·30632	87	3·48	·26791	67
2·99	·30545	86	3·49	·26724	67
3·00	·30459	86	3·50	·26657	67
3·01	·30373	86	3·51	·26590	67
3·02	·30287	85	3·52	·26523	66
3·03	·30202	84	3·53	·26457	66
3·04	·30118	84	3·54	·26391	65
3·05	·30034	84	3·55	·26326	66
3·06	·29950	84	3·56	·26260	65
3·07	·29866	82	3·57	·26195	64
3·08	·29784	83	3·58	·26131	65
3·09	·29701	82	3·59	·26066	64
3·10	·29619	81	3·60	·26002	63
3·11	·29538	82	3·61	·25939	64
3·12	·29456	80	3·62	·25875	63
3·13	·29376	81	3·63	·25812	63
3·14	·29295	80	3·64	·25749	63
3·15	·29215	79	3·65	·25686	62
3·16	·29136	79	3·66	·25624	62
3·17	·29057	79	3·67	·25562	62
3·18	·28978	78	3·68	·25500	61
3·19	·28900	78	3·69	·25439	61
3·20	·28822	78	3·70	·25378	61
3·21	·28744	77	3·71	·25317	61
3·22	·28667	77	3·72	·25256	60
3·23	·28590	76	3·73	·25196	60
3·24	·28514	76	3·74	·25136	60
3·25	·28438	75	3·75	·25076	59
3·26	·28363	76	3·76	·25017	60
3·27	·28287	74	3·77	·24957	59
3·28	·28213	75	3·78	·24898	58
3·29	·28138	74	3·79	·24840	59

TABLE III.—(*continued*).

x	$\mathcal{R}_x$	$-\Delta$	x	$\mathcal{R}_x$	$-\Delta$
3·80	·24781	58	6·00	·16238	253
3·81	·24723	58	6·10	·15984	246
3·82	·24665	58	6·20	·15739	239
3·83	·24607	57	6·30	·15500	232
3·84	·24550	57	6·40	·15269	225
3·85	·24493	57	6·50	·15044	218
3·86	·24436	57	6·60	·14825	212
3·87	·24379	56	6·70	·14613	206
3·88	·24323	56	6·80	·14407	201
3·89	·24267	56	6·90	·14206	195
3·90	·24211	56	7·00	·14010	190
3·91	·24155	55	7·10	·13820	185
3·92	·24100	55	7·20	·13635	180
3·93	·24045	55	7·30	·13455	176
3·94	·23990	55	7·40	·13279	171
3·95	·23935	54	7·50	·13108	167
3·96	·23881	55	7·60	·12941	163
3·97	·23826	54	7·70	·12778	159
3·98	·23772	53	7·80	·12619	155
3·99	·23719	54	7·90	·12464	151
4·00*	·23665	264	8·00	·12313	148
4·05	·23401	258	8·10	·12166	144
4·10	·23143	253	8·20	·12021	141
4·15	·22890	248	8·30	·11880	138
4·20	·22642	243	8·40	·11743	135
4·25	·22399	238	8·50	·11608	132
4·30	·22161	233	8·60	·11477	129
4·35	·21928	228	8·70	·11348	126
4·40	·21700	224	8·80	·11222	123
4·45	·21476	219	8·90	·11099	120
4·50	·21257	215	9·00	·10979	118
4·55	·21042	211	9·10	·10861	115
4·60	·20831	207	9·20	·10745	113
4·65	·20624	203	9·30	·10632	111
4·70	·20421	199	9·40	·10522	108
4·75	·20222	195	9·50	·10413	106
4·80	·20027	192	9·60	·10307	104
4·85	·19835	188	9·70	·10203	102
4·90	·19647	185	9·80	·10101	100
4·95	·19462	181	9·90	·10001	98
5·00*	·19281	353	10·00	·09903	
5·10	·18928	341			
5·20	·18587	329			
5·30	·18258	318			
5·40	·17940	307			
5·50	·17632	297			
5·60	·17335	288			
5·70	·17047	278			
5·80	·16769	270			
5·90	·16499	261			

* Note the change in the x interval.

TABLE IV. *Table for ascertaining the Significance of the Correlation Ratio*

N = size of sample	3				4				5			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3{\cdot}50$	P_2 $\lambda_2=2{\cdot}94$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3{\cdot}20$	P_2 $\lambda_2=2{\cdot}80$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3{\cdot}14$	P_2 $\lambda_2=2{\cdot}68$
51	·040000	·038431	·010	·019	·060000	·046575+	·011	·018	·080000	·053205−	·010	·019
52	·039216	·037707	·010	·019	·058824	·045709	·011	·018	·078431	·052226	·010	·019
53	·038462	·037010	·010	·019	·057692	·044873	·011	·018	·076923	·051282	·010	·019
54	·037736	·036338	·010	·019	·056604	·044067	·011	·018	·075472	·050372	·010	·019
55	·037037	·035690	·010	·019	·055556	·043288	·011	·018	·074074	·049493	·010	·019
56	·036364	·035065−	·010	·019	·054545+	·042538	·011	·018$_5$	·072727	·048644	·010	·019
57	·035714	·034461	·010	·019	·053571	·041813	·011	·019	·071429	·047824	·010	·019
58	·035088	·033877	·010	·019	·052632	·041112	·011	·019	·070175+	·047031	·010	·019
59	·034483	·033314	·010	·019	·051724	·040435−	·011	·019	·068966	·046263	·010	·019
60	·033898	·032768	·010	·019	·050847	·039779	·011	·019	·067797	·045521	·010	·019
61	·033333	·032240	·010	·019	·050000	·039144	·011	·019	·066667	·044801	·010	·019
62	·032787	·031729	·010	·019	·049180	·038529	·011	·019	·065574	·044104	·010	·019
63	·032258	·031234	·010	·019	·048387	·037933	·011	·019	·064516	·043429	·010	·019
64	·031746	·030754	·010	·019	·047619	·037355+	·011	·019	·063492	·042773	·010	·019
65	·031250	·030288	·010	·019	·046875	·036794	·011	·019	·062500	·042137	·010	·019
66	·030769	·029837	·010	·019	·046154	·036251	·011	·019	·061538	·041520	·010	·019
67	·030303	·029398	·010	·019	·045455−	·035723	·011	·019	·060606	·040921	·010	·019
68	·029851	·028973	·010	·019	·044776	·035210	·011	·019	·059701	·040338	·010	·019
69	·029412	·028559	·010	·019	·044118	·034712	·011$_5$	·019	·058824	·039772	·010	·019
70	·028986	·028157	·010	·019	·043478	·034227	·012	·019	·057971	·039221	·010	·019
71	·028571	·027766	·010	·019	·042857	·033756	·012	·019	·057143	·038686	·010	·019
72	·028169	·027386	·010	·019	·042254	·033297	·012	·019	·056338	·038165−	·010	·019
73	·027778	·027017	·010	·019	·041667	·032851	·012	·019	·055556	·037657	·010	·019
74	·027397	·026657	·010	·019	·041096	·032417	·012	·019	·054795−	·037163	·010	·019
75	·027027	·026306	·010	·019	·040541	·031994	·012	·019	·054054	·036682	·010	·019
76	·026667	·025965−	·010	·019	·040000	·031582	·012	·019	·053333	·036213	·010$_5$	·019
77	·026316	·025632	·010	·019	·039474	·031180	·012	·019	·052632	·035756	·011	·019
78	·025974	·025308	·010	·019	·038961	·030788	·012	·019	·051948	·035310	·011	·019
79	·025641	·024992	·010	·019	·038462	·030407	·012	·019	·051282	·034876	·011	·019$_5$
80	·025316	·024683	·010	·019	·037975−	·030034	·012	·019	·050633	·034451	·011	·020
81	·025000	·024383	·010	·019	·037500	·029670	·012	·019	·050000	·034037	·011	·020
82	·024691	·024089	·010	·019	·037037	·029316	·012	·019	·049383	·033633	·011	·020
83	·024390	·023802	·010	·019	·036585+	·028969	·012	·019	·048780	·033238	·011	·020
84	·024096	·023523	·010	·019	·036145−	·028631	·012	·019	·048193	·032853	·011	·020
85	·023810	·023249	·010	·019	·035714	·028300	·012	·019	·047619	·032476	·011	·020
86	·023529	·022982	·010	·019	·035294	·027977	·012	·019	·047059	·032108	·011	·020
87	·023256	·022721	·010$_5$	·019	·034884	·027661	·012	·019	·046512	·031748	·011	·020
88	·022989	·022466	·011	·019	·034483	·027353	·012	·019	·045977	·031396	·011	·020
89	·022727	·022216	·011	·019	·034091	·027051	·012	·019	·045455−	·031051	·011	·020
90	·022472	·021972	·011	·019	·033708	·026755+	·012	·019	·044944	·030715−	·011	·020
91	·022222	·021734	·011	·019	·033333	·026467	·012	·019	·044444	·030385−	·011	·020
92	·021978	·021500+	·011	·019	·032967	·026184	·012	·019	·043956	·030062	·011	·020
93	·021739	·021272	·011	·019	·032609	·025907	·012	·019	·043478	·029746	·011	·020
94	·021505+	·021048	·011	·019	·032258	·025636	·012	·019	·043011	·029437	·011	·020
95	·021277	·020829	·011	·019	·031915−	·025371	·012	·019	·042553	·029134	·011	·020
96	·021053	·020614	·011	·019	·031579	·025111	·012	·019	·042105+	·028837	·011	·020
97	·020833	·020404	·011	·019	·031250	·024856	·012	·019	·041667	·028547	·011	·020
98	·020619	·020198	·011	·019	·030928	·024607	·012	·019	·041237	·028262	·011	·020
99	·020408	·019996	·011	·019	·030612	·024362	·012	·019	·040816	·027982	·011	·020
100	·020202	·019798	·011	·019	·030303	·024122	·012	·019	·040404	·027708	·011	·020

N = size of sample	6				7				8			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3{\cdot}06$	P_2 $\lambda_2=2{\cdot}60$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}98$	P_2 $\lambda_2=2{\cdot}52$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}92$	P_2 $\lambda_2=2{\cdot}48$
51	·100000	·058835−	·010	·019	·120000	·063730	·009	·019	·140000	·068050−	·009	·019
52	·098039	·057766	·010	·019	·117647	·062588	·009	·019$_5$	·137255−	·066847	·009	·019
53	·096154	·056735	·010	·019	·115385−	·061485+	·009	·020	·134615+	·065686	·009	·019
54	·094340	·055740	·010	·019	·113208	·060420	·009	·020	·132075+	·064563	·009	·019
55	·092593	·054779	·010	·019	·111111	·059391	·009	·020	·129630	·063478	·009	·019
56	·090909	·053850−	·010	·019	·109091	·058397	·009$_5$	·020	·127273	·062429	·009	·020
57	·089286	·052952	·010	·019	·107143	·057435−	·010	·020	·125000	·061413	·009$_5$	·020
58	·087719	·052084	·010	·019	·105263	·056503	·010	·020	·122807	·060429	·010	·020
59	·086207	·051243	·010	·019	·103448	·055602	·010	·020	·120690	·059477	·010	·020
60	·084746	·050429	·010	·019	·101695−	·054728	·010	·020	·118644	·058553	·010	·020
61	·083333	·049640	·010	·019$_5$	·100000	·053882	·010	·020	·116667	·057657	·010	·020
62	·081967	·048876	·010	·020	·098361	·053061	·010	·020	·114754	·056789	·010	·020
63	·080645+	·048134	·010	·020	·096774	·052264	·010	·020	·112903	·055945+	·010	·020
64	·079365+	·047415+	·010	·020	·095238	·051491	·010	·020	·111111	·055127	·010	·020
65	·078125	·046717	·010	·020	·093750	·050740	·010	·020	·109375	·054331	·010	·020
66	·076923	·046039	·010	·020	·092308	·050011	·010	·020	·107692	·053558	·010	·020
67	·075758	·045380	·010	·020	·090909	·049302	·010	·020	·106061	·052807	·010	·020
68	·074627	·044740	·010	·020	·089552	·048613	·010	·020	·104478	·052076	·010	·020
69	·073529	·044118	·010	·020	·088235+	·047943	·010	·020	·102941	·051365+	·010	·020
70	·072464	·043512	·010	·020	·086957	·047291	·010	·020	·101449	·050674	·010	·020
71	·071429	·042923	·010	·020	·085714	·046657	·010	·020	·100000	·050000	·010	·020
72	·070423	·042350−	·010	·020	·084507	·046039	·010	·020	·098592	·049344	·010	·020
73	·069444	·041792	·010	·020	·083333	·045437	·010	·020$_5$	·097222	·048705−	·010	·020
74	·068493	·041248	·010	·020	·082192	·044851	·010	·021	·095890	·048082	·010	·020$_5$
75	·067568	·040718	·010	·020	·081081	·044280	·010	·021	·094595−	·047475−	·010	·021
76	·066667	·040202	·010	·020	·080000	·043723	·010	·021	·093333	·046883	·010	·021
77	·065789	·039698	·010	·020	·078947	·043180	·010	·021	·092105+	·046305−	·010	·021
78	·064935+	·039207	·010	·020	·077922	·042650−	·010	·021	·090909	·045741	·010	·021
79	·064103	·038728	·010	·020	·076923	·042133	·010	·021	·089744	·045191	·010	·021
80	·063291	·038260	·010	·020	·075949	·041628	·010	·021	·088608	·044654	·010	·021
81	·062500	·037804	·010	·020	·075000	·041135−	·010	·021	·087500	·044129	·010	·021
82	·061728	·037358	·010$_5$	·020	·074074	·040653	·010	·021	·086420	·043617	·010	·021
83	·060976	·036923	·011	·020	·073171	·040183	·010	·021	·085366	·043116	·010	·021
84	·060241	·036497	·011	·020	·072289	·039724	·010	·021	·084337	·042627	·010	·021
85	·059524	·036082	·011	·020	·071429	·039274	·010	·021	·083333	·042148	·010	·021
86	·058824−	·035675+	·011	·020	·070588	·038835+	·010$_5$	·021	·082353	·041680	·010$_5$	·021
87	·058140	·035278	·011	·020	·069767	·038406	·011	·021	·081395+	·041223	·011	·021
88	·057471	·034889	·011	·020	·068966	·037986	·011	·021	·080460	·040775+	·011	·021
89	·056818	·034509	·011	·020	·068182	·037575−	·011	·021	·079545+	·040337	·011	·021
90	·056180	·034137	·011	·020	·067416	·037172	·011	·021	·078652	·039908	·011	·021
91	·055556	·033773	·011	·020	·066667	·036778	·011	·021	·077778	·039488	·011	·021
92	·054945+	·033417	·011	·020	·065934	·036393	·011	·021	·076923	·039077	·011	·021
93	·054348	·033068	·011	·020	·065217	·036015+	·011	·021	·076087	·038674	·011	·021
94	·053763	·032726	·011	·020	·064516	·035646	·011	·021	·075269	·038280	·011	·021
95	·053191	·032392	·011	·020	·063830	·035283	·011	·021	·074468	·037893	·011	·021
96	·052632	·032064	·011	·020	·063158	·034928	·011	·021	·073684	·037514	·011	·021
97	·052083	·031742	·011	·020	·062500	·034580	·011	·021	·072917	·037143	·011	·021
98	·051546	·031427	·011	·020	·061856	·034239	·011	·021	·072165−	·036779	·011	·021
99	·051020	·031118	·011	·020	·061224	·033905−	·011	·021	·071429	·036422	·011	·021
100	·050505+	·030815+	·011	·020	·060606	·033577	·011	·021	·070707	·036071	·011	·021

TABLE IV.—(*continued*).

N = size of sample	9				10				11			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}86$	P_2 $\lambda_2 = 2{\cdot}44$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}81$	P_2 $\lambda_2 = 2{\cdot}41$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}76$	P_2 $\lambda_2 = 2{\cdot}38$
51	·160000	·071897	·009	·019	·180000	·075345 +	·009	·019	·200000	·078446	·009	·019
52	·156863	·070646	·009	·019	·176471	·074055 −	·009	·019	·196078	·077126	·009	·019
53	·153846	·069436	·009	·019	·173077	·072807	·009	·019	·192308	·075847	·009	·019
54	·150943	·068267	·009	·019	·169811	·071599	·009	·019	·188679	·074609	·009	·019
55	·148148	·067135 +	·009	·019	·166667	·070430	·009	·019	·185185 +	·073410	·009	·019
56	·145455 −	·066040	·009	·020	·163636	·069297	·009	·019$_5$	·181818	·072247	·009	·019
57	·142857	·064980	·009	·020	·160714	·068200	·009	·020	·178571	·071120	·009	·019
58	·140351	·063952	·009$_5$	·020	·157895 −	·067136	·009$_5$	·020	·175439	·070027	·009$_5$	·019
59	·137931	·062957	·010	·020	·155172	·066104	·010	·020	·172414	·068966	·010	·020
60	·135593	·061991	·010	·020	·152542	·065103	·010	·020	·169492	·067935 +	·010	·020
61	·133333	·061054	·010	·020	·150000	·064132	·010	·020	·166667	·066935 −	·010	·020
62	·131148	·060145 −	·010	·020	·147541	·063188	·010	·020	·163934	·065963	·010	·020
63	·129032	·059262	·010	·020	·145161	·062272	·010	·020	·161290	·065018	·010	·020
64	·126984	·058404	·010	·020	·142857	·061381	·010	·020	·158730	·064100	·010	·020
65	·125000	·057571	·010	·020	·140625	·060515 +	·010	·020	·156250	·063206	·010	·020
66	·123077	·056761	·010	·020	·138462	·059673	·010	·020	·153846	·062337	·010	·020
67	·121212	·055973	·010	·020	·136364	·058854	·010	·020	·151515 +	·061491	·010	·020
68	·119403	·055206	·010	·020	·134328	·058057	·010	·020	·149254	·060667	·010	·020
69	·117647	·054460	·010	·020	·132353	·057280	·010	·020	·147059	·059865 −	·010	·020
70	·115942	·053734	·010	·020	·130435 −	·056524	·010	·020$_5$	·144928	·059083	·010	·020
71	·114286	·053026	·010	·020	·128571	·055787	·010	·021	·142857	·058321	·010	·020
72	·112676	·052337	·010	·020	·126761	·055070	·010	·021	·140845 +	·057578	·010	·020
73	·111111	·051666	·010	·020$_5$	·125000	·054370	·010	·021	·138889	·056854	·010	·020$_5$
74	·109589	·051011	·010	·021	·123288	·053687	·010	·021	·136986	·056148	·010$_5$	·021
75	·108108	·050372	·010	·021	·121622	·053022	·010	·021	·135135 +	·055458	·011	·021
76	·106667	·049750 −	·010	·021	·120000	·052372	·010	·021	·133333	·054785 +	·011	·021
77	·105263	·049142	·010	·021	·118421	·051738	·010	·021	·131579	·054129	·011	·021
78	·103896	·048549	·010	·021	·116883	·051119	·010$_5$	·021	·129870	·053487	·011	·021
79	·102564	·047970	·010	·021	·115385 −	·050515 +	·011	·021	·128205 +	·052860	·011	·021
80	·101266	·047405 −	·010	·021	·113924	·049925 −	·011	·021	·126582	·052248	·011	·021
81	·100000	·046852	·010$_5$	·021	·112500	·049348	·011	·021	·125000	·051650 −	·011	·021
82	·098765 +	·046312	·011	·021	·111111	·048784	·011	·021	·123457	·051065 −	·011	·021
83	·097561	·045785 −	·011	·021	·109756	·048233	·011	·021	·121951	·050493	·011	·021
84	·096386	·045269	·011	·021	·108434	·047694	·011	·021	·120482	·049933	·011	·021
85	·095238	·044765 −	·011	·021	·107143	·047167	·011	·021	·119048	·049386	·011	·021
86	·094118	·044272	·011	·021	·105882	·046651	·011	·021	·117647	·048850 +	·011	·021
87	·093023	·043789	·011	·021	·104651	·046147	·011	·021	·116279	·048326	·011	·021
88	·091954	·043317	·011	·021	·103448	·045653	·011	·021	·114943	·047813	·011	·021
89	·090909	·042855 −	·011	·021	·102273	·045170	·011	·021	·113636	·047311	·011	·021
90	·089888	·042403	·011	·021	·101124	·044696	·011	·021	·112360	·046819	·011	·021
91	·088889	·041960	·011	·021	·100000	·044233	·011	·021	·111111	·046337	·011	·021
92	·087912	·041526	·011	·021	·098901	·043778	·011	·021	·109890	·045864	·011	·021
93	·086957	·041101	·011	·021	·097826	·043333	·011	·021	·108696	·045401	·011	·021
94	·086022	·040684	·011	·021	·096774	·042897	·011	·021	·107527	·044948	·011	·021
95	·085106	·040276	·011	·021	·095745 −	·042470	·011	·021	·106383	·044503	·011	·021
96	·084211	·039876	·011	·021	·094737	·042051	·011	·021	·105263	·044067	·011	·021
97	·083333	·039484	·011	·021	·093750	·041640	·011	·021	·104167	·043640	·011	·021
98	·082474	·039099	·011	·021	·092784	·041237	·011	·021	·103093	·043220	·011	·021
99	·081633	·038722	·011	·021	·091837	·040842	·011	·021	·102041	·042809	·011	·021
100	·080808	·038352	·011	·021	·090909	·040454	·011	·021	·101010	·042405 −	·011	·021

N = size of sample	12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}71$	P_2 $\lambda_2 = 2{\cdot}35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}66$	P_2 $\lambda_2 = 2{\cdot}32$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}63$	P_2 $\lambda_2 = 2{\cdot}30$
51	·220000	·081240	·009	·019	·240000	·083758	·009	·019	·260000	·086023	·009	·018
52	·215686	·079898	·009	·019	·235294	·082400	·009	·019	·254902	·084658	·009	·018
53	·211538	·078596	·009	·019	·230769	·081084	·009	·019	·250000	·083333	·009	·019
54	·207547	·077335 +	·009	·019	·226415 +	·079807	·009	·019	·245283	·082046	·009	·019
55	·203704	·076113	·009	·019	·222222	·078567	·009	·019	·240741	·080796	·009$_5$	·019
56	·200000	·074927	·009	·019	·218182	·077364	·009$_5$	·019	·236364	·079581	·010	·019
57	·196429	·073776	·010	·019	·214286	·076196	·010	·019	·232143	·078401	·010	·019
58	·192982	·072659	·010	·019	·210526	·075060	·010	·019	·228070	·077252	·010	·019
59	·189655 +	·071574	·010	·019	·206897	·073957	·010	·020	·224138	·076136	·010	·019
60	·186441	·070520	·010	·019$_5$	·203390	·072885 −	·010	·020	·220339	·075050 −	·010	·019$_5$
61	·183333	·069496	·010	·020	·200000	·071842	·010	·020	·216667	·073993	·010	·020
62	·180328	·068501	·010	·020	·196721	·070828	·010	·020	·213115 −	·072964	·010	·020
63	·177419	·067533	·010	·020	·193548	·069841	·010	·020	·209677	·071962	·010	·020
64	·174603	·066591	·010	·020	·190476	·068880	·010	·020	·206349	·070986	·010	·020
65	·171875	·065675 −	·010	·020	·187500	·067945 −	·010	·020	·203125	·070036	·010	·020
66	·169231	·064782	·010	·020	·184615 +	·067034	·010	·020	·200000	·069109	·010$_5$	·020
67	·166667	·063914	·010	·020	·181818	·066146	·010	·020	·196970	·068207	·011	·020
68	·164179	·063068	·010	·020	·179104	·065281	·010$_5$	·020	·194030	·067326	·011	·020
69	·161765 −	·062243	·010	·020	·176471	·064438	·011	·020	·191176	·066468	·011	·020
70	·159420	·061439	·010$_5$	·020	·173913	·063616	·011	·020$_5$	·188406	·065630	·011	·020
71	·157143	·060656	·011	·020	·171429	·062814	·011	·021	·185714	·064813	·011	·021
72	·154930	·059892	·011	·020	·169014	·062031	·011	·021	·183099	·064015 −	·011	·021
73	·152778	·059146	·011	·021	·166667	·061268	·011	·021	·180556	·063236	·011	·021
74	·150685 −	·058419	·011	·021	·164384	·060523	·011	·021	·178082	·062475 +	·011	·021
75	·148649	·057709	·011	·021	·162162	·059795 −	·011	·021	·175676	·061732	·011	·021
76	·146667	·057016	·011	·021	·160000	·059084	·011	·021	·173333	·061006	·011	·021
77	·144737	·056339	·011	·021	·157895 −	·058390	·011	·021	·171053	·060297	·011	·021
78	·142857	·055677	·011	·021	·155844	·057711	·011	·021	·168831	·059604	·011	·021
79	·141026	·055031	·011	·021	·153846	·057048	·011	·021	·166667	·058926	·011	·021
80	·139241	·054400	·011	·021	·151899	·056399	·011	·021	·164557	·058262	·011$_5$	·021
81	·137500	·053782	·011	·021	·150000	·055765 +	·011	·021	·162500	·057614	·012	·021
82	·135802	·053179	·011	·021	·148148	·055145 −	·011	·021	·160494	·056979	·012	·021
83	·134146	·052588	·011	·021	·146341	·054538	·011	·021	·158537	·056358	·012	·021
84	·132530	·052010	·011	·021	·144578	·053945 −	·011	·021	·156627	·055750 +	·012	·021
85	·130952	·051445 +	·011	·021	·142857	·053363	·011	·021	·154762	·055155 +	·012	·021$_5$
86	·129412	·050892	·011	·021	·141176	·052794	·011	·021$_5$	·152941	·054573	·012	·022
87	·127907	·050350 +	·011	·021	·139535 −	·052237	·012	·022	·151163	·054002	·012	·022
88	·126437	·049820	·011	·021	·137931	·051692	·012	·022	·149425 +	·053443	·012	·022
89	·125000	·049301	·011	·021	·136364	·051157	·012	·022	·147727	·052895 −	·012	·022
90	·123596	·048792	·011	·021	·134831	·050634	·012	·022	·146067	·052358	·012	·022
91	·122222	·048293	·011$_5$	·021	·133333	·050121	·012	·022	·144444	·051832	·012	·022
92	·120879	·047805 +	·012	·021$_5$	·131868	·049618	·012	·022	·142857	·051316	·012	·022
93	·119565 +	·047326	·012	·022	·130435 −	·049125 −	·012	·022	·141304	·050810	·012	·022
94	·118280	·046857	·012	·022	·129032	·048641	·012	·022	·139785 −	·050314	·012	·022
95	·117021	·046397	·012	·022	·127660	·048167	·012	·022	·138298	·049827	·012	·022
96	·115789	·045945 +	·012	·022	·126316	·047702	·012	·022	·136842	·049350 −	·012	·022
97	·114583	·045503	·012	·022	·125000	·047246	·012	·022	·135417	·048881	·012	·022
98	·113402	·045068	·012	·022	·123711	·046798	·012	·022	·134021	·048421	·012	·022
99	·112245 −	·044642	·012	·022	·122449	·046358	·012	·022	·132653	·047970	·012	·022
100	·111111	·044224	·012	·022	·121212	·045927	·012	·022	·131313	·047527	·012	·022

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15				16				17			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·60	P_2 λ_3 = 2·28	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·57	P_2 λ_2 = 2·26	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·54	P_2 λ_2 = 2·24
51	·280000	·088056	·009	·018	·300000	·089872	·009	·018	·320000	·091483	·009	·018
52	·274510	·086691	·009	·018	·294118	·088512	·009	·018	·313725 +	·090137	·009	·018
53	·269231	·085363	·009	·018	·288462	·087189	·009	·018$_5$	·307692	·088823	·009	·018
54	·264151	·084073	·009	·019	·283019	·085900	·009	·019	·301887	·087542	·009	·019
55	·259259	·082817	·010	·019	·277778	·084646	·010	·019	·296296	·086294	·010	·019
56	·254545 +	·081596	·010	·019	·272727	·083424	·010	·019	·290909	·085076	·010	·019
57	·250000	·080408	·010	·019	·267857	·082234	·010	·019	·285714	·083889	·010	·019
58	·245614	·079252	·010	·019	·263158	·081075 −	·010	·019	·280702	·082731	·010	·019
59	·241379	·078127	·010	·019	·258621	·079945 −	·010	·019	·275862	·081601	·010	·019$_5$
60	·237288	·077031	·010	·019	·254237	·078844	·010	·019$_5$	·271186	·080499	·010	·020
61	·233333	·075965 −	·010	·020	·250000	·077771	·010	·020	·266667	·079424	·010	·020
62	·229508	·074925 +	·010	·020	·245902	·076725 +	·010	·020	·262295 +	·078376	·010	·020
63	·225806	·073913	·010	·020	·241935 +	·075706	·010	·020	·258065 −	·077352	·010$_5$	·020
64	·222222	·072926	·010	·020	·238095 +	·074711	·011	·020	·253968	·076353	·011	·020
65	·218750	·071963	·010$_5$	·020	·234375	·073741	·011	·020	·250000	·075378	·011	·020
66	·215385 −	·071025 +	·011	·020	·230769	·072794	·011	·020	·246154	·074426	·011	·020
67	·212121	·070110	·011	·020	·227273	·071870	·011	·020	·242424	·073496	·011	·020$_5$
68	·208955 +	·069218	·011	·020	·223881	·070968	·011	·020	·238806	·072587	·011	·021
69	·205882	·068347	·011	·020	·220588	·070088	·011	·020$_5$	·235294	·071700	·011	·021
70	·202899	·067497	·011	·020$_5$	·217391	·069228	·011	·021	·231884	·070833	·011	·021
71	·200000	·066667	·011	·021	·214286	·068388	·011	·021	·228571	·069985 +	·011	·021
72	·197183	·065856	·011	·021	·211268	·067567	·011	·021	·225352	·069157	·011	·021
73	·194444	·065065 −	·011	·021	·208333	·066765 +	·011	·021	·222222	·068347	·011	·021
74	·191781	·064291	·011	·021	·205479	·065981	·011	·021	·219178	·067555 +	·011	·021
75	·189189	·063535 +	·011	·021	·202703	·065215 +	·011	·021	·216216	·066781	·011$_5$	·021
76	·186667	·062797	·011	·021	·200000	·064466	·011$_5$	·021	·213333	·066023	·012	·021
77	·184211	·062075 −	·011	·021	·197368	·063733	·012	·021	·210526	·065281	·012	·021
78	·181818	·061368	·011	·021	·194805 +	·063016	·012	·021	·207792	·064556	·012	·021
79	·179487	·060678	·011	·021	·192308	·062315 −	·012	·021	·205128	·063846	·012	·021$_5$
80	·177215 +	·050002	·012	·021	·189873	·061628	·012	·021	·202532	·063150 +	·012	·022
81	·175000	·059341	·012	·021	·187500	·060957	·012	·021	·200000	·062470	·012	·022
82	·172840	·058694	·012	·021	·185185 +	·060299	·012	·022	·197531	·061803	·012	·022
83	·170732	·058060	·012	·021	·182927	·059655 −	·012	·022	·195122	·061150 −	·012	·022
84	·168675 −	·057440	·012	·021$_5$	·180723	·059024	·012	·022	·192771	·060510	·012	·022
85	·166667	·056833	·012	·022	·178571	·058406	·012	·022	·190476	·059883	·012	·022
86	·164706	·056238	·012	·022	·176471	·057800	·012	·022	·188235 +	·059268	·012	·022
87	·162791	·055655 +	·012	·022	·174419	·057207	·012	·022	·186047	·058666	·012	·022
88	·160920	·055084	·012	·022	·172414	·056626	·012	·022	·183908	·058075 +	·012	·022
89	·159091	·054524	·012	·022	·170455 −	·056055 +	·012	·022	·181818	·057496	·012	·022
90	·157303	·053976	·012	·022	·168539	·055497	·012	·022	·179775 +	·056928	·012$_5$	·022
91	·155556	·053438	·012	·022	·166667	·054948	·012	·022	·177778	·056371	·013	·022
92	·153846	·052910	·012	·022	·164835 +	·054411	·012	·022	·175824	·055824	·013	·022
93	·152174	·052393	·012	·022	·163043	·053883	·012	·022	·173913	·055288	·013	·022
94	·150538	·051886	·012	·022	·161290	·053366	·013	·022	·172043	·054762	·013	·022$_5$
95	·148936	·051388	·012	·022	·159574	·052858	·013	·022	·170213	·054245 −	·013	·023
96	·147368	·050899	·012	·022	·157895 −	·052360	·013	·022	·168421	·053738	·013	·023
97	·145833	·050420	·012	·022	·156250	·051870	·013	·022	·166667	·053240	·013	·023
98	·144330	·049949	·012	·022	·154639	·051390	·013	·022	·164948	·052751	·013	·023
99	·142857	·049487	·012	·022	·153061	·050918	·013	·022$_5$	·163265 +	·052270	·013	·023
100	·141414	·049033	·012	·022	·151515 +	·050455 +	·013	·023	·161616	·051799	·013	·023

N = size of sample	18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·53	P_2 λ_2 = 2·23	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·52	P_2 λ_2 = 2·22	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·51	P_2 λ_2 = 2·21
51	·340000	·092902	·008$_5$	·017$_5$	·360000	·094136	·008	·017	·380000	·095192	·008	·017
52	·333333	·091574	·009	·018	·352941	·092833	·008	·017	·372549	·093920	·008	·017
53	·326923	·090276	·009	·018	·346154	·091557	·009	·017$_5$	·365385 −	·092672	·008	·018
54	·320755 −	·089009	·009	·018	·339623	·090308	·009	·018	·358491	·091448	·008	·018
55	·314815 −	·087771	·009	·018	·333333	·089087	·009	·018	·351852	·090248	·008$_5$	·018
56	·309091	·086563	·009	·019	·327273	·087893	·009	·018	·345455 −	·089072	·009	·018
57	·303571	·085383	·009	·019	·321429	·086724	·009	·018	·339286	·087921	·009	·018$_5$
58	·298246	·084230	·010	·019	·315789	·085582	·009	·019	·333333	·086793	·009	·019
59	·293103	·083105 +	·010	·019	·310345 −	·084465 +	·009	·019	·327586	·085688	·009	·019
60	·288136	·082006	·010	·019	·305085 −	·083373	·010	·019	·322034	·084607	·009	·019
61	·283333	·080933	·010	·019	·300000	·082305 +	·010	·019	·316667	·083548	·009	·019
62	·278689	·079885 +	·010	·019$_5$	·295082	·081262	·010	·019	·311475 +	·082512	·010	·019
63	·274194	·078861	·010	·020	·290323	·080241	·010	·019	·306452	·081498	·010	·019
64	·269841	·077861	·010	·020	·285714	·079243	·010	·019$_5$	·301587	·080505 −	·010	·019
65	·265625	·076884	·010	·020	·281250	·078267	·010	·020	·296875	·079533	·010	·020
66	·261538	·075929	·011	·020	·276923	·077312	·010	·020	·292308	·078581	·010	·020
67	·257576	·074996	·011	·020	·272727	·076379	·010	·020	·287879	·077650 +	·010	·020
68	·253731	·074084	·011	·020	·268657	·075466	·010$_5$	·020	·283582	·076738	·010	·020
69	·250000	·073193	·011	·020	·264706	·074572	·011	·020	·279412	·075846	·010	·020
70	·246377	·072321	·011	·020	·260870	·073698	·011	·020	·275362	·074972	·010$_5$	·020
71	·242857	·071468	·011	·021	·257143	·072843	·011	·020	·271429	·074116	·011	·020
72	·239437	·070634	·011	·021	·253521	·072006	·011	·020$_5$	·267606	·073278	·011	·020
73	·236111	·069819	·011	·021	·250000	·071187	·011	·021	·263889	·072457	·011	·020
74	·232877	·069021	·011	·021	·246575 +	·070385 −	·011	·021	·260274	·071653	·011	·021
75	·229730	·068240	·011	·021	·243243	·069600	·011	·021	·256757	·070865 +	·011	·021
76	·226667	·067476	·011	·021	·240000	·068831	·011	·021	·253333	·070094	·011	·021
77	·223684	·066727	·011$_5$	·021	·236842	·068078	·011	·021	·250000	·069338	·011	·021
78	·220779	·065995 −	·012	·021	·233766	·067340	·011	·021	·246753	·068596	·011	·021
79	·217949	·065278	·012	·021	·230769	·066617	·011	·021	·243590	·067870	·011	·021
80	·215190	·064575 +	·012	·021	·227848	·065909	·011$_5$	·021	·240506	·067158	·011	·021
81	·212500	·063887	·012	·021	·225000	·065215 +	·012	·021	·237500	·066460	·011	·021
82	·209877	·063213	·012	·022	·222222	·064535 +	·012	·021	·234568	·065775 +	·011$_5$	·021
83	·207317	·062552	·012	·022	·219512	·063869	·012	·021$_5$	·231707	·065104	·012	·021
84	·204819	·061905 −	·012	·022	·216867	·063215 +	·012	·022	·228916	·064446	·012	·021
85	·202381	·061270	·012	·022	·214286	·062574	·012	·022	·226190	·063800	·012	·022
86	·200000	·060648	·012	·022	·211765 −	·061946	·012	·022	·223529	·063166	·012	·022
87	·197674	·060038	·012	·022	·209302	·061329	·012	·022	·220930	·062545 −	·012	·022
88	·195402	·059439	·012	·022	·206897	·060724	·012	·022	·218391	·061934	·012	·022
89	·193182	·058852	·012	·022	·204545 +	·060131	·012	·022	·215909	·061336	·012	·022
90	·191011	·058277	·012	·022	·202247	·059548	·012	·022	·213483	·060748	·012	·022
91	·188889	·057712	·012	·022	·200000	·058977	·012	·022	·211111	·060171	·012	·022
92	·186813	·057157	·012$_5$	·022	·197802	·058416	·012	·022	·208791	·059604	·012	·022
93	·184783	·056613	·013	·022	·195652	·057865 −	·012	·022	·206522	·059047	·012	·022
94	·182796	·056079	·013	·022	·193548	·057324	·012	·022	·204301	·058501	·012	·022
95	·180851	·055555 −	·013	·022	·191489	·056793	·012	·022	·202128	·057964	·012	·022
96	·178947	·055040	·013	·022	·189474	·056271	·012	·022	·200000	·057437	·012	·022
97	·177083	·054534	·013	·022$_5$	·187500	·055759	·012$_5$	·022	·197917	·056918	·012	·022
98	·175258	·054037	·013	·023	·185567	·055255 +	·013	·022	·195876	·056409	·012	·022
99	·173469	·053550 −	·013	·023	·183673	·054761	·013	·022$_5$	·193878	·055909	·012$_5$	·022$_5$
100	·171717	·053070	·013	·023	·181818	·054275 −	·013	·023	·191919	·055417	·013	·023

TABLE IV.—(*continued*).

N = size of sample	3				4				5			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}50$	P_2 $\lambda_2 = 2{\cdot}94$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}20$	P_2 $\lambda_2 = 2{\cdot}80$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}14$	P_2 $\lambda_2 = 2{\cdot}68$
101	·020000	·019604	·011	·019	·030000	·023887	·012	·019	·040000	·027440	·011	·020
102	·019802	·019414	·011	·019	·029703	·023656	·012	·019	·039604	·027176	·011	·020
103	·019608	·019227	·011	·019	·029412	·023430	·012	·019	·039216	·026918	·011	·020
104	·019417	·019044	·011	·019	·029126	·023208	·012	·019	·038835 −	·026664	·011	·020
105	·019231	·018864	·011	·019	·028846	·022991	·012	·019	·038462	·026415 +	·011	·020
106	·019048	·018688	·011	·019	·028571	·022777	·012	·019	·038095 +	·026171	·011	·020
107	·018868	·018515 +	·011	·019	·028302	·022567	·012	·019	·037736	·025931	·011	·020
108	·018692	·018345 +	·011	·019	·028037	·022361	·012	·019	·037383	·025696	·011	·020
109	·018519	·018179	·011	·019	·027778	·022159	·012	·019	·037037	·025465 −	·011	·020
110	·018349	·018015 −	·011	·019	·027523	·021960	·012	·019	·036697	·025238	·011	·020
111	·018182	·017854	·011	·019	·027273	·021765 +	·012	·019	·036364	·025015 −	·011	·020
112	·018018	·017696	·011	·019	·027027	·021574	·012	·019	·036036	·024796	·011	·020
113	·017857	·017541	·011	·019	·026786	·021385 +	·012	·019	·035714	·024580	·011	·020
114	·017699	·017389	·011	·019	·026549	·021200	·012	·019	·035398	·024369	·011	·020
115	·017544	·017239	·011	·019	·026316	·021019	·012	·019	·035088	·024161	·011	·020
116	·017391	·017091	·011	·019	·026087	·020840	·012	·019	·034783	·023956	·011	·020
117	·017241	·016947	·011	·019	·025862	·020664	·012	·019	·034483	·023755	·011	·020
118	·017094	·016804	·011	·019	·025641	·020491	·012	·019	·034188	·023557	·011	·020
119	·016949	·016664	·011	·019	·025424	·020321	·012	·019	·033898	·023363	·011	·020
120	·016807	·016527	·011	·019	·025210	·020154	·012	·019	·033613	·023172	·011	·020
121	·016667	·016391	·011	·019	·025000	·019990	·012	·019	·033333	·022983	·011	·020
122	·016529	·016258	·011	·019	·024793	·019828	·012	·019	·033058	·022798	·011	·020
123	·016393	·016127	·011	·019	·024590	·019669	·012	·019	·032787	·022616	·011	·020
124	·016260	·015998	·011	·019	·024390	·019512	·012	·019	·032520	·022437	·011	·020
125	·016129	·015871	·011	·019	·024194	·019358	·012	·019	·032258	·022260	·011	·020
126	·016000	·015746	·011	·019	·024000	·019206	·012	·019	·032000	·022086	·011	·020
127	·015873	·015623	·011	·019	·023810	·019057	·012	·019	·031746	·021915 +	·011	·020
128	·015748	·015502	·011	·019	·023622	·018910	·012	·019	·031496	·021747	·011	·020
129	·015625	·015383	·011	·019	·023438	·018765 +	·012	·019	·031250	·021581	·011	·020
130	·015504	·015265 +	·011	·019	·023256	·018622	·012	·019	·031008	·021418	·011	·020
131	·015385 −	·015150 −	·011	·019	·023077	·018482	·012	·019	·030769	·021257	·011	·020
132	·015267	·015036	·011	·019	·022901	·018344	·012	·019	·030534	·021098	·011	·020
133	·015152	·014924	·011	·019	·022727	·018207	·012	·019	·030303	·020942	·011	·020
134	·015038	·014813	·011	·019	·022556	·018073	·012	·019	·030075 +	·020788	·011	·020
135	·014925 +	·014704	·011	·019	·022388	·017941	·012	·019	·029851	·020637	·011	·020
136	·014815 −	·014597	·011	·019	·022222	·017810	·012	·019	·029630	·020487	·011	·020
137	·014706	·014491	·011	·019	·022059	·017682	·012	·019	·029412	·020340	·011	·020
138	·014599	·014387	·011	·019	·021898	·017555 −	·012	·019	·029197	·020195 −	·011	·020
139	·014493	·014284	·011	·019	·021739	·017430	·012	·019	·028986	·020052	·011	·020
140	·014388	·014183	·011	·019	·021583	·017307	·012	·019	·028777	·019911	·011	·020
141	·014286	·014083	·011	·019	·021429	·017186	·012	·019	·028571	·019772	·011	·020
142	·014184	·013985 −	·011	·019	·021277	·017066	·012	·019	·028369	·019634	·011	·020
143	·014085 −	·013888	·011	·019	·021127	·016948	·012	·019	·028169	·019499	·011	·020
144	·013986	·013792	·011	·019	·020979	·016831	·012	·019	·027972	·019366	·011	·020
145	·013889	·013697	·011	·019	·020833	·016717	·012	·019	·027778	·019234	·011	·020
146	·013793	·013604	·011	·019	·020690	·016603	·012	·019	·027586	·019104	·011	·020
147	·013699	·013512	·011	·019	·020548	·016491	·012	·019	·027397	·018976	·011	·020
148	·013605 +	·013422	·011	·019	·020408	·016381	·012	·019	·027211	·018850 −	·011	·020
149	·013514	·013332	·011	·019	·020270	·016272	·012	·019	·027027	·018725 −	·011	·020
150	·013423	·013244	·011	·019	·020134	·016165 +	·012	·019	·026846	·018602	·011	·020

N = size of sample	6				7				8			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}11$	P_2 $\lambda_2 = 2{\cdot}63$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}08$	P_2 $\lambda_2 = 2{\cdot}58$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}02$	P_2 $\lambda_2 = 2{\cdot}54$
101	·050000	·030518	·010	·020	·060000	·033255 −	·009	·019	·070000	·035728	·009	·019
102	·049505 −	·030227	·010	·020	·059406	·032939	·009	·019	·069307	·035391	·009	·019
103	·049020	·029941	·010	·020	·058824	·032629	·009	·019	·068627	·035060	·009	·019
104	·048544	·029661	·010	·020	·058252	·032325 +	·009	·019	·067961	·034735 +	·009	·019
105	·048077	·029385 +	·010	·020	·057692	·032027	·009	·019	·067308	·034416	·009	·019
106	·047619	·029115 +	·010	·020	·057143	·031734	·009	·019	·066667	·034103	·009	·019
107	·047170	·028850 −	·010	·020	·056604	·031447	·009	·019	·066038	·033796	·009	·019
108	·046729	·028589	·010	·020	·056075 −	·031164	·009	·019	·065421	·033494	·009	·019
109	·046296	·028333	·010	·020	·055556	·030887	·009	·019	·064815 −	·033197	·009	·019
110	·045872	·028082	·010	·020	·055046	·030614	·009	·019	·064220	·032906	·009	·019₅
111	·045455 −	·027835 +	·010	·020	·054545 +	·030346	·009	·019	·063636	·032620	·009	·020
112	·045045 +	·027592	·010	·020	·054054	·030083	·009	·019	·063063	·032338	·009	·020
113	·044643	·027354	·010	·020	·053571	·029824	·009	·019	·062500	·032062	·009	·020
114	·044248	·027120	·010	·020	·053097	·029570	·009	·019₅	·061947	·031790	·009	·020
115	·043860	·026889	·010	·020	·052632	·029320	·009	·020	·061404	·031523	·009	·020
116	·043478	·026663	·010	·020	·052174	·029075 −	·009	·020	·060870	·031260	·009	·020
117	·043103	·026440	·010	·020	·051724	·028833	·009	·020	·060345 −	·031001	·009	·020
118	·042735 +	·026221	·010	·020	·051282	·028595 +	·009	·020	·059829	·030747	·009	·020
119	·042373	·026006	·010	·020	·050847	·028361	·009	·020	·059322	·030497	·009	·020
120	·042017	·025794	·010	·020	·050420	·028131	·009	·020	·058824	·030251	·009	·020
121	·041667	·025585 +	·010	·020	·050000	·027905 −	·009	·020	·058333	·030008	·009₅	·020
122	·041322	·025380	·010	·020	·049587	·027682	·009	·020	·057851	·029770	·010	·020
123	·040984	·025178	·010	·020	·049180	·027463	·009₅	·020	·057377	·029535 +	·010	·020
124	·040650 +	·024979	·010	·020	·048780	·027247	·010	·020	·056911	·029304	·010	·020
125	·040323	·024784	·010	·020	·048387	·027035 −	·010	·020	·056452	·029077	·010	·020
126	·040000	·024591	·010	·020	·048000	·026826	·010	·020	·056000	·028853	·010	·020
127	·039683	·024402	·010	·020	·047619	·026620	·010	·020	·055556	·028633	·010	·020
128	·039370	·024215 −	·010	·020	·047244	·026417	·010	·020	·055118	·028416	·010	·020
129	·039063	·024031	·010	·020	·046875	·026217	·010	·020	·054688	·028202	·010	·020
130	·038760	·023850 −	·010	·020	·046512	·026021	·010	·020	·054264	·027991	·010	·020
131	·038462	·023671	·010	·020	·046154	·025827	·010	·020	·053846	·027783	·010	·020
132	·038168	·023496	·010	·020	·045802	·025636	·010	·020	·053435 +	·027579	·010	·020
133	·037879	·023323	·010	·020	·045455 −	·025448	·010	·020	·053030	·027377	·010	·020
134	·037594	·023152	·010	·020	·045113	·025262	·010	·020	·052632	·027179	·010	·020
135	·037313	·022984	·010	·020	·044776	·025080	·010	·020	·052239	·026983	·010	·020
136	·037037	·022818	·010	·020	·044444	·024900	·010	·020	·051852	·026790	·010	·020
137	·036765 −	·022655 −	·010	·020	·044118	·024722	·010	·020	·051471	·026600	·010	·020
138	·036496	·022494	·010	·020	·043796	·024547	·010	·020	·051095 −	·026412	·010	·020
139	·036232	·022335 −	·010	·020	·043478	·024374	·010	·020	·050725 −	·026227	·010	·020
140	·035971	·022178	·010	·020	·043165 +	·024204	·010	·020	·050360	·026045 +	·010	·020
141	·035714	·022024	·010	·020	·042587	·024036	·010	·020	·050000	·025865 +	·010	·020
142	·035461	·021872	·010	·020	·042553	·023871	·010	·020	·049645 +	·025688	·010	·020
143	·035211	·021722	·010	·020	·042254	·023708	·010	·020	·049296	·025513	·010	·020
144	·034965 +	·021573	·010	·020	·041958	·023547	·010	·020	·048951	·025340	·010	·020
145	·034722	·021427	·010	·020	·041667	·023388	·010	·020	·048611	·025170	·010	·020
146	·034483	·021283	·010	·020	·041379	·023231	·010	·020	·048276	·025002	·010	·020
147	·034247	·021141	·010	·020	·041096	·023077	·010	·020	·047945 +	·024836	·010	·020
148	·034014	·021001	·010	·020	·040816	·022924	·010	·020	·047619	·024673	·010	·020
149	·033784	·020862	·010	·020	·040541	·022773	·010	·020	·047297	·024511	·010	·020
150	·033557	·020726	·010	·020	·040268	·022625 −	·010	·020	·046980	·024352	·010	·020

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	9: $\bar{\eta}^2$	9: $\sigma_{\bar{\eta}^2}$	9: P_1 λ_1 = 2·96	9: P_2 λ_2 = 2·50	10: $\bar{\eta}^2$	10: $\sigma_{\bar{\eta}^2}$	10: P_1 λ_1 = 2·92	10: P_2 λ_2 = 2·47	11: $\bar{\eta}^2$	11: $\sigma_{\bar{\eta}^2}$	11: P_1 λ_1 = 2·88	11: P_2 λ_2 = 2·44
101	·080000	·037989	·009	·019	·090000	·040073	·009	·019	·100000	·042008	·009	·019
102	·079208	·037632	·009	·019	·089109	·039700	·009	·019	·099010	·041619	·009	·019
103	·078431	·037283	·009	·019	·088235 +	·039333	·009	·019	·098039	·041237	·009	·019
104	·077670	·036939	·009	·019	·087379	·038973	·009	·019	·097087	·040862	·009	·019$_5$
105	·076923	·036602	·009	·019	·086538	·038620	·009	·019	·096154	·040494	·009	·020
106	·076190	·036271	·009	·019	·085714	·038273	·009	·019	·095238	·040132	·009	·020
107	·075472	·035946	·009	·019$_5$	·084906	·037932	·009	·019$_5$	·094340	·039777	·009	·020
108	·074766	·035627	·009	·020	·084112	·037597	·009	·020	·093458	·039428	·009	·020
109	·074074	·035313	·009	·020	·083333	·037268	·009	·020	·092593	·039085 −	·009	·020
110	·073394	·035005 +	·009	·020	·082569	·036944	·009	·020	·091743	·038748	·009	·020
111	·072727	·034702	·009	·020	·081818	·036626	·009	·020	·090909	·038416	·009	·020
112	·072072	·034405 −	·009	·020	·081081	·036314	·009	·020	·090090	·038090	·009	·020
113	·071429	·034112	·009	·020	·080357	·036007	·009	·020	·089286	·037770	·009	·020
114	·070796	·033824	·009$_5$	·020	·079646	·035705 −	·009	·020	·088496	·037455 −	·009	·020
115	·070175 +	·033541	·010	·020	·078947	·035408	·009$_5$	·020	·087719	·037145 −	·009	·020
116	·069565 +	·033263	·010	·020	·078261	·035115 +	·010	·020	·086957	·036840	·009	·020
117	·068966	·032989	·010	·020	·077586	·034828	·010	·020	·086207	·036540	·009	·020
118	·068376	·032720	·010	·020	·076923	·034545 +	·010	·020	·085470	·036245 −	·009$_5$	·020
119	·067797	·032455 +	·010	·020	·076271	·034267	·010	·020	·084746	·035955 −	·010	·020
120	·067227	·032195 −	·010	·020	·075630	·033993	·010	·020	·084034	·035669	·010	·020
121	·066667	·031938	·010	·020	·075000	·033724	·010	·020	·083333	·035388	·010	·020
122	·066116	·031686	·010	·020	·074380	·033459	·010	·020	·082645 −	·035111	·010	·020
123	·065574	·031437	·010	·020	·073770	·033197	·010	·020	·081967	·034838	·010	·020
124	·065041	·031192	·010	·020	·073171	·032940	·010	·020	·081301	·034570	·010	·020
125	·064516	·030952	·010	·020	·072581	·032687	·010	·020	·080645 +	·034305 +	·010	·020
126	·064000	·030714	·010	·020	·072000	·032438	·010	·020	·080000	·034045 −	·010	·020
127	·063492	·030481	·010	·020	·071429	·032192	·010	·020	·079365 +	·033788	·010	·020
128	·062992	·030251	·010	·020	·070866	·031951	·010	·020	·078740	·033536	·010	·020
129	·062500	·030024	·010	·020	·070313	·031712	·010	·020	·078125	·033287	·010	·020
130	·062016	·029801	·010	·020	·069767	·031478	·010	·020	·077519	·033042	·010	·020
131	·061538	·029581	·010	·020	·069231	·031246	·010	·020	·076923	·032800	·010	·020
132	·061069	·029364	·010	·020	·068702	·031018	·010	·020	·076336	·032562	·010	·020
133	·060606	·029150 −	·010	·020	·068182	·030794	·010	·020	·075758	·032327	·010	·020
134	·060150 +	·028940	·010	·020	·067669	·030572	·010	·020	·075188	·032096	·010	·020
135	·059701	·028732	·010	·020	·067164	·030354	·010	·020	·074627	·031868	·010	·020
136	·059259	·028528	·010	·020	·066667	·030139	·010	·020	·074074	·031643	·010	·020
137	·058824	·028326	·010	·020	·066176	·029927	·010	·020	·073529	·031421	·010	·020
138	·058394	·028127	·010	·020	·065693	·029718	·010	·020	·072993	·031202	·010	·020
139	·057971	·027931	·010	·020	·065217	·029511	·010	·020	·072464	·030987	·010	·020
140	·057554	·027738	·010	·020	·064748	·029308	·010	·020	·071942	·030774	·010	·020
141	·057143	·027547	·010	·020	·064286	·029107	·010	·020	·071429	·030564	·010	·020
142	·056738	·027359	·010	·020	·063830	·028909	·010	·020	·070922	·030357	·010	·020
143	·056338	·027173	·010	·020	·063380	·028714	·010	·020	·070423	·030153	·010	·020
144	·055944	·026990	·010	·020	·062937	·028521	·010	·020	·069930	·029952	·010	·020
145	·055556	·026810	·010	·020	·062500	·028331	·010	·020	·069444	·029753	·010	·020
146	·055172	·026631	·010	·020	·062069	·028144	·010	·020	·068966	·029557	·010	·020
147	·054795 −	·026455 +	·010	·020	·061644	·027958	·010	·020	·068493	·029363	·010	·020
148	·054422	·026282	·010	·020	·061224	·027776	·010	·020	·068027	·029172	·010	·020
149	·054054	·026111	·010	·020	·060811	·027595 +	·010	·020	·067568	·028983	·010	·020
150	·053691	·025941	·010	·020	·060403	·027417	·010	·020	·067114	·028797	·010	·020

N = size of sample	12: $\bar{\eta}^2$	12: $\sigma_{\bar{\eta}^2}$	12: P_1 λ_1 = 2·84	12: P_2 λ_2 = 2·42	13: $\bar{\eta}^2$	13: $\sigma_{\bar{\eta}^2}$	13: P_1 λ_1 = 2·80	13: P_2 λ_2 = 2·40	14: $\bar{\eta}^2$	14: $\sigma_{\bar{\eta}^2}$	14: P_1 λ_1 = 2·79	14: P_2 λ_2 = 2·39
101	·110000	·043813	·009	·019	·120000	·045504	·009	·019	·130000	·047092	·009	·019
102	·108911	·043410	·009	·019	·118812	·045088	·009$_5$	·019	·128713	·046665 −	·009	·019
103	·107843	·043015 −	·009	·019	·117647	·044680	·010	·019	·127451	·046245 +	·009	·019
104	·106796	·042626	·009	·019	·116505 −	·044279	·010	·019	·126214	·045833	·009	·019
105	·105769	·042244	·009	·019$_5$	·115385 −	·043885 −	·010	·019	·125000	·045428	·009	·019
106	·104762	·041869	·009	·020	·114286	·043498	·010	·019	·123810	·045030	·009	·019
107	·103774	·041501	·009	·020	·113208	·043117	·010	·019	·122642	·044639	·009	·019
108	·102804	·041139	·009	·020	·112150 −	·042744	·010	·019	·121495 +	·044254	·009	·019
109	·101852	·040783	·009	·020	·111111	·042376	·010	·019	·120370	·043876	·009	·019
110	·100917	·040433	·009	·020	·110092	·042015 −	·010	·019$_5$	·119266	·043505 −	·009	·019
111	·100000	·040089	·009	·020	·109091	·041660	·010	·020	·118182	·043139	·009	·019
112	·099099	·039751	·009	·020	·108108	·041311	·010	·020	·117117	·042780	·009	·019
113	·098214	·039419	·009	·020	·107143	·040967	·010	·020	·116071	·042426	·009	·019
114	·097345 +	·039092	·009	·020	·106195 −	·040629	·010	·020	·115044	·042078	·009	·019
115	·096491	·038770	·009$_5$	·020	·105263	·040297	·010	·020	·114035 +	·041736	·009$_5$	·019
116	·095652	·038454	·010	·020	·104348	·039970	·010	·020	·113043	·041400	·010	·019
117	·094828	·038142	·010	·020	·103448	·039648	·010	·020	·112069	·041068	·010	·019
118	·094017	·037836	·010	·020	·102564	·039332	·010	·020	·111111	·040742	·010	·019
119	·093220	·037534	·010	·020	·101695 −	·039020	·010	·020	·110169	·040421	·010	·019
120	·092437	·037238	·010	·020	·100840	·038713	·010	·020	·109244	·040105 +	·010	·020
121	·091667	·036946	·010	·020	·100000	·038411	·010	·020	·108333	·039794	·010	·020
122	·090909	·036658	·010	·020	·099174	·038114	·010	·020	·107438	·039488	·010	·020
123	·090164	·036375 −	·010	·020	·098361	·037821	·010	·020	·106557	·039186	·010	·020
124	·089431	·036096	·010	·020	·097561	·037532	·010	·020	·105691	·038889	·010	·020
125	·088710	·035821	·010	·020	·096774	·037248	·010	·020	·104839	·038596	·010	·020
126	·088000	·035551	·010	·020	·096000	·036969	·010	·020	·104000	·038308	·010	·020
127	·087302	·035285 −	·010	·020	·095238	·036693	·010	·020	·103175 −	·038023	·010	·020
128	·086614	·035022	·010	·020	·094488	·036421	·010	·020	·102362	·037743	·010	·020
129	·085938	·034763	·010	·020	·093750	·036154	·010	·020	·101563	·037467	·010	·020
130	·085271	·034509	·010	·020	·093023	·035890	·010	·020	·100775 +	·037195 +	·010	·020
131	·084615 +	·034257	·010	·020	·092308	·035630	·010	·020	·100000	·036927	·010	·020
132	·083969	·034010	·010	·020	·091603	·035374	·010	·020	·099237	·036663	·010	·020
133	·083333	·033766	·010	·020	·090909	·035121	·010	·020	·098485	·036403	·010	·020
134	·082707	·033525 +	·010	·020	·090226	·034872	·010	·020	·097744	·036146	·010	·020
135	·082090	·033288	·010	·020	·089552	·034627	·010	·020	·097015 −	·035893	·010	·020
136	·081481	·033054	·010	·020	·088889	·034385 −	·010	·020	·096296	·035643	·010	·020
137	·080882	·032824	·010	·020	·088235 +	·034146	·010	·020	·095588	·035397	·010	·020
138	·080292	·032596	·010	·020	·087591	·033910	·010	·020	·094891	·035154	·010	·020
139	·079710	·032372	·010	·020	·086957	·033678	·010	·020	·094203	·034914	·010	·020
140	·079137	·032151	·010	·020	·086331	·033449	·010	·020	·093525 +	·034677	·010	·020
141	·078571	·031933	·010	·020	·085714	·033223	·010	·020	·092857	·034444	·010	·020
142	·078014	·031717	·010	·020	·085106	·033000	·010	·020	·092199	·034214	·010	·020
143	·077465 −	·031505 −	·010	·020	·084507	·032780	·010	·020	·091549	·033987	·010	·020
144	·076923	·031295 +	·010	·020	·083916	·032563	·010	·020	·090909	·033763	·010	·020
145	·076389	·031088	·010	·020	·083333	·032348	·010	·020	·090278	·033542	·010	·020
146	·075862	·030884	·010	·020	·082759	·032137	·010	·020	·089655 +	·033323	·010	·020
147	·075342	·030683	·010	·020	·082192	·031928	·010	·020	·089041	·033108	·010	·020
148	·074830	·030484	·010	·020	·081633	·031722	·010	·020	·088435 +	·032895 −	·010	·020
149	·074324	·030288	·010	·020	·081081	·031519	·010	·020	·087838	·032685 −	·010	·020
150	·073826	·030094	·010	·020	·080537	·031318	·010	·020	·087248	·032477	·010	·020

TABLE IV.—(*continued*).

N = size of sample	15 $\bar{\eta}^2$	15 $\sigma_{\bar{\eta}^2}$	15 P_1 λ_1 = 2·78	15 P_2 λ_2 = 2·38	16 $\bar{\eta}^2$	16 $\sigma_{\bar{\eta}^2}$	16 P_1 λ_1 = 2·77	16 P_2 λ_2 = 2·37	17 $\bar{\eta}^2$	17 $\sigma_{\bar{\eta}^2}$	17 P_1 λ_1 = 2·76	17 P_2 λ_2 = 2·36
101	·140000	·048583	·009	·019	·150000	·050000	·009	·018$_5$	·160000	·051335 +	·008	·018
102	·138614	·048150 +	·009	·019	·148515 –	·049553	·009	·019	·158416	·050880	·008	·018
103	·137255 –	·047720	·009	·019	·147059	·049114	·009	·019	·156863	·050432	·009	·018
104	·135922	·047298	·009	·019	·145631	·048682	·009	·019	·155340	·049992	·009	·018
105	·134615 +	·046883	·009	·019	·144231	·048258	·009	·019	·153846	·049560	·009	·018$_5$
106	·133333	·046475 –	·009	·019	·142857	·047841	·009	·019	·152381	·049135 –	·009	·019
107	·132075 +	·046074	·009	·019	·141509	·047431	·009	·019	·150943	·048717	·009	·019
108	·130841	·045680	·009	·019	·140187	·047028	·009	·019	·149533	·048306	·009	·019
109	·129630	·045292	·009	·019	·138889	·046632	·009	·019	·148148	·047901	·009	·019
110	·128440	·044911	·009	·019	·137615 –	·046242	·009	·019	·146789	·047504	·009	·019
111	·127273	·044536	·009	·019	·136364	·045859	·009	·019	·145455 –	·047113	·009	·019
112	·126126	·044167	·009	·019	·135135 +	·045481	·009	·019	·144144	·046728	·009	·019
113	·125000	·043805 –	·009	·019	·133929	·045110	·009	·019	·142857	·046349	·009	·019
114	·123894	·043448	·009	·019	·132743	·044745 +	·009	·019	·141593	·045976	·009	·019
115	·122807	·043097	·009	·019	·131579	·044386	·009	·019	·140351	·045609	·009	·019
116	·121739	·042751	·009	·019	·130435 –	·044032	·009	·019	·139130	·045248	·009	·019
117	·120690	·042411	·009	·019	·129310	·043684	·009	·019	·137931	·044893	·009	·019
118	·119658	·042076	·009	·019	·128205 +	·043341	·009	·019	·136752	·044543	·009	·019
119	·118644	·041747	·009	·019	·127119	·043004	·009	·019	·135593	·044198	·009	·019
120	·117647	·041422	·009	·019	·126050 +	·042671	·009	·019	·134454	·043859	·009	·019
121	·116667	·041103	·009	·019	·125000	·042344	·009	·019	·133333	·043524	·009	·019
122	·115702	·040788	·009	·019	·123967	·042022	·009	·019	·132231	·043195 –	·009	·019
123	·114754	·040478	·009	·019	·122951	·041704	·009	·019	·131148	·042870	·009	·019
124	·113821	·040173	·009	·019	·121951	·041392	·009	·019	·130081	·042551	·009	·019
125	·112903	·039872	·009	·019	·120968	·041083	·009	·019	·129032	·042236	·009	·019
126	·112000	·039576	·009	·019	·120000	·040780	·009	·019	·128000	·041925 +	·009	·019
127	·111111	·039284	·009	·019	·119048	·040481	·009	·019	·126984	·041619	·009	·019
128	·110236	·038996	·009	·019	·118110	·040186	·009	·019	·125984	·041318	·009	·019
129	·109375	·038712	·009$_5$	·019$_5$	·117188	·039895 –	·009	·019	·125000	·041021	·009	·019
130	·108527	·038433	·010	·020	·116279	·039608	·009	·019	·124031	·040728	·009	·019
131	·107692	·038157	·010	·020	·115385 –	·039326	·009	·019	·123077	·040439	·009	·019
132	·106870	·037886	·010	·020	·114504	·039047	·009	·019	·122137	·040154	·009	·019
133	·106061	·037618	·010	·020	·113636	·038773	·009	·019	·121212	·039873	·009	·019
134	·105263	·037354	·010	·020	·112782	·038502	·009	·019	·120301	·039596	·009	·019
135	·104478	·037093	·010	·020	·111940	·038235 –	·009	·019	·119403	·039323	·009	·019
136	·103704	·036836	·010	·020	·111111	·037971	·009	·019	·118519	·039053	·009	·019
137	·102941	·036583	·010	·020	·110294	·037712	·009	·019	·117647	·038787	·009	·019
138	·102190	·036333	·010	·020	·109489	·037455 +	·009	·019	·116788	·038525 –	·009	·019
139	·101449	·036087	·010	·020	·108696	·037202	·010	·019	·115942	·038266	·009	·019
140	·100719	·035843	·010	·020	·107914	·036953	·010	·019	·115108	·038010	·009	·019
141	·100000	·035603	·010	·020	·107143	·036707	·010	·019	·114286	·037758	·009	·019
142	·099291	·035367	·010	·020	·106383	·036464	·010	·019	·113475 +	·037510	·009	·019
143	·098592	·035133	·010	·020	·105634	·036224	·010	·019	·112676	·037264	·009	·019
144	·097902	·034902	·010	·020	·104895 +	·035987	·010	·019	·111888	·037022	·009	·019
145	·097222	·034675 –	·010	·020	·104167	·035753	·010	·019$_5$	·111111	·036782	·009	·019
146	·096552	·034450 –	·010	·020	·103448	·035523	·010	·020	·110345 –	·036546	·009	·019
147	·095890	·034228	·010	·020	·102740	·035295 –	·010	·020	·109589	·036313	·009	·020
148	·095238	·034009	·010	·020	·102041	·035070	·010	·020	·108844	·036083	·009	·020
149	·094595 –	·033793	·010	·020	·101351	·034848	·010	·020	·108108	·035855 +	·009	·020
150	·093960	·033579	·010	·020	·100671	·034629	·010	·020	·107383	·035631	·009	·020

N = size of sample	18 $\bar{\eta}^2$	18 $\sigma_{\bar{\eta}^2}$	18 P_1 λ_1 = 2·75	18 P_2 λ_2 = 2·35	19 $\bar{\eta}^2$	19 $\sigma_{\bar{\eta}^2}$	19 P_1 λ_1 = 2·74	19 P_2 λ_2 = 2·34	20 $\bar{\eta}^2$	20 $\sigma_{\bar{\eta}^2}$	20 P_1 λ_1 = 2·73	20 P_2 λ_2 = 2·33
101	·170000	·052599	·008	·018	·180000	·053797	·008	·018	·190000	·054933	·008	·018
102	·168317	·052136	·008	·018	·178218	·053327	·008	·018	·188119	·054458	·008	·018
103	·166667	·051681	·008	·018	·176471	·052866	·008	·018	·186275 –	·053990	·008	·018
104	·165049	·051234	·008	·018	·174757	·052412	·008	·018	·184466	·053530	·008	·018
105	·163462	·050794	·008	·018	·173077	·051965 +	·008	·018	·182692	·053078	·008	·018
106	·161905 –	·050362	·008	·018	·171429	·051526	·008	·018	·180952	·052633	·008	·018
107	·160377	·049936	·008$_5$	·018	·169811	·051095 –	·008	·018	·179245 +	·052196	·008	·018
108	·158879	·049518	·009	·018$_5$	·168224	·050670	·008	·018	·177570	·051765 –	·008	·018
109	·157407	·049107	·009	·019	·166667	·050252	·008	·018	·175926	·051341	·008	·018
110	·155963	·048702	·009	·019	·165138	·049841	·008	·018$_5$	·174312	·050924	·008	·018
111	·154545 +	·048304	·009	·019	·163636	·049436	·008	·019	·172727	·050514	·008	·018$_5$
112	·153153	·047912	·009	·019	·162162	·049038	·008	·019	·171171	·050110	·008	·019
113	·151786	·047526	·009	·019	·160714	·048646	·008	·019	·169643	·049712	·008	·019
114	·150442	·047146	·009	·019	·159292	·048260	·008$_5$	·019	·168142	·049321	·008	·019
115	·149123	·046773	·009	·019	·157895 –	·047880	·009	·019	·166667	·048935 +	·008	·019
116	·147826	·046405 –	·009	·019	·156522	·047506	·009	·019	·165217	·048555 +	·008	·019
117	·146552	·046042	·009	·019	·155172	·047137	·009	·019	·163793	·048181	·008	·019
118	·145299	·045686	·009	·019	·153846	·046775 –	·009	·019	·162393	·047813	·008	·019
119	·144068	·045334	·009	·019	·152542	·046417	·009	·019	·161017	·047450 +	·008$_5$	·019
120	·142857	·044988	·009	·019	·151261	·046065 +	·009	·019	·159664	·047093	·009	·019
121	·141667	·044647	·009	·019	·150000	·045718	·009	·019	·158333	·046740	·009	·019
122	·140496	·044312	·009	·019	·148760	·045377	·009	·019	·157025 –	·046393	·009	·019
123	·139344	·043981	·009	·019	·147541	·045040	·009	·019	·155738	·046051	·009	·019
124	·138211	·043655 –	·009	·019	·146341	·044708	·009	·019	·154472	·045714	·009	·019
125	·137097	·043334	·009	·019	·145161	·044381	·009	·019	·153226	·045382	·009	·019
126	·136000	·043017	·009	·019	·144000	·044059	·009	·019	·152000	·045054	·009	·019
127	·134921	·042705 –	·009	·019	·142857	·043741	·009	·019	·150794	·044731	·009	·019
128	·133858	·042397	·009	·019	·141732	·043428	·009	·019	·149606	·044412	·009	·019
129	·132813	·042094	·009	·019	·140625	·043119	·009	·019	·148438	·044098	·009	·019
130	·131783	·041795 –	·009	·019	·139535 –	·042814	·009	·019	·147287	·043789	·009	·019
131	·130769	·041500 +	·009	·019	·138462	·042514	·009	·019	·146154	·043483	·009	·019
132	·129771	·041209	·009	·019	·137405 –	·042218	·009	·019	·145038	·043182	·009	·019
133	·128788	·040922	·009	·019	·136364	·041925 +	·009	·019	·143939	·042885 –	·009	·019
134	·127820	·040640	·009	·019	·135338	·041637	·009	·019	·142857	·042592	·009	·019
135	·126866	·040361	·009	·019	·134328	·041353	·009	·019	·141791	·042303	·009	·019
136	·125926	·040085 +	·009	·019	·133333	·041072	·009	·019	·140741	·042017	·009	·019
137	·125000	·039814	·009	·019	·132353	·040796	·009	·019	·139706	·041736	·009	·019
138	·124088	·039546	·009	·019	·131387	·040523	·009	·019	·138686	·041458	·009	·019
139	·123188	·039282	·009	·019	·130435 –	·040253	·009	·019	·137681	·041183	·009	·019
140	·122302	·039021	·009	·019	·129496	·039987	·009	·019	·136691	·040913	·009	·019
141	·121429	·038763	·009	·019	·128571	·039725 –	·009	·019	·135714	·040645 +	·009	·019
142	·120567	·038509	·009	·019	·127660	·039465 +	·009	·019	·134752	·040382	·009	·019
143	·119718	·038258	·009	·019	·126761	·039210	·009	·019	·133803	·040121	·009	·019
144	·118881	·038011	·009	·019	·125874	·038957	·009	·019	·132867	·039864	·009	·019
145	·118056	·037766	·009	·019	·125000	·038708	·009	·019	·131944	·039610	·009	·019
146	·117241	·037525 –	·009	·019	·124138	·038462	·009	·019	·131034	·039360	·009	·019
147	·116438	·037286	·009	·019	·123288	·038218	·009	·019	·130137	·039112	·009	·019
148	·115646	·037051	·009	·019$_5$	·122449	·037978	·009	·019	·129252	·038867	·009	·019
149	·114865 –	·036819	·009	·020	·121622	·037741	·009	·019	·128378	·038626	·009	·019
150	·114094	·036589	·009	·020	·120805 +	·037507	·009	·019$_5$	·127517	·038387	·009	·019$_5$

TABLE IV.—(*continued*).

$N=$ size of sample	3 $\bar{\eta}^2$	3 $\sigma_{\bar{\eta}^2}$	3 P_1 $\lambda_1=3·50$	3 P_2 $\lambda_2=2·94$	4 $\bar{\eta}^2$	4 $\sigma_{\bar{\eta}^2}$	4 P_1 $\lambda_1=3·20$	4 P_2 $\lambda_2=2·80$	5 $\bar{\eta}^2$	5 $\sigma_{\bar{\eta}^2}$	5 P_1 $\lambda_1=3·14$	5 P_2 $\lambda_2=2·68$
151	·013333	·013157	·011	·019	·020000	·016059	·012	·019	·026667	·018480	·011	·020
152	·013245 +	·013071	·011	·019	·019868	·015955 −	·012	·019	·026490	·018360	·011	·020
153	·013158	·012986	·011	·019	·019737	·015851	·012	·019	·026316	·018242	·011	·020
154	·013072	·012902	·011	·019	·019608	·015749	·012	·019	·026144	·018125 +	·011	·020
155	·012987	·012819	·011	·019	·019481	·015649	·012	·019	·025974	·018010	·011	·020
156	·012903	·012738	·011	·019	·019355 −	·015549	·012	·019	·025806	·017896	·011	·020
157	·012821	·012657	·011	·019	·019231	·015451	·012	·019	·025641	·017783	·011	·020
158	·012739	·012578	·011	·019	·019108	·015355 −	·012	·019	·025478	·017672	·011	·020
159	·012658	·012499	·011	·019	·018987	·015259	·012	·019	·025316	·017563	·011	·020
160	·c12579	·012421	·011	·019	·018868	·015164	·012	·019	·025157	·017454	·011	·020
161	·012500	·012345 −	·011	·019	·018750	·015071	·012	·019	·025000	·017347	·011	·020
162	·012422	·012269	·011	·019	·018634	·014979	·012	·019	·024845 −	·017242	·011	·020
163	·012346	·012194	·011	·019	·018519	·014888	·012	·019	·024691	·017137	·011	·020
164	·012270	·012120	·011	·019	·018405 −	·014798	·012	·019	·024540	·017034	·011	·020
165	·012195 +	·012047	·011	·019	·018293	·014709	·012	·019	·024390	·016932	·011	·020
166	·012121	·011975 +	·011	·019	·018182	·014621	·012	·019	·024242	·016831	·011	·020
167	·012048	·011904	·011	·019	·018072	·014535 −	·012	·019	·024096	·016732	·011	·020
168	·011976	·011833	·011	·019	·017964	·014449	·012	·019	·023952	·016633	·011	·020
169	·011905 −	·011764	·011	·019	·017857	·014364	·012	·019	·023810	·016536	·011	·020
170	·011834	·011695 +	·011	·019	·017751	·014281	·012	·019	·023669	·016440	·011	·020
171	·011765 −	·011627	·011	·019	·017647	·014198	·012	·019	·023529	·016345 +	·011	·020
172	·011696	·011560	·011	·019	·017544	·014116	·012	·019	·023392	·016251	·011	·020
173	·011628	·011493	·011	·019	·017442	·014035 +	·012	·019	·023256	·016158	·011	·020
174	·011561	·011428	·011	·019	·017341	·013955 +	·012	·019	·023121	·016067	·011	·020
175	·011494	·011363	·011	·019	·017241	·013876	·012	·019	·022989	·015976	·011	·020
176	·011429	·011299	·011	·019	·017143	·013798	·012	·019	·022857	·015886	·011	·020
177	·011364	·011235 +	·011	·019	·017045 +	·013721	·012	·019	·022727	·015797	·011	·020
178	·011299	·011172	·011	·019	·016949	·013644	·012	·019	·022599	·015710	·011	·020
179	·011236	·011110	·011	·019	·016854	·013569	·012	·019	·022472	·015623	·011	·020
180	·011173	·011049	·011	·019	·016760	·013494	·012	·019	·022346	·015537	·011	·020
181	·011111	·010988	·011	·019	·016667	·013420	·012	·019	·022222	·015452	·011	·020
182	·011050 −	·010928	·011	·019	·016575 −	·013347	·012	·019	·022099	·015368	·011	·020
183	·010989	·010869	·011	·019	·016484	·013275 −	·012	·019	·021978	·015285 +	·011	·020
184	·010929	·010810	·011	·019	·016393	·013203	·012	·019	·021858	·015203	·011	·020
185	·010870	·010752	·011	·019	·016304	·013132	·012	·019	·021739	·015122	·011	·020
186	·010811	·010695 −	·011	·019	·016216	·013062	·012	·019	·021622	·015042	·011	·020
187	·010753	·010638	·011	·019	·016129	·012993	·012	·019	·021505 +	·014962	·011	·020
188	·010695 +	·010581	·011	·019	·016043	·012924	·012	·019	·021390	·014883	·011	·020
189	·010638	·010526	·011	·019	·015957	·012857	·012	·019	·021277	·014805 +	·011	·020
190	·010582	·010471	·011	·019	·015873	·012789	·012	·019	·021164	·014728	·011	·020
191	·010526	·010416	·011	·019	·015789	·012723	·012	·019	·021053	·014652	·011	·020
192	·010471	·010362	·011	·019	·015707	·012657	·012	·019	·020942	·014577	·011	·020
193	·010417	·010309	·011	·019	·015625	·012592	·012	·019	·020833	·014502	·011	·020
194	·010363	·010256	·011	·019	·015544	·012528	·012	·019	·020725 +	·014428	·011	·020
195	·010309	·010204	·011	·019	·015464	·012464	·012	·019	·020619	·014355 −	·011	·020
196	·010256	·010152	·011	·019	·015385 −	·012401	·012	·019	·020513	·014282	·011	·020
197	·010204	·010100	·011	·019	·015306	·012339	·012	·019	·020408	·014210	·011	·020
198	·010152	·010050 −	·011	·019	·015228	·012277	·012	·019	·020305 −	·014139	·011	·020
199	·010101	·009999	·011	·019	·015152	·012216	·012	·019	·020202	·014069	·011	·020
200	·010050 +	·009950 −	·011	·019	·015075 +	·012155 −	·012	·019	·020101	·013999	·011	·020

$N=$ size of sample	6 $\bar{\eta}^2$	6 $\sigma_{\bar{\eta}^2}$	6 P_1 $\lambda_1=3·11$	6 P_2 $\lambda_2=2·63$	7 $\bar{\eta}^2$	7 $\sigma_{\bar{\eta}^2}$	7 P_1 $\lambda_1=3·08$	7 P_2 $\lambda_2=2·58$	8 $\bar{\eta}^2$	8 $\sigma_{\bar{\eta}^2}$	8 P_1 $\lambda_1=3·02$	8 P_2 $\lambda_2=2·54$
151	·033333	·020591	·010	·020	·040000	·022478	·010	·020	·046667	·024195 −	·010	·020
152	·033113	·020458	·010	·020	·039735 +	·022333	·010	·020	·046358	·024039	·010	·020
153	·032895 −	·020326	·010	·020	·039474	·022190	·010	·020	·046053	·023886	·010	·020
154	·032680	·020196	·010	·020	·039216	·022049	·010	·020	·045752	·023735 −	·010	·020
155	·032468	·020068	·010	·020	·038961	·021910	·010	·020	·045455 −	·023585 +	·010	·020
156	·032258	·019942	·010	·020	·038710	·021772	·010	·020	·045161	·023438	·010	·020
157	·032051	·019817	·011	·020	·038462	·021636	·010	·020	·044872	·023292	·010	·020
158	·031847	·019694	·011	·020	·038217	·021502	·010	·020	·044586	·023148	·010	·020
159	·031646	·019572	·011	·020	·037975 −	·021370	·010	·020	·044304	·023006	·010	·020
160	·031447	·019351	·011	·020	·037736	·021239	·010	·020	·044025 +	·022865 +	·010	·020
161	·031250	·019333	·011	·020	·037500	·021109	·010	·020	·043750	·022726	·010	·020
162	·031056	·019215 +	·011	·020	·037267	·020982	·010	·020	·043478	·022589	·010	·020
163	·030864	·019099	·011	·020	·037037	·020855 +	·010	·020	·043210	·022454	·010	·020
164	·030675 −	·018984	·011	·020	·036810	·020731	·010	·020	·042945 −	·022320	·010	·020
165	·030488	·018871	·011	·020	·036585 +	·020607	·010	·020	·042683	·022188	·010	·020
166	·030303	·018759	·011	·020	·036364	·020486	·010	·020	·042424	·022057	·010	·020
167	·030120	·018649	·011	·020	·036145 −	·020365 +	·010	·020	·042169	·021928	·010	·020
168	·029940	·018539	·011	·020	·035928	·020246	·010	·020	·041916	·021800	·010	·020
169	·029762	·018431	·011	·020	·035714	·020129	·010	·020	·041667	·021674	·010	·020
170	·029586	·018325 −	·011	·020	·035503	·020012	·010	·020	·041420	·021549	·010	·020
171	·029412	·018219	·011	·020	·035294	·019898	·010	·020	·041176	·021426	·010	·020
172	·029240	·018115 −	·011	·020	·035088	·019784	·010	·020	·040936	·021304	·010	·020
173	·029070	·018012	·011	·020	·034884	·019672	·010	·020	·040698	·021184	·010	·020
174	·028902	·017910	·011	·020	·034682	·019561	·010	·020	·040462	·021065 −	·010	·020
175	·028736	·017809	·011	·020	·034483	·019451	·010	·020	·040230	·020947	·010	·020
176	·028571	·017709	·011	·020	·034286	·019342	·010	·020	·040000	·020830	·010	·020
177	·028409	·017611	·011	·020	·034091	·019235 +	·010	·020	·039773	·020715 −	·010	·020
178	·028249	·017513	·011	·020	·033898	·019129	·010	·020	·039548	·020601	·010	·020
179	·028090	·017417	·011	·020	·033708	·019024	·010	·020	·039326	·020488	·010	·020
180	·027933	·017321	·011	·020	·033520	·018920	·010	·020	·039106	·020377	·010	·020
181	·027778	·017227	·011	·020	·033333	·018817	·010	·020	·038889	·020267	·010	·020
182	·027624	·017134	·011	·020	·033149	·018716	·010	·020	·038674	·020157	·010	·020
183	·027473	·017041	·011	·020	·032967	·018615 +	·010	·020	·038462	·020049	·010	·020
184	·027322	·016950 +	·011	·020	·032787	·018516	·010	·020	·038251	·019943	·010	·020
185	·027174	·016860	·011	·020	·032609	·018417	·010	·020	·038043	·019837	·010	·020
186	·027027	·016770	·011	·020	·032432	·018320	·010	·020	·037838	·019732	·010	·020
187	·026882	·016682	·011	·020	·032258	·018224	·010	·020	·037634	·019629	·010	·020
188	·026738	·016594	·011	·020	·032086	·018128	·010	·020	·037433	·019527	·010	·020
189	·026596	·016508	·011	·020	·031915 −	·018034	·010	·020	·037234	·019425 +	·010	·020
190	·026455 +	·016422	·011	·020	·031746	·017941	·010	·020	·037037	·019325 +	·010	·020
191	·026316	·016337	·011	·020	·031579	·017848	·010	·020	·036842	·019226	·010	·020
192	·026178	·016253	·011	·020	·031414	·017757	·010	·020	·036649	·019128	·010	·020
193	·026042	·016170	·011	·020	·031250	·017666	·010	·020	·036458	·019030	·010	·020
194	·025907	·016088	·011	·020	·031088	·017577	·010	·020	·036269	·018934	·010	·020
195	·025773	·016007	·011	·020	·030928	·017488	·010	·020	·036082	·018839	010	·020
196	·025641	·015926	·011	·020	·030769	·017400	·010	·020	·035897	·018745 −	·010	·020
197	·025510	·015846	·011	·020	·030612	·017313	·010	·020	·035714	·018651	·010	·020
198	·025381	·015767	·011	·020	·030457	·017227	·010	·020	·035533	·018559	·010	·020
199	·025253	·015689	·011	·020	·030303	·017142	·010	·020	·035354	·018467	·010	·020
200	·025126	·015612	·011	·020	·030151	·017058	·010	·020	·035176	·018377	·010	·020

TABLE IV.—(*continued*).

N = size of sample	9: $\bar{\eta}^2$	9: $\sigma_{\bar{\eta}^2}$	9: P_1 $\lambda_1 = 2·96$	9: P_2 $\lambda_2 = 2·50$	10: $\bar{\eta}^2$	10: $\sigma_{\bar{\eta}^2}$	10: P_1^* $\lambda_1 = 2·92$	10: P_2 $\lambda_2 = 2·47$	11: $\bar{\eta}^2$	11: $\sigma_{\bar{\eta}^2}$	11: P_1 $\lambda_1 = 2·88$	11: P_2 $\lambda_2 = 2·44$
151	·053333	·025775 −	·010	·020	·060000	·027242	·010	·020	·066667	·028613	·010	·020
152	·052980	·025610	·010	·020	·059603	·027068	·010	·020	·066225 +	·028432	·010	·020
153	·052632	·025447	·010	·020	·059211	·026897	·010	·020	·065789	·028252	·010	·020
154	·052288	·025286	·010	·020	·058824	·026728	·010	·020	·065359	·028075 +	·010	·020
155	·051948	·025128	·010	·020	·058442	·026561	·010	·020	·064935 +	·027901	·010	·020
156	·051613	·024971	·010	·020	·058065 −	·026396	·010	·020	·064516	·027728	·010	·020
157	·051282	·024816	·010	·020	·057692	·026233	·010	·020	·064103	·027557	·010	·020
158	·050955 +	·024664	·010	·020	·057325 −	·026072	·010	·020	·063694	·027389	·010	·020
159	·050633	·024513	·010	·020	·056962	·025913	·010	·020	·063291	·027223	·010	·020
160	·050314	·024363	·010	·020	·056604	·025756	·010	·020	·062893	·027058	·010	·020
161	·050000	·024216	·010	·020	·056250	·025600	·010	·020	·062500	·026896	·010	·020
162	·049689	·024071	·010	·020	·055901	·025447	·010	·020	·062112	·026735 +	·010	·020
163	·049383	·023927	·010	·020	·055556	·025296	·010	·020	·061728	·026577	·010	·020
164	·049080	·023785 −	·010	·020	·055215 −	·025146	·010	·020	·061350 −	·026420	·010	·020
165	·048780	·023644	·010	·020	·054878	·024998	·010	·020	·060976	·026265 +	·010	·020
166	·048485 −	·023505 +	·010	·020	·054545 +	·024852	·010	·020	·060606	·026112	·010	·020
167	·048193	·023368	·010	·020	·054217	·024707	·010	·020	·060241	·025961	·010	·020
168	·047904	·023233	·010	·020	·053892	·024564	·010	·020	·059880	·025811	·010	·020
169	·047619	·023099	·010	·020	·053571	·024423	·010	·020	·059524	·025663	·010	·020
170	·047337	·022966	·010	·020	·053254	·024284	·010	·020	·059172	·025517	·010	·020
171	·047059	·022835 +	·010	·020	·052941	·024145 +	·010	·020	·058824	·025372	·010	·020
172	·046784	·022706	·010	·020	·052632	·024009	·010	·020	·058480	·025230	·010	·020
173	·046512	·022578	·010	·020	·052326	·023874	·010	·020	·058140	·025088	·010	·020
174	·046243	·022451	·010	·020	·052023	·023741	·010	·020	·057803	·024948	·010	·020
175	·045977	·022326	·010	·020	·051724	·023609	·010	·020	·057471	·024810	·010	·020
176	·045714	·022202	·010	·020	·051429	·023478	·010	·020	·057143	·024674	·010	·020
177	·045455 −	·022080	·010	·020	·051136	·023349	·010	·020	·056818	·024538	·010	·020
178	·045198	·021959	·010	·020	·050847	·023222	·010	·020	·056497	·024405 −	·010	·020
179	·044944	·021839	·010	·020	·050562	·023095 +	·010	·020	·056180	·024272	·010	·020
180	·044693	·021720	·010	·020	·050279	·022970	·010	·020	·055866	·024142	·010	·020
181	·044444	·021603	·010	·020	·050000	·022847	·010	·020	·055556	·024012	·010	·020
182	·044199	·021487	·010	·020	·049724	·022725 −	·010	·020	·055249	·023884	·010	·020$_5$
183	·043956	·021372	·010	·020	·049451	·022604	·010	·020	·054945 +	·023757	·010	·021
184	·043716	·021259	·010	·020	·049180	·022484	·010	·020	·054645 −	·023632	·010	·021
185	·043478	·021147	·010	·020	·048913	·022366	·010	·020	·054348	·023508	·010	·021
186	·043243	·021036	·010	·020	·048649	·022248	·010	·020	·054054	·023385 +	·010	·021
187	·043011	·020926	·010	·020	·048387	·022133	·010	·020	·053763	·023264	·010	·021
188	·042781	·020817	·010	·020	·048128	·022018	·010	·020	·053476	·023144	·010	·021
189	·042553	·020709	·010	·020	·047872	·021904	·010	·020	·053191	·023025 −	·010	·021
190	·042328	·020603	·010	·020	·047619	·021792	·010	·020	·052910	·022907	·010	·021
191	·042105 +	·020497	·010	·020	·047368	·021681	·010	·020	·052632	·022790	·010	·021
192	·041885 −	·020393	·010	·020	·047120	·021570	·010	·020	·052356	·022675 −	·010	·021
193	·041667	·020289	·010	·020	·046875	·021461	·010	·020	·052083	·022560	·010	·021
194	·041451	·020187	·010	·020	·046632	·021354	·010	·020	·051813	·022447	·010	·021
195	·041237	·020086	·010	·020	·046392	·021247	·010	·020	·051546	·022335 +	·010	·021
196	·041026	·019985 +	·010	·020	·046154	·021141	·010	·020	·051282	·022225 −	·010	·021
197	·040816	·019886	·010	·020	·045918	·021036	·010	·020	·051020	·022115 −	·010	·021
198	·040609	·019788	·010	·020	·045685 +	·020933	·010	·020	·050761	·022006	·010	·021
199	·040404	·019690	·010	·020	·045455 −	·020830	·010	·020	·050505 +	·021898	·010	·021
200	·040201	·019594	·010	·020	·045226	·020728	·010	·020	·050251	·021792	·010	·021

N = size of sample	12: $\bar{\eta}^2$	12: $\sigma_{\bar{\eta}^2}$	12: P_1 $\lambda_1 = 2·84$	12: P_2 $\lambda_2 = 2·42$	13: $\bar{\eta}^2$	13: $\sigma_{\bar{\eta}^2}$	13: P_1 $\lambda_1 = 2·80$	13: P_2 $\lambda_2 = 2·40$	14: $\bar{\eta}^2$	14: $\sigma_{\bar{\eta}^2}$	14: P_1 $\lambda_1 = 2·79$	14: P_2 $\lambda_2 = 2·39$
151	·073333	·029902	·010	·020	·080000	·031119	·010	·020	·086667	·032273	·010	·020
152	·072848	·029713	·010	·020	·079470	·030924	·010	·020	·086093	·032070	·010	·020
153	·072368	·029527	·010	·020	·078947	·030730	·010	·020	·085526	·031871	·010	·020
154	·071895 +	·029343	·010	·020	·078431	·030539	·010	·020	·084967	·031673	·010	·020
155	·071429	·029161	·010	·020	·077922	·030351	·010	·020	·084416	·031478	·010	·020
156	·070968	·028981	·010	·020	·077419	·030164	·010	·020	·083871	·031286	·010	·020
157	·070513	·028803	·010	·020	·076923	·029980	·010	·020	·083333	·031096	·010	·020
158	·070064	·028628	·010	·020	·076433	·029798	·010	·020	·082803	·030908	·010	·020
159	·069620	·028455 −	·010	·020	·075949	·029619	·010	·020	·082278	·030722	·010	·020
160	·069182	·028283	·010	·020	·075472	·029441	·010	·020	·081761	·030539	·010	·020
161	·068750	·028114	·010	·020	·075000	·029266	·010	·020	·081250	·030358	·010	·020
162	·068323	·027947	·010	·020	·074534	·029092	·010	·020	·080745 +	·030179	·010	·020
163	·067901	·027782	·010	·020	·074074	·028921	·010	·020	·080247	·030001	·010	·020
164	·067485 −	·027619	·010	·020	·073620	·028752	·010	·020	·079755 −	·029827	·010	·020
165	·067073	·027457	·010	·020	·073171	·028584	·010	·020	·079268	·029654	·010	·020
166	·066667	·027298	·010	·020	·072727	·028419	·010	·020	·078788	·029483	·010	·020
167	·066265 +	·027140	·010	·020	·072289	·028256	·010	·020	·078313	·029314	·010	·020
168	·065868	·026984	·010	·020	·071856	·028094	·010	·020	·077844	·029147	·010	·020
169	·065476	·026830	·010	·020	·071429	·027934	·010	·020	·077381	·028981	·010	·020
170	·065089	·026678	·010	·020	·071006	·027776	·010	·020	·076923	·028818	·010	·020
171	·064706	·026528	·010	·020	·070588	·027620	·010	·020	·076471	·028657	·010	·020
172	·064327	·026379	·010	·020	·070175 +	·027465 +	·010	·020	·076023	·028497	·010	·020
173	·063953	·026231	·010	·020	·069767	·027313	·010	·020	·075581	·028339	·010	·020
174	·063584	·026086	·010	·020	·069364	·027161	·010$_5$	·020	·075145 −	·028183	·010	·020
175	·063218	·025942	·010	·020	·068966	·027012	·011	·020	·074713	·028028	·010	·020
176	·062857	·025799	·010	·020	·068571	·026864	·011	·020	·074286	·027875 +	·010	·020
177	·062500	·025658	·010	·020	·068182	·026718	·011	·020	·073864	·027724	·010	·020
178	·062147	·025519	·010	·020	·067797	·026573	·011	·020	·073446	·027575 −	·010	·020
179	·061798	·025381	·010	·020$_5$	·067416	·026430	·011	·020	·073034	·027427	·010	·020
180	·061453	·025245 −	·010	·021	·067039	·026289	·011	·020	·072626	·027280	·010	·020
181	·061111	·025110	·010	·021	·066667	·026149	·011	·020	·072222	·027135 +	·010	·020
182	·060773	·024977	·010	·021	·066298	·026010	·011	·020$_5$	·071823	·026992	·010	·020
183	·060440	·024844	·010	·021	·065934	·025873	·011	·021	·071429	·026850 +	·010	·020
184	·060109	·024714	·010	·021	·065574	·025738	·011	·021	·071038	·026710	·010	·020
185	·059783	·024584	·010	·021	·065217	·025603	·011	·021	·070652	·026571	·010	·020
186	·059459	·024456	·010	·021	·064865 −	·025470	·011	·021	·070270	·026434	·010	·020
187	·059140	·024330	·010	·021	·064516	·025339	·011	·021	·069892	·026298	·010	·020
188	·058824	·024204	·010	·021	·064171	·025209	·011	·021	·069519	·026163	·010	·020
189	·058511	·024080	·010	·021	·063830	·025080	·011	·021	·069149	·026030	·010	·020
190	·058201	·023958	·010	·021	·063492	·024952	·011	·021	·068783	·025898	·010	·020
191	·057895 −	·023836	·010	·021	·063158	·024826	·011	·021	·068421	·025767	·010	·020
192	·057592	·023716	·010	·021	·062827	·024701	·011	·021	·068063	·025638	·010	·020
193	·057292	·023597	·010	·021	·062500	·024578	·011	·021	·067708	·025510	·010	·020
194	·056995 −	·023479	·010	·021	·062176	·024455 +	·011	·021	·067358	·025383	·010	·020
195	·056701	·023362	·010	·021	·061856	·024334	·011	·021	·067010	·025258	·010	·020
196	·056410	·023246	·010	·021	·061538	·024214	·011	·021	·066667	·025134	·010	·020
197	·056122	·023132	·010	·021	·061224	·024095 −	·011	·021	·066327	·025011	·010	·020
198	·055838	·023018	·010	·021	·060914	·023977	·011	·021	·065990	·024889	·010	·020
199	·055556	·022906	·010	·021	·060606	·023861	·011	·021	·065657	·024768	·010	·020
200	·055276	·022795 −	·010	·021	·060302	·023745 +	·011	·021	·065327	·024649	·010	·020$_5$

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15: $\bar{\eta}^2$	15: $\sigma_{\bar{\eta}^2}$	15: P_1 $\lambda_1=2·78$	15: P_2 $\lambda_2=2·38$	16: $\bar{\eta}^2$	16: $\sigma_{\bar{\eta}^2}$	16: P_1 $\lambda_1=2·77$	16: P_2 $\lambda_2=2·37$
151	·093333	·033368	·010	·020	·100000	·034412	·010	·020
152	·092715 +	·033160	·010	·020	·099338	·034199	·010	·020
153	·092105 +	·032954	·010	·020	·098684	·033987	·010	·020
154	·091503	·032751	·010	·020	·098039	·033779	·010	·020
155	·090909	·032551	·010	·020	·097403	·033573	·010	·020
156	·090323	·032352	·010	·020	·096774	·033369	·010	·020
157	·089744	·032157	·010	·020	·096154	·033168	·010	·020
158	·089172	·031963	·010	·020	·095541	·032969	·010	·020
159	·088608	·031772	·010	·020	·094937	·032773	·010	·020
160	·088050 +	·031583	·010	·020	·094340	·032579	·010	·020
161	·087500	·031396	·010	·020	·093750	·032387	·010	·020
162	·086957	·031212	·010	·020	·093168	·032197	·010	·020
163	·086420	·031029	·010	·020	·092593	·032010	·010	·020
164	·085890	·030849	·010	·020	·092025 −	·031825 −	·010	·020
165	·085366	·030671	·010	·020	·091463	·031641	·010	·020
166	·084848	·030495 −	·010	·020	·090909	·031460	·010	·020
167	·084337	·030321	·010	·020	·090361	·031281	·010	·020
168	·083832	·030148	·010	·020	·089820	·031104	·010	·020
169	·083333	·029978	·010	·020	·089286	·030929	·010	·020
170	·082840	·029810	·010	·020	·088757	·030756	·010	·020
171	·082353	·029643	·010	·020	·088235 +	·030585 +	·010	·020
172	·081871	·029479	·010	·020	·087719	·030416	·010	·020
173	·081395 +	·029316	·010	·020	·087209	·030249	·010	·020
174	·080925 −	·029155 −	·010	·020	·086705 +	·030083	·010	·020
175	·080460	·028996	·010	·020	·086207	·029919	·010	·020
176	·080000	·028838	·010	·020	·085714	·029757	·010	·020
177	·079545 +	·028682	·010	·020	·085227	·029597	·010	·020
178	·079096	·028528	·010	·020	·084746	·029439	·010	·020
179	·078652	·028376	·010	·020	·084270	·029282	·010	·020
180	·078212	·028225 −	·010	·020	·083799	·029127	·010	·020
181	·077778	·028075 +	·010	·020	·083333	·028973	·010	·020
182	·077348	·027928	·010	·020	·082873	·028821	·010	·020
183	·076923	·027781	·010	·020	·082418	·028671	·010	·020
184	·076503	·027637	·010	·020	·081967	·028522	·010	·020
185	·076087	·027493	·010	·020	·081522	·028375 −	·010	·020
186	·075676	·027352	·010	·020	·081081	·028229	·010	·020
187	·075269	·027211	·010	·020	·080645 +	·028085 −	·010	·020
188	·074866	·027073	·010	·020	·080214	·027942	·010	·020
189	·074468	·026935 +	·010	·020	·079787	·027800	·010	·020
190	·074074	·026799	·010	·020	·079365 +	·027660	·010	·020
191	·073684	·026664	·010	·020	·078947	·027522	·010	·020
192	·073298	·026531	·010	·020	·078534	·027385 −	·010	·020
193	·072917	·026399	·010	·020	·078125	·027249	·010	·020
194	·072539	·026268	·010	·020	·077720	·027114	·010	·020
195	·072165 −	·026139	·010	·020	·077320	·026981	·010	·020
196	·071795 −	·026011	·010	·020	·076923	·026849	·010	·020
197	·071429	·025884	·010	·020	·076531	·026718	·010	·020
198	·071066	·025758	·010	·020	·076142	·026589	·010	·020
199	·070707	·025633	·010	·020	·075758	·026461	·010	·020
200	·070352	·025510	·010	·020	·075377	·026334	·010	·020

N = size of sample	17: $\bar{\eta}^2$	17: $\sigma_{\bar{\eta}^2}$	17: P_1 $\lambda_1=2·76$	17: P_2 $\lambda_2=2·36$	18: $\bar{\eta}^2$	18: $\sigma_{\bar{\eta}^2}$	18: P_1 $\lambda_1=2·75$	18: P_2 $\lambda_2=2·35$
151	·106667	·035409	·009	·020	·113333	·036362	·009	·020
152	·105960	·035190	·009	·020	·112583	·036138	·009	·020
153	·105263	·034974	·009	·020	·111842	·035917	·009	·020
154	·104575 +	·034760	·009	·020	·111111	·035699	·009	·020
155	·103896	·034549	·010	·020	·110390	·035483	·009	·020
156	·103226	·034340	·010	·020	·109677	·035269	·009	·020
157	·102564	·034134	·010	·020	·108974	·035059	·009	·020
158	·101911	·033930	·010	·020	·108280	·034850 +	·009	·020
159	·101266	·033729	·010	·020	·107595 −	·034644	·009	·020
160	·100629	·033530	·010	·020	·106918	·034441	·009	·020
161	·100000	·033333	·010	·020	·106250	·034240	·009	·020
162	·099379	·033139	·010	·020	·105590	·034041	·009	·020
163	·098765 +	·032947	·010	·020	·104938	·033844	·009	·020
164	·098160	·032757	·010	·020	·104294	·033650 +	·009	·020
165	·097561	·032569	·010	·020	·103659	·033458	·009	·020
166	·096970	·032384	·010	·020	·103030	·033268	·009$_5$	·020
167	·096386	·032200	·010	·020	·102410	·033080	·010	·020
168	·095808	·032019	·010	·020	·101796	·032895 −	·010	·020
169	·095238	·031839	·010	·020	·101190	·032711	·010	·020
170	·094675 −	·031662	·010	·020	·100592	·032529	·010	·020
171	·094118	·031486	·010	·020	·100000	·032350 −	·010	·020
172	·093567	·031313	·010	·020	·099415 +	·032172	·010	·020
173	·093023	·031141	·010	·020	·098837	·031996	·010	·020
174	·092486	·030971	·010	·020	·098266	·031823	·010	·020
175	·091954	·030803	·010	·020	·097701	·031651	·010	·020
176	·091429	·030637	·010	·020	·097143	·031481	·010	·020
177	·090909	·030473	·010	·020	·096591	·031312	·010	·020
178	·090395 +	·030310	·010	·020	·096045 +	·031146	·010	·020
179	·089888	·030149	·010	·020	·095506	·030981	·010	·020
180	·089385 +	·029990	·010	·020	·094972	·030818	·010	·020
181	·088889	·029832	·010	·020	·094444	·030657	·010	·020
182	·088398	·029677	·010	·020	·093923	·030497	·010	·020
183	·087912	·029522	·010	·020	·093407	·030339	·010	·020
184	·087432	·029369	·010	·020	·092896	·030183	·010	·020
185	·086957	·029218	·010	·020	·092391	·030028	·010	·020
186	·086486	·029069	·010	·020	·091892	·029875 −	·010	·020
187	·086022	·028921	·010	·020	·091398	·029723	·010	·020
188	·085561	·028774	·010	·020	·090909	·029573	·010	·020
189	·085106	·028629	·010	·020	·090426	·029424	·010	·020
190	·084656	·028485 +	·010	·020	·089947	·029277	·010	·020
191	·084211	·028343	·010	·020	·089474	·029131	·010	·020
192	·083770	·028202	·010	·020	·089005 +	·028987	·010	·020
193	·083333	·028063	·010	·020	·088542	·028844	·010	·020
194	·082902	·027925 −	·010	·020	·088083	·028703	·010	·020
195	·082474	·027788	·010	·020	·087629	·028563	·010	·020
196	·082051	·027652	·010	·020	·087179	·028424	·010	·020
197	·081633	·027518	·010	·020	·086735 −	·028286	·010	·020
198	·081218	·027386	·010	·020	·086294	·028150 +	·010	·020
199	·080808	·027254	·010	·020	·085859	·028016	·010	·020
200	·080402	·027124	·010	·020	·085427	·027882	·010	·020

N = size of sample	19: $\bar{\eta}^2$	19: $\sigma_{\bar{\eta}^2}$	19: P_1 $\lambda_1=2·74$	19: P_2 $\lambda_2=2·34$	20: $\bar{\eta}^2$	20: $\sigma_{\bar{\eta}^2}$	20: P_1 $\lambda_1=2·73$	20: P_2 $\lambda_2=2·33$
151	·120000	·037276	·009	·020	·126667	·038152	·009	·020
152	·119205 +	·037047	·009	·020	·125828	·037919	·009	·020
153	·118421	·036821	·009	·020	·125000	·037689	·009	·020
154	·117647	·036598	·009	·020	·124183	·037462	·009	·020
155	·116883	·036378	·009	·020	·123377	·037237	·009	·020
156	·116129	·036160	·009	·020	·122581	·037015 +	·009	·020
157	·115385 −	·035945 +	·009	·020	·121795 −	·036796	·009	·020
158	·114650 −	·035732	·009	·020	·121019	·036579	·009	·020
159	·113924	·035522	·009	·020	·120253	·036365 −	·009	·020
160	·113208	·035314	·009	·020	·119497	·036153	·009	·020
161	·112500	·035109	·009	·020	·118750	·035944	·009	·020
162	·111801	·034906	·009	·020	·118012	·035737	·009	·020
163	·111111	·034705 +	·009	·020	·117284	·035532	·009	·020
164	·110429	·034507	·009	·020	·116564	·035330	·009	·020
165	·109756	·034311	·009	·020	·115854	·035130	·009	·020
166	·109091	·034117	·009	·020	·115152	·034932	·009	·020
167	·108434	·033925 −	·009	·020	·114458	·034737	·009	·020
168	·107784	·033735 +	·009	·020	·113772	·034543	·009	·020
169	·107143	·033548	·009	·020	·113095 +	·034352	·009	·020
170	·106509	·033362	·009	·020	·112426	·034163	·009	·020
171	·105882	·033179	·009	·020	·111765 −	·033976	·009	·020
172	·105263	·032997	·009	·020	·111111	·033790	·009	·020
173	·104651	·032818	·009	·020	·110465 +	·033607	·009	·020
174	·104046	·032640	·009	·020	·109827	·033426	·009	·020
175	·103448	·032464	·009	·020	·109195 +	·033247	·009	·020
176	·102857	·032291	·009	·020	·108571	·033070	·009	·020
177	·102273	·032119	·009	·020	·107955 −	·032894	·009	·020
178	·101695 −	·031948	·009	·020	·107345 −	·032721	·009	·020
179	·101124	·031780	·009	·020	·106742	·032549	·009	·020
180	·100559	·031613	·009$_5$	·020	·106145 +	·032379	·009	·020
181	·100000	·031449	·010	·020	·105556	·032210	·009	·020
182	·099448	·031285 +	·010	·020	·104972	·032044	·009	·020
183	·098901	·031124	·010	·020	·104396	·031879	·009	·020
184	·098361	·030964	·010	·020	·103825 +	·031716	·009	·020
185	·097826	·030806	·010	·020	·103261	·031554	·009	·020
186	·097297	·030649	·010	·020	·102703	·031394	·009	·020
187	·096774	·030494	·010	·020	·102151	·031236	·009	·020
188	·096257	·030340	·010	·020	·101604	·031079	·009	·020
189	·095745 −	·030188	·010	·020	·101064	·030924	·009$_5$	·020
190	·095238	·030038	·010	·020	·100529	·030771	·010	·020
191	·094737	·029889	·010	·020	·100000	·030619	·010	·020
192	·094241	·029741	·010	·020	·099476	·030468	·010	·020
193	·093750	·029595 +	·010	·020	·098958	·030319	·010	·020
194	·093264	·029451	·010	·020	·098446	·030171	·010	·020
195	·092784	·029307	·010	·020	·097938	·030025 −	·010	·020
196	·092308	·029166	·010	·020	·097436	·029880	·010	·020
197	·091837	·029025 +	·010	·020	·096939	·029736	·010	·020
198	·091371	·028886	·010	·020	·096447	·029594	·010	·020
199	·090909	·028748	·010	·020	·095960	·029454	·010	·020
200	·090452	·028611	·010	·020	·095477	·029314	·010	·020

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 $\lambda_1 =$ 3·50	3: P_2 $\lambda_2 =$ 2·94	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 $\lambda_1 =$ 3·20	4: P_2 $\lambda_2 =$ 2·80	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 $\lambda_1 =$ 3·14	5: P_2 $\lambda_2 =$ 2·68
201	·010000	·009900	·011	·019	·015000	·012095 –	·012	·019	·020000	·013931	·011	·020
202	·009950 +	·009852	·011	·019	·014925 +	·012036	·012	·0195	·019900	·013862	·011	·020
203	·009901	·009803	·011	·019	·014851	·011977	·012	·020	·019802	·013795 –	·011	·020
204	·009852	·009756	·011	·019	·014778	·011918	·012	·020	·019704	·013728	·011	·020
205	·009804	·009708	·011	·019	·014706	·011861	·012	·020	·019608	·013661	·011	·020
206	·009756	·009661	·011	·019	·014634	·011804	·012	·020	·019512	·013596	·011	·020
207	·009709	·009615 –	·011	·019	·014563	·011747	·012	·020	·019417	·013531	·011	·020
208	·009662	·009569	·011	·019	·014493	·011691	·012	·020	·019324	·013466	·011	·020
209	·009615 +	·009523	·011	·019	·014423	·011635 +	·012	·020	·019231	·013403	·011	·020
210	·009569	·009478	·011	·019	·014354	·011580	·012	·020	·019139	·013339	·011	·020
211	·009524	·009434	·011	·019	·014286	·011526	·012	·020	·019048	·013277	·011	·020
212	·009479	·009389	·011	·019	·014218	·011472	·012	·020	·018957	·013215 –	·011	·020
213	·009434	·009345 +	·011	·019	·014151	·011418	·012	·020	·018868	·013153	·011	·020
214	·009390	·009302	·011	·019	·014085 –	·011365 +	·012	·020	·018779	·013092	·011	·020
215	·009346	·009259	·011	·019	·014019	·011313	·012	·020	·018692	·013032	·011	·020
216	·009302	·009216	·011	·019	·013953	·011261	·012	·020	·018605 –	·012972	·011	·020
217	·009259	·009174	·011	·019	·013889	·011209	·012	·020	·018519	·012913	·011	·020
218	·009217	·009132	·011	·019	·013825 –	·011158	·012	·020	·018433	·012854	·011	·020
219	·009174	·009091	·011	·019	·013761	·011108	·012	·020	·018349	·012796	·011	·020
220	·009132	·009049	·011	·019	·013699	·011058	·012	·020	·018265 –	·012739	·011	·020
221	·009091	·009009	·011	·019	·013636	·011008	·012	·020	·018182	·012682	·011	·020
222	·009050 –	·008968	·011	·019	·013575 –	·010959	·012	·020	·018100	·012625 –	·011	·020
223	·009009	·008928	·011	·019	·013514	·010910	·012	·020	·018018	·012569	·011	·020
224	·008969	·008889	·011	·019	·013453	·010862	·012	·020	·017937	·012513	·011	·020
225	·008929	·008849	·011	·019	·013393	·010814	·012	·020	·017857	·012458	·011	·020
226	·008889	·008810	·011	·019	·013333	·010766	·012	·020	·017778	·012404	·011	·020
227	·008850 –	·008772	·011	·019	·013274	·010719	·012	·020	·017699	·012349	·011	·020
228	·008811	·008733	·011	·019	·013216	·010672	·012	·020	·017621	·012296	·011	·020
229	·008772	·008695 +	·011	·019	·013158	·010626	·012	·020	·017544	·012243	·011	·020
230	·008734	·008658	·011	·019	·013100	·010580	·012	·020	·017467	·012190	·011	·020
231	·008696	·008620	·011	·019	·013043	·010535 –	·012	·020	·017391	·012137	·011	·020
232	·008658	·008583	·011	·019	·012987	·010489	·012	·020	·017316	·012086	·011	·020
233	·008621	·008547	·011	·019	·012931	·010445 –	·012	·020	·017241	·012034	·011	·020
234	·008584	·008510	·011	·019	·012876	·010400	·012	·020	·017167	·011983	·011	·020
235	·008547	·008474	·011	·019	·012821	·010356	·012	·020	·017094	·011933	·011	·020
236	·008511	·008439	·011	·019	·012766	·010313	·012	·020	·017021	·011883	·011	·020
237	·008475	·008403	·011	·019	·012712	·010270	·012	·020	·016949	·011833	·011	·020
238	·008439	·008368	·011	·019	·012658	·010227	·012	·020	·016878	·011784	·011	·020
239	·008403	·008333	·011	·019	·012605 +	·010184	·012	·020	·016807	·011735 –	·011	·020
240	·008368	·008298	·011	·019	·012552	·010142	·012	·020	·016736	·011686	·011	·020
241	·008333	·008264	·011	·019	·012500	·010100	·012	·020	·016667	·011638	·011	·020
242	·008299	·008230	·011	·019	·012448	·010059	·012	·020	·016598	·011590	·0115	·020
243	·008264	·008196	·011	·019	·012397	·010018	·012	·020	·016529	·011543	·012	·020
244	·008230	·008163	·011	·019	·012346	·009977	·012	·020	·016461	·011496	·012	·020
245	·008197	·008130	·011	·019	·012295 +	·009936	·012	·020	·016393	·011450 –	·012	·020
246	·008163	·008097	·011	·019	·012245 –	·009896	·012	·020	·016327	·011404	·012	·020
247	·008130	·008064	·011	·019	·012195 +	·009856	·012	·020	·016260	·011358	·012	·020
248	·008097	·008032	·011	·019	·012146	·009817	·012	·020	·016194	·011312	·012	·020
249	·008065 –	·008000	·011	·019	·012097	·009778	·012	·020	·016129	·011267	·012	·020
250	·008032	·007968	·011	·019	·012048	·009739	·012	·020	·016064	·011223	·012	·020

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 $\lambda_1 =$ 3·11	6: P_2 $\lambda_2 =$ 2·63	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 $\lambda_1 =$ 3·08	7: P_2 $\lambda_2 =$ 2·58	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 $\lambda_1 =$ 3·02	8: P_2 $\lambda_2 =$ 2·54
201	·025000	·015535 +	·011	·020	·030000	·016974	·010	·020	·035000	·018287	·010	·020
202	·024876	·015459	·011	·020	·029851	·016891	·010	·020	·034826	·018198	·010	·020
203	·024752	·015384	·011	·020	·029703	·016809	·010	·020	·034653	·018110	·010	·020
204	·024631	·015309	·011	·020	·029557	·016728	·010	·020	·034483	·018023	·010	·020
205	·024510	·015236	·011	·020	·029412	·016648	·010	·020	·034314	·017936	·010	·020
206	·024390	·015163	·011	·020	·029268	·016568	·010	·020	·034146	·017851	·010	·020
207	·024272	·015090	·011	·020	·029126	·016489	·010	·020	·033981	·017766	·010	·020
208	·024155 –	·015019	·011	·020	·028986	·016411	·010	·020	·033816	·017682	·010	·020
209	·024038	·014948	·011	·020	·028846	·016334	·010	·020	·033654	·017599	·010	·020
210	·023923	·014877	·011	·020	·028708	·016257	·010	·020	·033493	·017517	·010	·020
211	·023810	·014808	·011	·020	·028571	·016181	·010	·020	·033333	·017435 +	·010	·020
212	·023697	·014739	·011	·020	·028436	·016106	·010	·020	·033175 +	·017354	·010	·020
213	·023585 –	·014670	·011	·020	·028302	·016032	·010	·020	·033019	·017274	·010	·020
214	·023474	·014603	·011	·020	·028169	·015958	·010	·020	·032864	·017195 –	·010	·020
215	·023364	·014536	·011	·020	·028037	·015885 –	·010	·020	·032710	·017116	·010	·020
216	·023256	·014469	·011	·020	·027907	·015812	·010	·020	·032558	·017038	·010	·020
217	·023148	·014403	·011	·020	·027778	·015740	·010	·020	·032407	·016961	·010	·020
218	·023041	·014338	·011	·020	·027650 –	·015669	·010	·020	·032258	·016885 –	·010	·020
219	·022936	·014273	·011	·020	·027523	·015599	·010	·020	·032110	·016809	·010	·020
220	·022831	·014209	·011	·020	·027397	·015529	·010	·020	·031963	·016734	·010	·020
221	·022727	·014146	·011	·020	·027273	·015460	·010	·020	·031818	·016659	·010	·020
222	·022624	·014083	·011	·020	·027149	·015391	·010	·020	·031674	·016585 +	·010	·020
223	·022523	·014020	·011	·020	·027027	·015323	·010	·020	·031532	·016512	·010	·020
224	·022422	·013958	·011	·020	·026906	·015255 +	·010	·020	·031390	·016440	·010	·020
225	·022321	·013897	·011	·020	·026786	·015189	·010	·020	·031250 –	·016368	·010	·020
226	·022222	·013836	·011	·020	·026667	·015122	·010	·020	·031111	·016297	·010	·020
227	·022124	·013776	·011	·020	·026549	·015057	·010	·020	·030973	·016226	·010	·020
228	·022026	·013716	·011	·020	·026432	·014991	·010	·020	·030837	·016156	·010	·020
229	021930	·013657	·011	·020	·026316	·014927	·010	·020	·030702	·016086	·010	·020
230	·021834	·013598	·011	·020	·026201	·014863	·010	·020	·030568	·016018	·010	·020
231	·021739	·013540	·011	·020	·026087	·014799	·010	·020	·030435 –	·015949	·010	·020
232	·021645 +	·013482	·011	·020	·025974	·014736	·010	·020	·030303	·015882	·010	·020
233	·021552	·013425 +	·011	·020	·025862	·014674	·010	·020	·030172	·015815 –	·010	·020
234	·021459	·013368	·011	·020	·025751	·014612	·010	·020	·030043	·015748	·010	·020
235	·021368	·013312	·011	·020	·025641	·014551	·010	·020	·029915 –	·015682	·010	·020
236	·021277	·013256	·011	·020	·025532	·014490	·010	·020	·029787	·015617	·010	·020
237	·021186	·013201	·011	·020	·025424	·014430	·010	·020	·029661	·015552	·010	·020
238	·021097	·013146	·011	·020	·025316	·014370	·010	·020	·029536	·015487	·010	·020
239	·021008	·013092	·011	·020	·025210	·014310	·010	·020	·029412	·015424	·020	·020
240	·020921	·013038	·011	·020	·025105 –	·014252	·010	·020	·029289	·015360	·010	·020
241	·020833	·012984	·011	·020	·025000	·014193	·010	·020	·029167	·015298	·010	·020
242	·020747	·012931	·011	·020	·024896	·014135 +	·010	·020	·029046	·015235 +	·010	·020
243	·020661	·012878	·011	·020	·024793	·014078	·010	·020	·028926	·015174	·010	·020
244	·020576	·012826	·011	·020	·024691	·014021	·010	·020	·028807	·015112	·010	·020
245	·020492	·012774	·011	·020	·024590	·013964	·010	·020	·028689	·015052	·010	·020
246	·020408	·012723	·011	·020	·024490	·013908	·010	·020	·028571	·014991	·010	·020
247	·020325 +	·012672	·011	·020	·024390	·013853	·010	·020	·028455 +	·014931	·010	·020
248	·020243	·012622	·011	·020	·024291	·013798	·010	·020	·028340	·014872	·010	·020
249	·020161	·012571	·011	·020	·024194	·013743	·010	·020	·028226	·014813	·010	·020
250	·020080	·012522	·011	·020	·024096	·013689	·010	·020	·028112	·014755 –	·010	·020

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	9: $\bar{\eta}^2$	9: $\sigma_{\bar{\eta}^2}$	9: P_1 $\lambda_1=2{\cdot}96$	9: P_2 $\lambda_2=2{\cdot}50$	10: $\bar{\eta}^2$	10: $\sigma_{\bar{\eta}^2}$	10: P_1 $\lambda_1=2{\cdot}92$	10: P_2 $\lambda_2=2{\cdot}47$	11: $\bar{\eta}^2$	11: $\sigma_{\bar{\eta}^2}$	11: P_1 $\lambda_1=2{\cdot}88$	11: P_2 $\lambda_2=2{\cdot}44$
201	·040000	·019499	·010	·020	·045000	·020628	·010	·020	·050000	·021686	·010	·021
202	·039801	·019404	·010	·020	·044776	·020528	·010	·020$_5$	·049751	·021582	·010	·021
203	·039604	·019311	·010	·020	·044554	·020429	·010	·021	·049505 –	·021478	·010	·021
204	·039409	·019218	·010	·020	·044335 –	·020331	·010	·021	·049261	·021376	·010	·021
205	·039216	·019126	·010	·020	·044118	·020234	·010	·021	·049020	·021274	·010	·021
206	·039024	·019035 +	·010	·020	·043902	·020138	·010	·021	·048780	·021174	·010	·021
207	·038835 –	·018945 –	·010	·020	·043689	·020043	·010	·021	·048544	·021074	·010	·021
208	·038647	·018856	·010	·020	·043478	·019949	·010	·021	·048309	·020975 +	·010	·021
209	·038462	·018767	·010	·020	·043269	·019856	·010	·021	·048077	·020877	·010	·021
210	·038278	·018680	·010	·020	·043062	·019763	·010	·021	·047847	·020780	·010	·021
211	·038095 +	·018593	·010	·020	·042857	·019672	·010	·021	·047619	·020684	·010	·021
212	·037915 –	·018507	·010	·020	·042654	·019581	·010	·021	·047393	·020589	·010	·021
213	·037736	·018422	·010	·020	·042453	·019491	·010	·021	·047170	·020495 +	·010	·021
214	·037559	·018337	·010	·020	·042254	·019402	·010	·021	·046948	·020402	·010	·021
215	·037383	·018254	·010	·020	·042056	·019314	·010	·021	·046729	·020309	·010	·021
216	·037209	·018171	·010	·020	·041860	·019227	·010	·021	·046512	·020217	·010	·021
217	·037037	·018089	·010	·020	·041667	·019140	·010	·021	·046296	·020126	·010	·021
218	·036866	·018007	·010	·020	·041475 –	·019054	·010	·021	·046083	·020036	·010	·021
219	·036697	·017927	·010	·020	·041284	·018969	·010	·021	·045872	·019947	·010	·021
220	·036530	·017847	·010	·020	·041096	·018885 –	·010	·021	·045662	·019859	·010	·021
221	·036364	·017768	·010	·020	·040909	·018801	·010	·021	·045455 –	·019771	·010	·021
222	·036199	·017689	·010	·020	·040724	·018718	·010	·021	·045249	·019684	·010	·021
223	·036036	·017611	·010	·020	·040541	·018636	·010	·021	·045045 +	·019598	·010	·021
224	·035874	·017534	·010	·020	·040359	·018554	·010	·021	·044843	·019512	·010	·021
225	·035714	·017458	·010	·020	·040179	·018474	·010	·021	·044643	·019428	·010	·021
226	·035556	·017382	·010	·020	·040000	·018394	·010	·021	·044444	·019344	·010	·021
227	·035398	·017307	·010	·020	·039823	·018314	·010	·021	·044248	·019260	·010	·021
228	·035242	·017232	·010	·020	·039648	·018236	·010	·021	·044053	·019178	·010	·021
229	·035088	·017158	·010	·020	·039474	·018158	·010	·021	·043860	·019096	·010	·021
230	·034934	·017085 –	·010	·020	·039301	·018080	·010	·021	·043668	·019015 –	·010	·021
231	·034783	·017012	·010	·020	·039130	·018004	·010	·021	·043478	·018935 –	·010	·021
232	·034632	·016940	·010	·020	·038961	·017928	·010	·021	·043290	·018855 –	·010	·021
233	·034483	·016869	·010	·020	·038793	·017852	·010	·021	·043103	·018776	·010	·021
234	·034335 –	·016798	·010	·020	·038627	·017777	·010	·021	·042918	·018697	·010	·021
235	·034188	·016728	·010	·020	·038462	·017703	·010	·021	·042735 +	·018619	·010	·021
236	·034043	·016658	·010	·020$_5$	·038298	·017630	·010	·021	·042553	·018542	·010	·021
237	·033898	·016589	·010	·021	·038136	·017557	·010	·021	·042373	·018466	·010	·021
238	·033755 +	·016521	·010	·021	·037975 –	·017485 –	·010	·021	·042194	·018390	·010	·021
239	·033613	·016453	·010	·021	·037815 +	·017413	·010	·021	·042017	·018315 –	·010	·021
240	·033473	·016385 +	·010	·021	·037657	·017342	·010	·021	·041841	·018240	·010	·021
241	·033333	·016319	·010	·021	·037500	·017271	·010	·021	·041667	·018166	·010	·021
242	·033195 +	·016252	·010	·021	·037344	·017201	·010	·021	·041494	·018093	·010	·021
243	·033058	·016187	·010	·021	·037190	·017132	·010	·021	·041322	·018020	·010	·021
244	·032922	·016121	·010	·021	·037037	·017063	·010	·021	·041152	·017947	·010	·021
245	·032787	·016057	·010	·021	·036885 +	·016995 –	·010	·021	·040984	·017876	·010	·021
246	·032653	·015993	·010	·021	·036735 –	·016927	·010	·021	·040816	·017805 –	·010	·021
247	·032520	·015929	·010	·021	·036585 +	·016860	·010	·021	·040650 +	·017734	·010	·021
248	·032389	·015866	·010	·021	·036437	·016793	·010	·021	·040486	·017664	·010	·021
249	·032258	·015803	·010	·021	·036290	·016727	·010	·021	·040323	·017595 –	·010	·021
250	·032129	·015741	·010	·021	·036145 –	·016661	·010	·021	·040161	·017526	·010	·021

N = size of sample	12: $\bar{\eta}^2$	12: $\sigma_{\bar{\eta}^2}$	12: P_1 $\lambda_1=2{\cdot}84$	12: P_2 $\lambda_2=2{\cdot}42$	13: $\bar{\eta}^2$	13: $\sigma_{\bar{\eta}^2}$	13: P_1 $\lambda_1=2{\cdot}80$	13: P_2 $\lambda_2=2{\cdot}40$	14: $\bar{\eta}^2$	14: $\sigma_{\bar{\eta}^2}$	14: P_1 $\lambda_1=2{\cdot}79$	14: P_2 $\lambda_2=2{\cdot}39$
201	·055000	·022685 –	·010	·021	·060000	·023631	·011	·021	·065000	·024530	·010	·021
202	·054726	·022576	·010	·021	·059701	·023518	·011	·021	·064677	·024413	·010	·021
203	·054455 +	·022468	·010	·021	·059406	·023405 +	·011	·021	·064356	·024297	·010	·021
204	·054187	·022361	·010	·021	·059113	·023294	·011	·021	·064039	·024182	·010	·021
205	·053922	·022255 –	·010$_5$	·021	·058824	·023184	·011	·021	·063725 +	·024068	·010	·021
206	·053659	·022150 –	·011	·021	·058537	·023075 +	·011	·021	·063415 –	·023955 +	·010	·021
207	·053398	·022046	·011	·021	·058252	·022967	·011	·021	·063107	·023843	·010	·021
208	·053140	·021943	·011	·021	·057971	·022860	·011	·021	·062802	·023733	·010	·021
209	·052885 –	·021841	·011	·021	·057692	·022754	·011	·021	·062500	·023623	·010	·021
210	·052632	·021740	·011	·021	·057416	·022649	·011	·021	·062201	·023514	·010	·021
211	·052381	·021640	·011	·021	·057143	·022545 +	·011	·021	·061905 –	·023406	·010	·021
212	·052133	·021540	·011	·021	·056872	·022442	·011	·021	·061611	·023300	·010	·021
213	·051887	·021442	·011	·021	·056604	·022340	·011	·021	·061321	·023194	·010	·021
214	·051643	·021345 –	·011	·021	·056338	·022238	·011	·021	·061033	·023089	·010	·021
215	·051402	·021248	·011	·021	·056075 –	·022138	·011	·021	·060748	·022985 –	·010	·021
216	·051163	·021152	·011	·021	·055814	·022039	·011	·021	·060465 +	·022882	·010$_5$	·021
217	·050926	·021057	·011	·021	·055556	·021940	·011	·021	·060185 +	·022780	·011	·021
218	·050691	·020963	·011	·021	·055300	·021842	·011	·021	·059908	·022679	·011	·021
219	·050459	·020870	·011	·021	·055046	·021746	·011	·021	·059633	·022579	·011	·021
220	·050228	·020778	·011	·021	·054795 –	·021650 –	·011	·021	·059361	·022479	·011	·021
221	·050000	·020686	·011	·021	·054545 +	·021555 –	·011	·021	·059091	·022381	·011	·021
222	·049774	·020596	·011	·021	·054299	·021460	·011	·021	·058824	·022283	·011	·021
223	·049550 –	·020506	·011	·021	·054054	·021367	·011	·021	·058559	·022186	·011	·021
224	·049327	·020417	·011	·021	·053812	·021274	·011	·021	·058296	·022090	·011	·021
225	·049107	·020328	·011	·021	·053571	·021182	·011	·021	·058036	·021995 +	·011	·021
226	·048889	·020241	·011	·021	·053333	·021091	·011	·021	·057778	·021901	·011	·021
227	·048673	·020154	·011	·021	·053097	·021001	·011	·021	·057522	·021807	·011	·021
228	·048458	·020068	·011	·021	·052863	·020911	·011	·021	·057269	·021715 –	·011	·021
229	·048246	·019982	·011	·021	·052632	·020823	·011	·021	·057018	·021623	·011	·021
230	·048035 –	·019897	·011	·021	·052402	·020735 –	·011	·021	·056769	·021531	·011	·021
231	·047826	·019814	·011	·021	·052174	·020647	·011	·021	·056522	·021441	·011	·021
232	·047619	·019730	·011	·021	·051948	·020561	·011	·021	·056277	·021351	·011	·021
233	·047414	·019648	·011	·021	·051724	·020475 –	·011	·021	·056034	·021262	·011	·021
234	·047210	·019566	·011	·021	·051502	·020390	·011	·021	·055794	·021174	·011	·021
235	·047009	·019485 –	·011	·021	·051282	·020305 +	·011	·021	·055556	·021087	·011	·021
236	·046809	·019404	·011	·021	·051064	·020222	·011	·021	·055319	·021000	·011	·021
237	·046610	·019324	·011	·021	·050847	·020139	·011	·021	·055085 –	·020914	·011	·021
238	·046414	·019245 +	·011	·021	·050633	·020056	·011	·021	·054852	·020829	·011	·021
239	·046218	·019166	·011	·021	·050420	·019975 –	·011	·021	·054622	·020744	·011	·021
240	·046025 +	·019089	·011	·021	·050209	·019894	·011	·021	·054393	·020660	·011	·021
241	·045833	·019011	·011	·021	·050000	·019813	·011	·021	·054167	·020577	·011	·021
242	·045643	·018935 –	·011	·021	·049793	·019733	·011	·021	·053942	·020494	·011	·021
243	·045455 –	·018858	·011	·021	·049587	·019654	·011	·021	·053719	·020412	·011	·021
244	·045267	·018783	·011	·021	·049383	·019576	·011	·021	·053498	·020331	·011	·021
245	·045082	·018708	·011	·021	·049180	·019498	·011	·021	·053279	·020250 +	·011	·021
246	·044898	·018634	·011	·021	·048980	·019421	·011	·021	·053061	·020170	·011	·021
247	·044715 +	·018560	·011	·021	·048780	·019344	·011	·021	·052846	·020091	·011	·021
248	·044534	·018487	·011	·021	·048583	·019268	·011	·021	·052632	·020012	·011	·021
249	·044355 –	·018415 –	·011	·021	·048387	·019193	·011	·021	·052419	·019934	·011	·021
250	·044177	·018343	·011	·021	·048193	·019118	·011	·021	·052209	·019857	·011	·021

TABLE IV.—(*continued*).

N = size of sample	15				16			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}78$	P_2 $\lambda_2 = 2{\cdot}38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}77$	P_2 $\lambda_2 = 2{\cdot}37$
201	·070000	·025388	·010	·020	·075000	·026208	·010	·020
202	·069652	·025267	·010	·020	·074627	·026084	·010	·020
203	·069307	·025147	·010	·020	·074257	·025961	·010	·020
204	·068966	·025029	·010	·020	·073892	·025838	·010	·020
205	·068627	·024911	·010	·020	·073529	·025717	·010	·020
206	·068293	·024795 −	·010	·020	·073171	·025598	·010	·020
207	·067961	·024679	·010	·020	·072816	·025479	·010	·020
208	·067633	·024565 −	·010	·020	·072464	·025361	·010	·020
209	·067308	·024452	·010	·020	·072115 +	·025244	·010	·020
210	·066986	·024339	·010	·020	·071770	·025129	·010	·020
211	·066667	·024228	·010	·020	·071429	·025014	·010	·020
212	·066351	·024118	·010	·020	·071090	·024901	·010	·020
213	·066038	·024009	·010	·020	·070755 −	·024789	·010	·020
214	·065728	·023900	·010	·020	·070423	·024677	·010	·020
215	·065421	·023793	·010	·020	·070093	·024567	·010	·020
216	·065116	·023687	·010	·020	·069767	·024457	·010	·020
217	·064815 −	·023582	·010	·020	·069444	·024349	·010	·020
218	·064516	·023477	·010	·020	·069124	·024241	·010	·020
219	·064220	·023374	·010	·020	·068807	·024135 −	·010	·020
220	·063927	·023271	·010	·020	·068493	·024029	·010	·020
221	·063636	·023169	·010	·020	·068182	·023924	·010	·020
222	·063348	·023069	·010	·020	·067873	·023820	·010	·020
223	·063063	·022969	·010	·020	·067568	·023717	·010	·020
224	·062780	·022869	·010	·020	·067265 −	·023615 +	·010	·020
225	·062500	·022771	·010	·020	·066964	·023514	·010	·020
226	·062222	·022674	·010	·020$_5$	·066667	·023414	·010	·020
227	·061947	·022577	·010	·021	·066372	·023314	·010	·020
228	·061674	·022481	·010	·021	·066079	·023216	·010	·020
229	·061404	·022387	·010	·021	·065789	·023118	·010	·020
230	·061135 +	·022292	·010	·021	·065502	·023021	·010	·020
231	·060870	·022199	·010	·021	·065217	·022925 −	·010	·020
232	·060606	·022106	·010	·021	·064935 +	·022830	·010	·020
233	·060345 −	·022015 −	·010	·021	·064655 +	·022735 −	·010	·020
234	·060086	·021924	·010	·021	·064378	·022641	·010	·020
235	·059829	·021833	·010	·021	·064103	·022548	·010	·020
236	·059574	·021744	·010	·021	·063830	·022456	·010	·020
237	·059322	·021655 −	·010	·021	·063559	·022364	·010	·020
238	·059072	·021567	·010	·021	·063291	·022274	·010	·020
239	·058824	·021479	·010	·021	·063025 +	·022184	·010	·020
240	·058577	·021393	·010	·021	·062762	·022094	·010	·020$_5$
241	·058333	·021307	·010	·021	·062500	·022006	·010	·021
242	·058091	·021221	·010	·021	·062241	·021918	·010	·021
243	·057851	·021137	·010	·021	·061983	·021830	·010	·021
244	·057613	·021053	·010	·021	·061728	·021744	·010	·021
245	·057377	·020969	·010	·021	·061475 +	·021658	·010	·021
246	·057143	·020887	·010	·021	·061224	·021573	·010	·021
247	·056911	·020805 −	·010	·021	·060976	·021488	·010	·021
248	·056680	·020723	·010	·021	·060729	·021405 −	·010	·021
249	·056452	·020643	·010	·021	·060484	·021321	·010	·021
250	·056225 −	·020563	·010	·021	·060241	·021239	·010	·021

N = size of sample	17				18			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}76$	P_2 $\lambda_2 = 2{\cdot}36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}75$	P_2 $\lambda_2 = 2{\cdot}35$
201	·080000	·026995 −	·010	·020	·085000	·027750 −	·010	·020
202	·079602	·026867	·010	·020	·084577	·027619	·010	·020
203	·079208	·026740	·010	·020	·084158	·027489	·010	·020
204	·078818	·026615 −	·010	·020	·083744	·027360	·010	·020
205	·078431	·026490	·010	·020	·083333	·027233	·010	·020
206	·078049	·026367	·010	·020	·082927	·027107	·010	·020
207	·077670	·026245 +	·010	·020	·082524	·026982	·010	·020
208	·077295 −	·026125 −	·010	·020	·082126	·026858	·010	·020
209	·076923	·026005 −	·010	·020	·081731	·026735 +	·010	·020
210	·076555 +	·025886	·010	·020	·081340	·026614	·010	·020
211	·076190	·025768	·010	·020	·080952	·026493	·010	·020
212	·075829	·025652	·010	·020	·080569	·026374	·010	·020
213	·075472	·025536	·010	·020	·080189	·026255 +	·010	·020
214	·075117	·025422	·010	·020	·079812	·026138	·010	·020
215	·074766	·025309	·010	·020	·079439	·026021	·010	·020
216	·074419	·025196	·010	·020	·079070	·025906	·010	·020
217	·074074	·025085 −	·010	·020	·078704	·025792	·010	·020
218	·073733	·024974	·010	·020	·078341	·025679	·010	·020
219	·073394	·024865 −	·010	·020	·077982	·025566	·010	·020
220	·073059	·024756	·010	·020	·077626	·025455 +	·010	·020
221	·072727	·024649	·010	·020	·077273	·025345 −	·010	·020
222	·072398	·024542	·010	·020	·076923	·025235 +	·010	·020
223	·072072	·024436	·010	·020	·076577	·025127	·010	·020
224	·071749	·024331	·010	·020	·076233	·025019	·010	·020
225	·071429	·024227	·010	·020	·075893	·024913	·010	·020
226	·071111	·024124	·010	·020	·075556	·024807	·010	·020
227	·070796	·024022	·010	·020	·075221	·024702	·010	·020
228	·070485 −	·023921	·010	·020	·074890	·024598	·010	·020
229	·070175 +	·023820	·010	·020	·074561	·024495 +	·010	·020
230	·069869	·023720	·010	·020	·074236	·024393	·010	·020
231	·069565 +	·023622	·010	·020	·073913	·024292	·010	·020
232	·069264	·023524	·010	·020	·073593	·024191	·010	·020
233	·068966	·023426	·010	·020	·073276	·024091	·010	·020
234	·068670	·023330	·010	·020	·072961	·023993	·010	·020
235	·068376	·023234	·010	·020	·072650 −	·023894	·010	·020
236	·068085 +	·023140	·010	·020	·072340	·023797	·010	·020
237	·067797	·023045 +	·010	·020	·072034	·023701	·010	·020
238	·067511	·022952	·010	·020	·071730	·023605 −	·010	·020
239	·067227	·022860	·010	·020	·071429	·023510	·010	·020
240	·066946	·022768	·010	·020	·071130	·023416	·010	·020
241	·066667	·022677	·010	·020	·070833	·023322	·010	·020
242	·066390	·022586	·010	·020	·070539	·023230	·010	·020
243	·066116	·022497	·010	·020	·070248	·023138	·010	·020
244	·065844	·022408	·010	·020	·069959	·023046	·010	·020
245	·065574	·022320	·010	·020	·069672	·022956	·010	·020
246	·065306	·022232	·010	·020	·069388	·022866	·010	·020
247	·065041	·022145 +	·010	·020	·069106	·022777	·010	·020
248	·064777	·022059	·010	·020	·068826	·022689	·010	·020
249	·064516	·021973	·010	·020	·068548	·022601	·010	·020
250	·064257	·021889	·010	·020	·068273	·022514	·010	·020

N = size of sample	19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}74$	P_2 $\lambda_2 = 2{\cdot}34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}73$	P_2 $\lambda_2 = 2{\cdot}33$
201	·090000	·028476	·010	·020	·095000	·029176	·010	·020
202	·089552	·028342	·010	·020	·094527	·029039	·010	·020
203	·089109	·028209	·010	·020	·094059	·028904	·010	·020
204	·088670	·028078	·010	·020	·093596	·028769	·010	·020
205	·088235 +	·027948	·010	·020	·093137	·028636	·010	·020
206	·087805 −	·027818	·010	·020	·092683	·028504	·010	·020
207	·087379	·027691	·010	·020	·092233	·028374	·010	·020
208	·086957	·027564	·010	·020	·091787	·028244	·010	·020
209	·086538	·027438	·010	·020	·091346	·028116	·010	·020
210	·086124	·027314	·010	·020	·090909	·027989	·010	·020
211	·085714	·027190	·010	·020	·090476	·027863	·010	·020
212	·085308	·027068	·010	·020	·090047	·027738	·010	·020
213	·084906	·026947	·010	·020	·089623	·027614	·010	·020
214	·084507	·026827	·010	·020	·089202	·027491	·010	·020
215	·084112	·026708	·010	·020	·088785 +	·027370	·010	·020
216	·083721	·026590	·010	·020	·088372	·027249	·010	·020
217	·083333	·026473	·010	·020	·087963	·027130	·010	·020
218	·082949	·026357	·010	·020	·087558	·027011	·010	·020
219	·082569	·026242	·010	·020	·087156	·026894	·010	·020
220	·082192	·026128	·010	·020	·086758	·026777	·010	·020
221	·081818	·026015 +	·010	·020	·086364	·026662	·010	·020
222	·081448	·025903	·010	·020	·085973	·026547	·010	·020
223	·081081	·025792	·010	·020	·085586	·026434	·010	·020
224	·080717	·025682	·010	·020	·085202	·026322	·010	·020
225	·080357	·025573	·010	·020	·084821	·026210	·010	·020
226	·080000	·025465 −	·010	·020	·084444	·026099	·010	·020
227	·079646	·025358	·010	·020	·084071	·025990	·010	·020
228	·079295 +	·025251	·010	·020	·083700	·025881	·010	·020
229	·078947	·025146	·010	·020	·083333	·025773	·010	·020
230	·078603	·025041	·010	·020	·082969	·025666	·010	·020
231	·078261	·024937	·010	·020	·082609	·025560	·010	·020
232	·077922	·024834	·010	·020	·082251	·025455 −	·010	·020
233	·077586	·024732	·010	·020	·081897	·025350 +	·010	·020
234	·077253	·024631	·010	·020	·081545 +	·025247	·010	·020
235	·076923	·024530	·010	·020	·081197	·025144	·010	·020
236	·076596	·024431	·010	·020	·080851	·025042	·010	·020
237	·076271	·024332	·010	·020	·080508	·024941	·010	·020
238	·075949	·024234	·010	·020	·080169	·024841	·010	·020
239	·075630	·024137	·010	·020	·079832	·024742	·010	·020
240	·075314	·024040	·010	·020	·079498	·024643	·010	·020
241	·075000	·023945 −	·010	·020	·079167	·024545 +	·010	·020
242	·074689	·023850 −	·010	·020	·078838	·024448	·010	·020
243	·074380	·023756	·010	·020	·078512	·024352	·010	·020
244	·074074	·023662	·010	·020	·078189	·024256	·010	·020
245	·073770	·023569	·010	·020	·077869	·024162	·010	·020
246	·073469	·023477	·010	·020	·077551	·024068	·010	·020
247	·073171	·023386	·010	·020	·077236	·023974	·010	·020
248	·072874	·023296	·010	·020	·076923	·023882	·010	·020
249	·072581	·023206	·010	·020	·076613	·023790	·010	·020
250	·072289	·023116	·010	·020	·076305 +	·023698	·010	·020

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 $\lambda_1 =$ 3·50	3: P_2 $\lambda_2 =$ 2·94	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 $\lambda_1 =$ 3·20	4: P_2 $\lambda_2 =$ 2·80	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 $\lambda_1 =$ 3·14	5: P_2 $\lambda_2 =$ 2·68
251	·008000	·007936	·011	·019	·012000	·009700	·012	·020	·016000	·011178	·012	·020
252	·007968	·007905 −	·011	·019	·011952	·009662	·012	·020	·015936	·011134	·012	·020
253	·007937	·007874	·011	·019	·011905 −	·009624	·012	·020	·015873	·011091	·012	·020
254	·007905 +	·007843	·011	·019	·011858	·009586	·012	·020	·015810	·011047	·012	·020
255	·007874	·007812	·011	·019	·011810	·009549	·012	·020	·015748	·011004	·012	·020
256	·007843	·007782	·011	·019	·011765 −	·009512	·012	·020	·015686	·010962	·012	·020
257	·007813	·007752	·011	·019	·011719	·009475 +	·012	·020	·015625	·010919	·012	·020
258	·007782	·007722	·011	·019	·011673	·009439	·012	·020	·015564	·010877	·012	·020
259	·007752	·007692	·011	·019	·011628	·009402	·012	·020	·015504	·010836	·012	·020
260	·007722	·007663	·011	·019	·011583	·009366	·012	·020	·015444	·010794	·012	·020
261	·007692	·007633	·011	·019	·011538	·009331	·012	·020	·015385 −	·010753	·012	·020
262	·007663	·007604	·011	·019	·011494	·009295 +	·012	·020	·015326	·010713	·012	·020
263	·007634	·007576	·011	·019	·011450 +	·009260	·012	·020	·015267	·010672	·012	·020
264	·007605 −	·007547	·011	·019	·011407	·009225 +	·012	·020	·015209	·010632	·012	·020
265	·007576	·007519	·011	·019	·011364	·009191	·012	·020	·015152	·010592	·012	·020
266	·007547	·007490	·011	·019	·011321	·009156	·012	·020	·015094	·010553	·012	·020
267	·007519	·007462	·011	·019	·011278	·009122	·012	·020	·015038	·010513	·012	·020
268	·007491	·007435 −	·011	·019	·011236	·009088	·012	·020	·014981	·010475 −	·012	·020
269	·007463	·007407	·011	·019	·011194	·009055 −	·012	·020	·014925 +	·010436	·012	·020
270	·007435 −	·007380	·011	·019	·011152	·009022	·012	·020	·014870	·010398	·012	·020
271	·007407	·007353	·011	·019	·011111	·008988	·012	·020	·014815 −	·010359	·012	·020
272	·007380	·007326	·011	·019	·011070	·008956	·012	·020	·014760	·010322	·012	·020
273	·007353	·007299	·011	·019	·011029	·008923	·012	·020	·014706	·010284	·012	·020
274	·007326	·007273	·011	·019	·011989	·008891	·012	·020	·014652	·010247	·012	·020
275	·007299	·007246	·011	·019	·010949	·008858	·012	·020	·014599	·010210	·012	·020
276	·007273	·007220	·011	·019	·010909	·008826	·012	·020	·014545 +	·010173	·012	·020
277	·007246	·007194	·011	·019	·010870	·008795 −	·012	·020	·014493	·010137	·012	·020
278	·007220	·007168	·011	·019	·010830	·008763	·012	·020	·014440	·010101	·012	·020
279	·007194	·007143	·011	·019	·010791	·008732	·012	·020	·014388	·010065 −	·012	·020
280	·007168	·007117	·011	·019	·010753	·008701	·012	·020	·014337	·010029	·012	·020
281	·007143	·007092	·011	·019	·010714	·008670	·012	·020	·014286	·009993	·012	·020
282	·007117	·007067	·011	·019	·010676	·008640	·012	·020	·014235 −	·009958	·012	·020
283	·007092	·007042	·011	·019	·010638	·008609	·012	·020	·014184	·009923	·012	·020
284	·007067	·007017	·011	·019	·010601	·008579	·012	·020	·014134	·009889	·012	·020
285	·007042	·006993	·011	·019	·010563	·008549	·012	·020	·014085 −	·009854	·012	·020
286	·007018	·006968	·011	·019	·010526	·008520	·012	·020	·014035 +	·009820	·012	·020
287	·006993	·006944	·011	·019	·010490	·008490	·012	·020	·013986	·009786	·012	·020
288	·006969	·006920	·011	·019	·010453	·008461	·012	·020	·013937	·009752	·012	·020
289	·006944	·006896	·011	·019	·010417	·008432	·012	·020	·013889	·009719	·012	·020
290	·006920	·006873	·011	·019	·010381	·008403	·012	·020	·013841	·009686	·012	·020
291	·006897	·006849	·011	·019	·010345 −	·008374	·012	·020	·013793	·009652	·012	·020
292	·006873	·006826	·011	·019	·010309	·008345 +	·012	·020	·013746	·009620	·012	·020
293	·006849	·006803	·011	·019	·010274	·008317	·012	·020	·013699	·009587	·012	·020
294	·006826	·006780	·011	·019	·010239	·008289	·012	·020	·013652	·009555 −	·012	·020
295	·006803	·006757	·011	·019	·010204	·008261	·012	·020	·013605 +	·009522	·012	·020
296	·006780	·006734	·011	·019	·010169	·008233	·012	·020	·013559	·009491	·012	·020
297	·006757	·006711	·011	·019	·010135 +	·008206	·012	·020	·013514	·009459	·012	·020
298	·006734	·006689	·011	·019	·010101	·008178	·012	·020	·013468	·009427	·012	·020
299	·006711	·006667	·011	·019	·010067	·008151	·012	·020	·013423	·009396	·012	·020
300	·006689	·006644	·011	·019	·010033	·008124	·012	·020	·013378	·009365 −	·012	·020

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 $\lambda_1 =$ 3·11	6: P_2 $\lambda_2 =$ 2·63	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 $\lambda_1 =$ 3·08	7: P_2 $\lambda_2 =$ 2·58	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 $\lambda_1 =$ 3·02	8: P_2 $\lambda_2 =$ 2·54
251	·020000	·012472	·011	·020	·024000	·013635 −	·010	·020	·028000	·014697	·010	·020
252	·019920	·012423	·011	·020	·023904	·013581	·010	·020	·027888	·014639	·010	·020
253	·019841	·012375 −	·011	·020	·023810	·013528	·010	·020	·027778	·014582	·010	·020
254	·019763	·012326	·011	·020	·023715 +	·013476	·010	·020	·027668	·014526	·010	·020
255	·019685 +	·012279	·011	·020	·023622	·013423	·010	·020	·027559	·014470	·010	·020
256	·019608	·012231	·011	·020	·023529	·013372	·010	·020	·027451	·014414	·010	·020
257	·019531	·012184	·011	·020	·023438	·013320	·010	·020	·027344	·014359	·010	·020
258	·019455 +	·012137	·011	·020	·023346	·013269	·010	·020	·027237	·014304	·010	·020
259	·019380	·012091	·011	·020	·023256	·013219	·010	·020	·027132	·014249	·010	·020
260	·019305 +	·012045 −	·011	·020	·023166	·013168	·010	·020	·027027	·014195 +	·010	·020
261	·019231	·011999	·011	·020	·023077	·013118	·010	·020	·026923	·014142	·010	·020
262	·019157	·011954	·011	·020	·022989	·013069	·010	·020	·026820	·014088	·010	·020
263	·019084	·011909	·011	·020	·022901	·013020	·010	·020	·026718	·014036	·010	·020
264	·019011	·011864	·011	·020	·022814	·012971	·010	·020	·026616	·013983	·010	·020
265	·018939	·011820	·011	·020	·022727	·012923	·010	·020	·026515 +	·013931	·010	·020
266	·018868	·011776	·011	·020	·022642	·012875 −	·010	·020	·026415 +	·013879	·010	·020
267	·018797	·011732	·011	·020	·022556	·012827	·010	·020	·026316	·013828	·010	·020
268	·018727	·011689	·011	·020	·022472	·012780	·010	·020	·026217	·013777	·010	·020
269	·018657	·011646	·011	·020	·022388	·012733	·010	·020	·026119	·013727	·010	·020
270	·018587	·011603	·011	·020	·022305 −	·012686	·010	·020	·026022	·013677	·010	·020
271	·018519	·011560	·011	·020	·022222	·012640	·010	·020	·025926	·013627	·010	·020
272	·018450 +	·011518	·011	·020	·022140	·012594	·010	·020	·025830	·013577	·010	·020
273	·018382	·011477	·011	·020	·022059	·012548	·010	·020	·025735 +	·013528	·010	·020
274	·018315 +	·011435 +	·011	·020	·021978	·012503	·010	·020	·025641	·013480	·010	·020
275	·018248	·011394	·011	·020	·021898	·012458	·010	·020	·025547	·013431	·010	·020
276	·018182	·011353	·011	·020	·021818	·012413	·010	·020	·025455 −	·013383	·010	·020
277	·018116	·011312	·011	·020	·021739	·012369	·010	·020	·025362	·013335 +	·010	·020
278	·018051	·011272	·011	·020	·021661	·012325 +	·010	·020	·025271	·013288	·010	·020
279	·017986	·011232	·011	·020	·021583	·012281	·010	·020	·025180	·013241	·010	·020
280	·017921	·011192	·011	·020	·021505 +	·012238	·010	·020	·025090	·013194	·010	·020
281	·017857	·011153	·011	·020	·021429	·012195 +	·010	·020	·025000	·013148	·010	·020
282	·017794	·011114	·011	·020	·021352	·012152	·010	·020	·024911	·013102	·010	·020
283	·017730	·011075 −	·011	·020	·021277	·012110	·010	·020	·024823	·013056	·010	·020
284	·017668	·011036	·011	·020	·021201	·012068	·010	·020	·024735 −	·013011	·010	·020
285	·017606	·010998	·011	·020	·021127	·012026	·010	·020	·024648	·012966	·010	·020
286	·017544	·010960	·011	·020	·021053	·011984	·010	·020	·024561	·012921	·010	·020
287	·017483	·010922	·011	·020	·020979	·011943	·010	·020	·024476	·012877	·010	·020
288	·017422	·010884	·011	·020	·020906	·011902	·010	·020	·024390	·012833	·010	·020
289	·017361	·010847	·011	·020	·020833	·011861	·010	·020	·024306	·012789	·010	·020
290	·017301	·010810	·011	·020	·020761	·011821	·010	·020	·024221	·012745 +	·010	·020
291	·017241	·010773	·011	·020	·020690	·011780	·010	·020	·024138	·012702	·010	·020
292	·017182	·010736	·011	·020	·020619	·011740	·010	·020	·024055 −	·012659	·010	·020
293	·017123	·010700	·011	·020	·020548	·011701	·010	·020	·023973	·012616	·010	·020
294	·017065 −	·010664	·011	·020	·020478	·011661	·010	·020	·023891	·012574	·010	·020
295	·017007	·010628	·011	·020	·020408	·011622	·010	·020	·023810	·012532	·010	·020
296	·016949	·010593	·011	·020	·020339	·011583	·010	·020	·023729	·012490	·010	·020
297	·016892	·010557	·011	·020	·020270	·011545 −	·010	·020	·023649	·012448	·010	·020
298	·016835 +	·010522	·011	·020	·020202	·011507	·010	·020	·023569	·012407	·010	·020
299	·016779	·010487	·011	·020	·020134	·011468	·010	·020	·023490	·012366	·010	·020
300	·016722	·010452	·011	·020	·020067	·011431	·010	·020	·023411	·012325 +	·010	·020

TABLE IV.—(*continued*).

N = size of sample	9				10				11			
	$\overline{\eta}^2$	$\sigma_{\overline{\eta}^2}$	P_1 $\lambda_1=2{\cdot}96$	P_2 $\lambda_2=2{\cdot}50$	$\overline{\eta}^2$	$\sigma_{\overline{\eta}^2}$	P_1 $\lambda_1=2{\cdot}92$	P_2 $\lambda_2=2{\cdot}47$	$\overline{\eta}^2$	$\sigma_{\overline{\eta}^2}$	P_1 $\lambda_1=2{\cdot}88$	P_2 $\lambda_2=2{\cdot}44$
251	·032000	·015679	·010	·021	·036000	·016596	·010	·021	·040000	·017457	·010	·021
252	·031873	·015618	·010	·021	·035857	·016531	·010	·021	·039841	·017390	·010	·021
253	·031746	·015557	·010	·021	·035714	·016467	·010	·021	·039683	·017322	·010	·021
254	·031621	·015497	·010	·021	·035573	·016404	·010	·021	·039526	·017255 +	·010	·021
255	·031496	·015437	·010	·021	·035433	·016341	·010	·021	·039370	·017189	·010	·021
256	·031373	·015378	·010	·021	·035294	·016278	·010	·021	·039216	·017123	·010	·021
257	·031250	·015319	·010	·021	·035156	·016216	·010	·021	·039063	·017058	·010	·021
258	·031128	·015261	·010	·021	·035019	·016154	·010	·021	·038911	·016993	·010	·021
259	·031008	·015203	·010	·021	·034884	·016093	·010	·021	·038760	·016929	·010	·021
260	·030888	·015145 +	·010	·021	·034749	·016032	·010	·021	·038610	·016865 +	·010	·021
261	·030769	·015088	·010	·021	·034615 +	·015972	·010	·021	·038462	·016802	·010	·021
262	·030651	·015031	·010	·021	·034483	·015912	·010	·021	·038314	·016739	·010	·021
263	·030534	·014975 +	·010	·021	·034351	·015852	·010	·021	·038168	·016677	·010$_5$	·021
264	·030418	·014919	·010	·021	·034221	·015793	·010	·021	·038023	·016615 −	·011	·021
265	·030303	·014864	·010	·021	·034091	·015735 −	·010	·021	·037879	·016553	·011	·021
266	·030189	·014809	·010	·021	·033962	·015677	·010	·021	·037736	·016492	·011	·021
267	·030075 +	·014754	·010	·021	·033835 −	·015619	·010	·021	·037594	·016432	·011	·021
268	·029963	·014700	·010	·021	·033708	·015562	·010	·021	·037453	·016372	·011	·021
269	·029851	·014646	·010	·021	·033582	·015505 −	·010	·021	·037313	·016312	·011	·021
270	·029740	·014593	·010	·021	·033457	·015448	·010	·021	·037175 −	·016253	·011	·021
271	·029630	·014540	·010	·021	·033333	·015392	·010	·021	·037037	·016194	·011	·021
272	·029520	·014487	·010	·021	·033210	·015337	·010	·021	·036900	·016136	·011	·021
273	·029412	·014435 +	·010	·021	·033088	·015282	·010	·021	·036765 −	·016078	·011	·021
274	·029304	·014383	·010	·021	·032967	·015227	·010	·021	·036630	·016020	·011	·021
275	·029197	·014332	·010	·021	·032847	·015172	·010	·021	·036496	·015963	·011	·021
276	·029091	·014280	·010	·021	·032727	·015118	·010	·021	·036364	·015906	·011	·021
277	·028986	·014230	·010	·021	·032609	·015065 −	·010	·021	·036232	·015850 −	·011	·021
278	·028881	·014179	·010	·021	·032491	·015011	·010	·021	·036101	·015794	·011	·021
279	·028777	·014129	·010	·021	·032374	·014959	·010	·021	·035971	·015738	·011	·021
280	·028674	·014080	·010	·021	·032258	·014906	·010	·021	·035842	·015683	·011	·021
281	·028571	·014030	·010	·021	·032143	·014854	·010	·021	·035714	·015628	·011	·021
282	·028470	·013981	·010	·021	·032028	·014802	·010	·021	·035587	·015574	·011	·021
283	·028369	·013932	·010	·021	·031915 −	·014750 +	·010	·021	·035461	·015520	·011	·021
284	·028269	·013884	·010	·021	·031802	·014700	·010	·021	·035336	·015466	·011	·021
285	·028169	·013836	·010	·021	·031690	·014649	·010	·021	·035211	·015413	·011	·021
286	·028070	·013788	·010	·021	·031579	·014598	·010	·021	·035088	·015360	·011	·021
287	·027972	·013741	·010	·021	·031469	·014548	·010	·021	·034965 +	·015308	·011	·021
288	·027875 −	·013694	·010	·021	·031359	·014499	·010	·021	·034843	·015255 +	·011	·021
289	·027778	·013647	·010	·021	·031250	·014449	·010	·021	·034722	·015204	·011	·021
290	·027682	·013601	·010	·021	·031142	·014400	·010$_5$	·021	·034602	·015152	·011	·021
291	·027586	·013555 −	·010	·021	·031034	·014352	·011	·021	·034483	·015101	·011	·021
292	·027491	·013509	·010	·021	·030928	·014303	·011	·021	·034364	·015050 +	·011	·021
293	·027397	·013464	·010	·021	·030822	·014255 +	·011	·021	·034247	·015000	·011	·021
294	·027304	·013418	·010	·021	·030717	·014207	·011	·021	·034130	·014950 −	·011	·021
295	·027211	·013374	·010	·021	·030612	·014160	·011	·021	·034014	·014900	·011	·021
296	·027119	·013329	·010	·021	·030508	·014113	·011	·021	·033898	·014850 +	·011	·021
297	·027027	·013285 −	·010	·021	·030405 +	·014066	·011	·021	·033784	·014801	·011	·021
298	·026936	·013241	·010	·021	·030303	·014020	·011	·021	·033670	·014752	·011	·021
299	·026846	·013197	·010	·021	·030201	·013974	·011	·021	·033557	·014704	·011	·021
300	·026756	·013154	·010	·021	·030100	·013928	·011	·021	·033445 −	·014656	·011	·021

N = size of sample	12				13				14			
	$\overline{\eta}^2$	$\sigma_{\overline{\eta}^2}$	P_1 $\lambda_1=2{\cdot}84$	P_2 $\lambda_2=2{\cdot}42$	$\overline{\eta}^2$	$\sigma_{\overline{\eta}^2}$	P_1 $\lambda_1=2{\cdot}80$	P_2 $\lambda_2=2{\cdot}40$	$\overline{\eta}^2$	$\sigma_{\overline{\eta}^2}$	P_1 $\lambda_1=2{\cdot}79$	P_2 $\lambda_2=2{\cdot}39$
251	·044000	·018271	·011	·021	·048000	·019044	·011	·021	·052000	·019780	·011	·021
252	·043825 −	·018200	·011	·021	·047809	·018970	·011	·021	·051793	·019703	·011	·021
253	·043651	·018130	·011	·021	·047619	·018897	·011	·021	·051587	·019628	·011	·021
254	·043478	·018060	·011	·021	·047431	·018825 −	·011	·021	·051383	·019552	·011	·021
255	·043307	·017991	·011	·021	·047244	·018753	·011	·021	·051181	·019478	·011	·021
256	·043137	·017923	·011	·021	·047059	·018681	·011	·021	·050980	·019404	·011	·021
257	·042969	·017854	·011	·021	·046875	·018610	·011	·021	·050781	·019330	·011	·021
258	·042802	·017787	·011	·021	·046693	·018540	·011	·021	·050584	·019257	·011	·021
259	·042636	·017720	·011	·021	·046512	·018470	·011	·021	·050388	·019185 +	·011	·021
260	·042471	·017653	·011	·021	·046332	·018401	·011	·021	·050193	·019113	·011	·021
261	·042308	·017587	·011	·021	·046154	·018332	·011	·021	·050000	·019042	·011	·021
262	·042146	·017521	·011	·021	·045977	·018264	·011	·021	·049808	·018971	·011	·021
263	·041985 −	·017456	·011	·021	·045802	·018196	·011	·021	·049618	·018901	·011	·021
264	·041825 +	·017391	·011	·021	·045627	·018129	·011	·021	·049430	·018831	·011	·021
265	·041667	·017327	·011	·021	·045455 −	·018062	·011	·021	·049242	·018762	·011	·021
266	·041509	·017263	·011	·021	·045283	·017996	·011	·021	·049057	·018693	·011	·021
267	·041353	·017200	·011	·021	·045113	·017930	·011	·021	·048872	·018625 +	·011	·021
268	·041199	·017137	·011	·021	·044944	·017864	·011	·021	·048689	·018557	·011	·021
269	·041045 −	·017075 +	·011	·021	·044776	·017800	·011	·021	·048507	·018490	·011	·021
270	·040892	·017013	·011	·021	·044610	·017735 +	·011	·021	·048327	·018423	·011	·021
271	·040741	·016952	·011	·021	·044444	·017671	·011	·021	·048148	·018357	·011	·021
272	·040590	·016891	·011	·021	·044280	·017608	·011	·021	·047970	·018291	·011	·021
273	·040441	·016830	·011	·021	·044118	·017545 −	·011	·021	·047794	·018226	·011	·021
274	·040293	·016770	·011	·021	·043956	·017482	·011	·021	·047619	·018161	·011	·021
275	·040146	·016710	·011	·021	·043796	·017420	·011	·021	·047445 +	·018097	·011	·021
276	·040000	·016651	·011	·021	·043636	·017358	·011	·021	·047273	·018033	·011	·021
277	·039855 +	·016592	·011	·021	·043478	·017297	·011	·021	·047101	·017969	·011	·021
278	·039711	·016534	·011	·021	·043321	·017236	·011	·021	·046931	·017906	·011	·021
279	·039568	·016476	·011	·021	·043165 +	·017176	·011	·021	·046763	·017844	·011	·021
280	·039427	·016418	·011	·021	·043011	·017116	·011	·021	·046595 −	·017782	·011	·021
281	·039286	·016361	·011	·021	·042857	·017057	·011	·021	·046429	·017720	·011	·021
282	·039146	·016304	·011	·021	·042705 −	·016997	·011	·021	·046263	·017659	·011	·021
283	·039007	·016248	·011	·021	·042553	·016939	·011	·021	·046099	·017598	·011	·021
284	·038869	·016191	·011	·021	·042403	·016880	·011	·021	·045936	·017537	·011	·021
285	·038732	·016136	·011	·021	·042254	·016822	·011	·021	·045775 −	·017477	·011	·021
286	·038596	·016081	·011	·021	·042105 +	·016765 −	·011	·021	·045614	·017417	·011	·021
287	·038462	·016026	·011	·021	·041958	·016708	·011	·021	·045455 −	·017358	·011	·021
288	·038328	·015971	·011	·021	·041812	·016651	·011	·021	·045296	·017299	·011	·021
289	·038194	·015917	·011	·021	·041667	·016595 −	·011	·021	·045139	·017241	·011	·021
290	·038062	·015863	·011	·021	·041522	·016539	·011	·021	·044983	·017183	·011	·021
291	·037931	·015810	·011	·021	·041379	·016483	·011	·021	·044828	·017125 +	·011	·021
292	·037801	·015757	·011	·021	·041237	·016428	·011	·021	·044674	·017068	·011	·021
293	·037671	·015704	·011	·021	·041096	·016373	·011	·021	·044521	·017011	·011	·021
294	·037543	·015652	·011	·021	·040956	·016318	·011	·021	·044369	·016955 −	·011	·021
295	·037415 −	·015600	·011	·021	·040816	·016264	·011	·021	·044218	·016898	·011	·021
296	·037288	·015548	·011	·021	·040678	·016211	·011	·021	·044068	·016843	·011	·021
297	·037162	·015497	·011	·021	·040541	·016157	·011	·021	·043919	·016787	·011	·021
298	·037037	·015446	·011	·021	·040404	·016104	·011	·021	·043771	·016732	·011	·021
299	·036913	·015395 −	·011	·021	·040268	·016051	·011	·021	·043624	·016678	·011	·021
300	·036789	·015345 −	·011	·021	·040134	·015999	·011	·021	·043478	·016623	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15				16				17			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·78$	P_2 $\lambda_2=2·38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·77$	P_2 $\lambda_2=2·37$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·76$	P_2 $\lambda_2=2·36$
251	·056000	·020483	·010$_5$	·021	·060000	·021157	·010	·021	·064000	·021804	·010	·020
252	·055777	·020404	·011	·021	·059761	·021076	·010	·021	·063745 +	·021721	·010	·020
253	·055556	·020326	·011	·021	·059524	·020995 +	·010	·021	·063492	·021638	·010	·020
254	·055336	·020248	·011	·021	·059289	·020915 +	·010	·021	·063241	·021556	·010	·020
255	·055118	·020171	·011	·021	·059055 +	·020836	·010	·021	·062992	·021474	·010	·020
256	·054902	·020095 −	·011	·021	·058824	·020757	·010	·021	·062745 +	·021393	·010	·020
257	·054688	·020019	·011	·021	·058594	·020679	·010	·021	·062500	·021312	·010	·020
258	·054475 −	·019943	·011	·021	·058366	·020601	·010	·021	·062257	·021232	·010	·020$_5$
259	·054264	·019869	·011	·021	·058140	·020524	·010	·021	·062016	·021153	·010	·021
260	·054054	·019794	·011	·021	·057915 +	·020447	·010	·021	·061776	·021075 −	·010	·021
261	·053846	·019721	·011	·021	·057692	·020371	·010	·021	·061538	·020996	·010	·021
262	·053640	·019648	·011	·021	·057471	·020296	·010	·021	·061303	·020919	·010	·021
263	·053435 +	·019575 −	·011	·021	·057252	·020221	·010	·021	·061069	·020842	·010	·021
264	·053232	·019503	·011	·021	·057034	·020147	·010	·021	·060837	·020766	·010	·021
265	·053030	·019431	·011	·021	·056818	·020073	·010	·021	·060606	·020690	·010	·021
266	·052830	·019360	·011	·021	·056604	·020000	·010	·021	·060377	·020615 −	·010	·021
267	·052632	·019290	·011	·021	·056391	·019927	·010	·021	·060150 +	·020540	·010	·021
268	·052434	·019220	·011	·021	·056180	·019855 +	·010	·021	·059925 +	·020466	·010	·021
269	·052239	·019150 +	·011	·021	·055970	·019784	·010	·021	·059701	·020392	·010	·021
270	·052045 −	·019081	·011	·021	·055762	·019712	·010	·021	·059480	·020319	·010	·021
271	·051852	·019013	·011	·021	·055556	·019642	·010	·021	·059259	·020246	·010	·021
272	·051661	·018945 +	·011	·021	·055351	·019572	·010	·021	·059041	·020174	·010	·021
273	·051471	·018878	·011	·021	·055147	·019502	·010	·021	·058824	·020103	·010	·021
274	·051282	·018810	·011	·021	·054945 +	·019433	·010	·021	·058608	·020031	·010	·021
275	·051095 −	·018744	·011	·021	·054745 −	·019364	·010	·021	·058394	·019961	·010	·021
276	·050909	·018678	·011	·021	·054545 +	·019296	·010	·021	·058182	·019891	·010	·021
277	·050725 −	·018612	·011	·021	·054348	·019229	·010	·021	·057971	·019821	·010	·021
278	·050542	·018547	·011	·021	·054152	·019161	·010	·021	·057762	·019752	·010	·021
279	·050360	·018482	·011	·021	·053957	·019095 −	·010	·021	·057554	·019683	·010	·021
280	·050179	·018418	·011	·021	·053763	·019029	·010	·021	·057348	·019615 +	·010	·021
281	·050000	·018354	·011	·021	·053571	·018963	·010	·021	·057143	·019548	·010	·021
282	·049822	·018291	·011	·021	·053381	·018897	·010	·021	·056940	·019480	·010	·021
283	·049645 +	·018228	·011	·021	·053191	·018833	·010	·021	·056738	·019414	·010	·021
284	·049470	·018165 +	·011	·021	·053004	·018768	·010	·021	·056537	·019347	·010	·021
285	·049296	·018103	·011	·021	·052817	·018704	·010	·021	·056338	·019282	·010	·021
286	·049123	·018042	·011	·021	·052632	·018640	·010	·021	·056140	·019216	·010	·021
287	·048951	·017980	·011	·021	·052448	·018577	·010	·021	·055944	·019151	·010	·021
288	·048780	·017920	·011	·021	·052265 −	·018515 −	·010	·021	·055749	·019087	·010	·021
289	·048611	·017859	·011	·021	·052083	·018452	·010	·021	·055556	·019023	·010	·021
290	·048443	·017799	·011	·021	·051903	·018390	·010	·021	·055363	·018959	·010	·021
291	·048276	·017740	·011	·021	·051724	·018329	·010	·021	·055172	·018896	·010	·021
292	·048110	·017680	·011	·021	·051546	·018268	·010	·021	·054983	·018833	·010	·021
293	·047945 +	·017622	·011	·021	·051370	·018207	·010	·021	·054795 −	·018770	·010	·021
294	·047782	·017563	·011	·021	·051195 −	·018147	·010	·021	·054608	·018708	·010	·021
295	·047619	·017505 +	·011	·021	·051020	·018087	·010$_5$	·021	·054422	·018647	·010	·021
296	·047458	·017447	·011	·021	·050847	·018028	·011	·021	·054237	·018586	·010	·021
297	·047297	·017390	·011	·021	·050676	·017969	·011	·021	·054054	·018525 −	·010	·021
298	·047138	·017333	·011	·021	·050505 +	·017910	·011	·021	·053872	·018464	·010	·021
299	·046980	·017277	·011	·021	·050336	·017852	·011	·021	·053691	·018404	·010	·021
300	·046823	·017221	·011	·021	·050167	·017794	·011	·021	·053512	·018345 −	·010	·021

N = size of sample	18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·75$	P_2 $\lambda_2=2·35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·74$	P_2 $\lambda_2=2·34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·73$	P_2 $\lambda_2=2·33$
251	·068000	·022427	·010	·020	·072000	·023028	·010	·020	·076000	·023608	·010	·020
252	·067729	·022342	·010	·020	·071713	·022940	·010	·020	·075697	·023518	·010	·020
253	·067460	·022256	·010	·020	·071429	·022853	·010	·020	·075397	·023429	·010	·020
254	·067194	·022172	·010	·020	·071146	·022766	·010	·020	·075099	·023340	·010	·020
255	·066929	·022088	·010	·020	·070866	·022681	·010	·020	·074803	·023253	·010	·020
256	·066667	·022005 −	·010	·020$_5$	·070588	·022595 +	·010	·020	·074510	·023165 +	·010	·020
257	·066406	·021922	·010	·021	·070313	·022511	·010	·020	·074219	·023079	·010	·020$_5$
258	·066148	·021840	·010	·021	·070039	·022427	·010	·020	·073930	·022993	·010	·021
259	·065891	·021759	·010	·021	·069767	·022343	·010	·020	·073643	·022908	·010	·021
260	·065637	·021678	·010	·021	·069498	·022261	·010	·020	·073359	·022823	·010	·021
261	·065385 −	·021598	·010	·021	·069231	·022179	·010	·020	·073077	·022739	·010	·021
262	·065134	·021519	·010	·021	·068966	·022097	·010	·020	·072797	·022656	·010	·021
263	·064885 +	·021440	·010	·021	·068702	·022016	·010	·020	·072519	·022573	·010	·021
264	·064639	·021361	·010	·021	·068441	·021936	·010	·020	·072243	·022491	·010	·021
265	·064394	·021284	·010	·021	·068182	·021856	·010	·020	·071970	·022409	·010	·021
266	·064151	·021206	·010	·021	·067925 −	·021777	·010	·020$_5$	·071698	·022328	·010	·021
267	·063910	·021130	·010	·021	·067669	·021698	·010	·021	·071429	·022248	·010	·021
268	·063670	·021053	·010	·021	·067416	·021620	·010	·021	·071161	·022168	·010	·021
269	·063433	·020978	·010	·021	·067164	·021543	·010	·021	·070896	·022089	·010	·021
270	·063197	·020903	·010	·021	·066914	·021466	·010	·021	·070632	·022010	·010	·021
271	·062963	·020828	·010	·021	·066667	·021390	·010	·021	·070370	·021932	·010	·021
272	·062731	·020754	·010	·021	·066421	·021314	·010	·021	·070111	·021855 −	·010	·021
273	·062500	·020681	·010	·021	·066176	·021239	·010	·021	·069853	·021777	·010	·021
274	·062271	·020608	·010	·021	·065934	·021164	·010	·021	·069597	·021701	·010	·021
275	·062044	·020535 +	·010	·021	·065693	·021089	·010	·021	·069343	·021625 +	·010	·021
276	·061818	·020463	·010	·021	·065455 −	·021016	·010	·021	·069091	·021550 −	·010	·021
277	·061594	·020392	·010	·021	·065217	·020943	·010	·021	·068841	·021475 −	·010	·021
278	·061372	·020321	·010	·021	·064982	·020870	·010	·021	·068592	·021400	·010	·021
279	·061151	·020251	·010	·021	·064748	·020798	·010	·021	·068345 +	·021326	·010	·021
280	·060932	·020181	·010	·021	·064516	·020726	·010	·021	·068100	·021253	·010	·021
281	·060714	·020111	·010	·021	·064286	·020655 −	·010	·021	·067857	·021180	·010	·021
282	·060498	·020042	·010	·021	·064057	·020584	·010	·021	·067616	·021108	·010	·021
283	·060284	·019973	·010	·021	·063830	·020514	·010	·021	·067376	·021036	·010	·021
284	·060071	·019905 +	·010	·021	·063604	·020444	·010	·021	·067138	·020965 −	·010	·021
285	·059859	·019838	·010	·021	·063380	·020375 −	·010	·021	·066901	·020894	·010	·021
286	·059649	·019771	·010	·021	·063158	·020306	·010	·021	·066667	·020823	·010	·021
287	·059441	·019704	·010	·021	·062937	·020237	·010	·021	·066434	·020753	·010	·021
288	·059233	·019638	·010	·021	·062718	·020170	·010	·021	·066202	·020684	·010	·021
289	·059028	·019572	·010	·021	·062500	·020102	·010	·021	·065972	·020615 −	·010	·021
290	·058824	·019507	·010	·021	·062284	·020035 +	·010	·021	·065744	·020546	·010	·021
291	·058621	·019442	·010	·021	·062069	·019969	·010	·021	·065517	·020478	·010	·021
292	·058419	·019377	·010	·021	·061856	·019902	·010	·021	·065292	·020410	·010	·021
293	·058219	·019313	·010	·021	·061644	·019837	·010	·021	·065068	·020343	·010	·021
294	·058020	·019249	·010	·021	·061433	·019771	·010	·021	·064846	·020276	·010	·021
295	·057823	·019186	·010	·021	·061224	·019707	·010	·021	·064626	·020210	·010	·021
296	·057627	·019123	·010	·021	·061017	·019642	·010	·021	·064407	·020144	·010	·021
297	·057432	·019061	·010	·021	·060811	·019578	·010	·021	·064189	·020079	·010	·021
298	·057239	·018999	·010	·021	·060606	·019515 −	·010	·021	·063973	·020013	·010	·021
299	·057047	·018937	·010	·021	·060403	·019452	·010	·021	·063758	·019949	·010	·021
300	·056856	·018876	·010	·021	·060201	·019389	·010	·021	·063545 +	·019885 −	·010	·021

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 λ_1 = 3·50	3: P_2 λ_2 = 2·94	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 λ_1 = 3·20	4: P_2 λ_2 = 2·80	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 λ_1 = 3·14	5: P_2 λ_2 = 2·68
301	·006667	·006622	·011	·019	·010000	·008097	·012	·020	·013333	·009334	·012	·020
302	·006645 –	·006601	·011	·019	·009967	·008070	·012	·020	·013289	·009303	·012	·020
303	·006623	·006579	·011	·019	·009934	·008044	·012	·020	·013245 +	·009273	·012	·020
304	·006601	·006557	·011	·019	·009901	·008018	·012	·020	·013201	·009242	·012	·020
305	·006579	·006536	·011	·019	·009868	·007991	·012	·020	·013158	·009212	·012	·020
306	·006557	·006515 –	·011	·019	·009836	·007965 +	·012	·020	·013115 –	·009182	·012	·020
307	·006536	·006493	·011	·019	·009804	·007940	·012	·020	·013072	·009153	·012	·020
308	·006515 –	·006472	·011	·019	·009772	·007914	·012	·020	·013029	·009123	·012	·020
309	·006494	·006451	·011	·019	·009740	·007888	·012	·020	·012987	·009094	·012	·020
310	·006472	·006431	·011	·019	·009709	·007863	·012	·020	·012945 –	·009065 –	·012	·020
311	·006452	·006410	·011	·019	·009677	·007838	·012	·020	·012903	·009036	·012	·020
312	·006431	·006390	·011	·019	·009646	·007813	·012	·020	·012862	·009007	·012	·020
313	·006410	·006369	·011	·019	·009615 +	·007788	·012	·020	·012821	·008978	·012	·020
314	·006390	·006349	·011	·019	·009585 –	·007763	·012	·020	·012780	·008950 +	·012	·020
315	·006369	·006329	·011	·019	·009554	·007739	·012	·020	·012739	·008922	·012	·020
316	·006349	·006309	·011	·019	·009524	·007715 –	·012	·020	·012698	·008894	·012	·020
317	·006329	·006289	·011	·019	·009494	·007690	·012	·020	·012658	·008866	·012	·020
318	·006309	·006269	·011	·019	·009464	·007666	·012	·020	·012618	·008838	·012	·020
319	·006289	·006250 –	·011	·019	·009434	·007642	·012	·020	·012579	·008811	·012	·020
320	·006270	·006230	·011	·019	·009404	·007619	·012	·020	·012539	·008783	·012	·020
321	·006250	·006211	·011	·019	·009375	·007595 –	·012	·020	·012500	·008756	·012	·020
322	·006231	·006192	·011	·019	·009346	·007572	·012	·020	·012461	·008729	·012	·020
323	·006211	·006173	·011	·019	·009317	·007548	·012	·020	·012422	·008702	·012	·020
324	·006192	·006154	·011	·019	·009288	·007525 –	·012	·020	·012384	·008676	·012	·020
325	·006173	·006135 –	·011	·019	·009259	·007502	·012	·020	·012346	·008649	·012	·020
326	·006154	·006116	·011	·019	·009231	·007479	·012	·020	·012308	·008623	·012	·020
327	·006135 –	·006097	·011	·019	·009202	·007456	·012	·020	·012270	·008596	·012	·020
328	·006116	·006079	·011	·019	·009174	·007434	·012	·020	·012232	·008570	·012	·020
329	·006098	·006060	·011	·019	·009146	·007411	·012	·020	·012195 +	·008545 –	·012	·020
330	·006079	·006042	·011	·019	·009119	·007389	·012	·020	·012158	·008519	·012	·020
331	·006061	·006024	·011	·019	·009091	·007367	·012	·020	·012121	·008493	·012	·020
332	·006042	·006006	·011	·019	·009063	·007345 –	·012	·020	·012085 –	·008468	·012	·020
333	·006024	·005988	·011	·019	·009036	·007323	·012	·020	·012048	·008442	·012	·020
334	·006006	·005970	·011	·019	·009009	·007301	·012	·020	·012012	·008417	·012	·020
335	·005988	·005952	·011	·019	·008982	·007279	·012	·020	·011976	·008392	·012	·020
336	·005970	·005935 –	·011	·019	·008955 +	·007257	·012	·020	·011940	·008368	·012	·020
337	·005952	·005917	·011	·019	·008929	·007236	·012	·020	·011905 –	·008343	·012	·020
338	·005935 –	·005900	·011	·019	·008902	·007215 –	·012	·020	·011869	·008318	·012	·020
339	·005917	·005882	·011	·019	·008876	·007194	·012	·020	·011834	·008294	·012	·020
340	·005900	·005865 +	·011	·019	·008850 –	·007172	·012	·020	·011799	·008270	·012	·020
341	·005882	·005848	·011	·019	·008824	·007152	·012	·020	·011765 –	·008246	·012	·020
342	·005865 +	·005831	·011	·019	·008798	·007131	·012	·020	·011730	·008222	·012	·020
343	·005848	·005814	·011	·019	·008772	·007110	·012	·020	·011696	·008198	·012	·020
344	·005831	·005797	·011	·019	·008746	·007089	·012	·020	·011662	·008174	·012	·020
345	·005814	·005780	·011	·019	·008721	·007069	·012	·020	·011628	·008151	·012	·020
346	·005797	·005764	·011	·019	·008696	·007049	·012	·020	·011594	·008127	·012	·020
347	·005780	·005747	·011	·019	·008671	·007028	·012	·020	·011561	·008104	·012	·020
348	·005764	·005731	·011	·019	·008646	·007008	·012	·020	·011527	·008081	·012	·020
349	·005747	·005714	·011	·019	·008621	·006988	·012	·020	·011494	·008058	·012	·020
350	·005731	·005698	·011	·019	·008596	·006968	·012	·020	·011461	·008035 –	·012	·020

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 λ_1 = 3·11	6: P_2 λ_2 = 2·63	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 λ_1 = 3·08	7: P_2 λ_2 = 2·58	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 λ_1 = 3·02	8: P_2 λ_2 = 2·54
301	·016667	·010418	·011	·020	·020000	·011393	·010	·020	·023333	·012285 –	·010	·020
302	·016611	·010384	·011	·020	·019934	·011356	·010	·020	·023256	·012245 –	·010	·020
303	·016556	·010350 –	·011	·020	·019868	·011319	·010	·020	·023179	·012204	·010	·020
304	·016502	·010316	·011	·020	·019802	·011282	·010	·020	·023102	·012165 +	·010	·020
305	·016447	·010283	·011	·020	·019737	·011245 +	·010	·020	·023026	·012126	·010	·020
306	·016393	·010249	·011	·020	·019672	·011209	·010	·020	·022951	·012087	·010	·020
307	·016340	·010216	·011	·020	·019608	·011173	·010	·020	·022876	·012048	·010	·020
308	·016287	·010183	·011	·020	·019544	·011137	·010	·020	·022801	·012009	·010	·020
309	·016234	·010151	·011	·020	·019481	·011101	·010	·020	·022727	·011971	·010	·020
310	·016181	·010118	·011	·020	·019417	·011066	·010	·020	·022654	·011932	·010	·020
311	·016129	·010086	·011	·020	·019355 –	·011030	·010	·020	·022581	·011895 –	·010	·021
312	·016077	·010054	·011	·020	·019293	·010995 +	·010	·020	·022508	·011857	·010	·021
313	·016026	·010022	·011	·020	·019231	·010961	·010	·020	·022436	·011819	·010	·021
314	·015974	·009990	·011	·020	·019169	·010926	·010	·020	·022364	·011782	·010	·021
315	·015924	·009959	·011	·020	·019108	·010892	·010	·020	·022293	·011745 +	·010	·021
316	·015873	·009928	·011	·020	·019048	·010857	·010	·020	·022222	·011708	·010	·021
317	·015823	·009896	·011	·020	·018987	·010824	·010	·020	·022152	·011672	·010	·021
318	·015773	·009866	·011	·020	·018927	·010790	·010	·020	·022082	·011636	·010	·021
319	·015723	·009835 –	·011	·020	·018868	·010756	·010	·020	·022013	·011600	·010	·021
320	·015674	·009804	·011	·020	·018809	·010723	·010	·020	·021944	·011564	·010	·021
321	·015625	·009774	·011	·020	·018750	·010690	·010	·020	·021875	·011528	·010	·021
322	·015576	·009744	·011	·020	·018692	·010657	·010	·020	·021807	·011493	·010	·021
323	·015528	·009714	·011	·020	·018634	·010624	·010	·020	·021739	·011458	·010	·021
324	·015480	·009684	·011	·020	·018576	·010592	·010	·020	·021672	·011423	·010	·021
325	·015432	·009655 –	·011	·020	·018519	·010560	·010	·020	·021605 –	·011388	·010	·021
326	·015385 –	·009625 +	·011	·020	·018462	·010528	·010	·020	·021538	·011353	·010	·021
327	·015337	·009596	·011	·020	·018405 –	·010496	·010	·020	·021472	·011319	·010	·021
328	·015291	·009567	·011	·020	·018349	·010464	·010	·020	·021407	·011285 –	·010	·021
329	·015244	·009538	·011	·020	·018293	·010432	·010	·020	·021341	·011251	·010	·021
330	·015198	·009510	·011	·020	·018237	·010401	·010	·020	·021277	·011217	·010	·021
331	·015152	·009481	·011	·020	·018182	·010370	·010	·020	·021212	·011184	·010	·021
332	·015106	·009453	·011	·020	·018127	·010339	·010	·020	·021148	·011150 +	·010	·021
333	·015060	·009425 –	·011	·020	·018072	·010308	·010	·020	·021084	·011117	·010	·021
334	·015015 +	·009397	·011	·020	·018018	·010278	·010	·020	·021021	·011084	·010	·021
335	·014970	·009369	·011	·020	·017964	·010247	·010	·020	·020958	·011052	·010	·021
336	·014925 +	·009341	·011	·020	·017910	·010217	·010	·020	·020896	·011019	·010	·021
337	·014881	·009314	·011	·020	·017857	·010187	·010	·020	·020833	·010987	·010	·021
338	·014837	·009286	·011	·020	·017804	·010157	·010	·020	·020772	·010954	·010	·021
339	·014793	·009259	·011	·020	·017751	·010128	·010	·020	·020710	·010922	·010	·021
340	·014749	·009232	·011	·020	·017699	·010098	·010	·020	·020649	·010891	·010	·021
341	·014706	·009205 +	·011	·020	·017647	·010069	·010	·020	·020588	·010859	·010	·021
342	·014663	·009178	·011	·020	·017595 +	·010039	·010	·020	·020528	·010828	·010	·021
343	·014620	·009152	·011	·020	·017544	·010010	·010	·020	·020468	·010796	·010	·021
344	·014577	·009125 +	·011	·020	·017493	·009982	·010	·020	·020408	·010765 +	·010	·021
345	·014535 –	·009099	·011	·020	·017442	·009953	·010	·020	·020349	·010735 –	·010	·021
346	·014493	·009073	·011	·020	·017391	·009924	·010	·020	·020290	·010704	·010	·021
347	·014451	·009047	·011	·020	·017341	·009896	·010	·020	·020231	·010673	·010	·021
348	·014409	·009021	·011	·020	·017291	·009868	·010	·020	·020173	·010643	·010	·021
349	·014368	·008996	·011	·020	·017241	·009840	·010	·020	·020115 –	·010613	·010	·021
350	·014327	·008970	·011	·020	·017192	·009812	·010	·020	·020057	·010583	·010	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	9: $\bar{\eta}^2$	9: $\sigma_{\bar{\eta}^2}$	9: P_1 $\lambda_1 = 2{\cdot}96$	9: P_2 $\lambda_2 = 2{\cdot}50$	10: $\bar{\eta}^2$	10: $\sigma_{\bar{\eta}^2}$	10: P_1 $\lambda_1 = 2{\cdot}92$	10: P_2 $\lambda_2 = 2{\cdot}47$	11: $\bar{\eta}^2$	11: $\sigma_{\bar{\eta}^2}$	11: P_1 $\lambda_1 = 2{\cdot}88$	11: P_2 $\lambda_2 = 2{\cdot}44$
301	·026667	·013111	·010	·021	·030000	·013882	·011	·021	·033333	·014608	·011	·021
302	·026578	·013068	·010	·021	·029900	·013837	·011	·021	·033223	·014560	·011	·021
303	·026490	·013025 +	·010	·021	·029801	·013792	·011	·021	·033113	·014513	·011	·021
304	·026403	·012983	·010	·021	·029703	·013747	·011	·021	·033003	·014466	·011	·021
305	·026316	·012941	·010	·021	·029605 +	·013703	·011	·021	·032895 –	·014420	·011	·021
306	·026230	·012899	·010	·021	·029508	·013659	·011	·021	·032787	·014373	·011	·021
307	·026144	·012858	·010	·021	·029412	·013615 +	·011	·021	·032680	·014327	·011	·021
308	·026059	·012817	·010	·021	·029316	·013571	·011	·021	·032573	·014282	·011	·021
309	·025974	·012776	·010	·021	·029221	·013528	·011	·021	·032468	·014236	·011	·021
310	·025890	·012735 +	·010	·021	·029126	·013485 +	·011	·021	·032362	·014191	·011	·021
311	·025806	·012695 –	·010	·021	·029032	·013443	·011	·021	·032258	·014146	·011	·021
312	·025723	·012655 –	·010	·021	·028939	·013400	·011	·021	·032154	·014102	·011	·021
313	·025641	·012615 –	·010	·021	·028846	·013358	·011	·021	·032051	·014057	·011	·021
314	·025559	·012575 +	·010	·021	·028754	·013316	·011	·021	·031949	·014013	·011	·021
315	·025478	·012536	·010	·021	·028662	·013274	·011	·021	·031847	·013969	·011	·021
316	·025397	·012497	·010	·021	·028571	·013233	·011	·021	·031746	·013926	·011	·021
317	·025316	·012458	·010	·021	·028481	·013192	·011	·021	·031646	·013883	·011	·021
318	·025237	·012419	·010	·021	·028391	·013151	·011	·021	·031546	·013840	·011	·021
319	·025157	·012381	·010	·021	·028302	·013110	·011	·021	·031447	·013797	·011	·021
320	·025078	·012342	·010	·021	·028213	·013070	·011	·021	·031348	·013755 –	·011	·021
321	·025000	·012304	·010	·021	·028125	·013030	·011	·021	·031250	·013713	·011	·021
322	·024922	·012267	·010	·021	·028037	·012990	·011	·021	·031153	·013671	·011	·021
323	·024845 –	·012229	·010	·021	·027950 +	·012950 +	·011	·021	·031056	·013629	·011	·021
324	·024768	·012192	·010	·021	·027864	·012911	·011	·021	·030960	·013588	·011	·021
325	·024691	·012155 –	·010	·021	·027778	·012872	·011	·021	·030864	·013546	·011	·021
326	·024615 +	·012118	·010	·021	·027692	·012833	·011	·021	·030769	·013506	·011	·021
327	·024540	·012081	·010	·021	·027607	·012794	·011	·021	·030675 –	·013465 –	·011	·021
328	·024465 –	·012045 +	·010	·021	·027523	·012756	·011	·021	·030581	·013425 –	·011	·021
329	·024390	·012009	·010	·021	·027439	·012717	·011	·021	·030488	·013384	·011	·021
330	·024316	·011973	·010	·021	·027356	·012679	·011	·021	·030395 +	·013344	·011	·021
331	·024242	·011937	·010	·021	·027273	·012642	·011	·021	·030303	·013305 –	·011	·021
332	·024169	·011902	·010	·021	·027190	·012604	·011	·021	·030211	·012265 +	·011	·021
333	·024096	·011866	·010	·021	·027108	·012567	·011	·021	·030120	·013226	·011	·021
334	·024024	·011831	·010	·021	·027027	·012530	·011	·021	·030030	·013187	·011	·021
335	·023952	·011796	·010	·021	·026946	·012493	·011	·021	·029940	·013148	·011	·021
336	·023881	·011762	·010	·021	·026866	·012456	·011	·021	·029851	·013110	·011	·021
337	·023810	·011727	·010	·021	·026786	·012420	·011	·021	·029762	·013072	·011	·021
338	·023739	·011693	·010	·021	·026706	·012384	·011	·021	·029674	·013033	·011	·021
339	·023669	·011659	·010	·021	·026627	·012347	·011	·021	·029586	·012996	·011	·021
340	·023599	·011625 +	·010	·021	·026549	·012312	·011	·021	·029499	·012958	·011	·021
341	·023529	·011591	·010	·021	·026471	·012276	·011	·021	·029412	·012921	·011	·021
342	·023460	·011558	·010	·021	·026393	·012241	·011	·021	·029326	·012883	·011	·021
343	·023392	·011525 –	·010	·021	·026316	·012205 +	·011	·021	·029240	·012846	·011	·021
344	·023324	·011492	·010	·021	·026239	·012170	·011	·021	·029155 –	·012810	·011	·021
345	·023256	·011459	·010	·021	·026163	·012136	·011	·021	·029070	·012773	·011	·021
346	·023188	·011426	·010	·021	·026087	·012101	·011	·021	·028986	·012737	·011	·021
347	·023121	·011393	·010	·021	·026012	·012067	·011	·021	·028902	·012700	·011	·021
348	·023055 –	·011361	·010	·021	·025937	·012032	·011	·021	·028818	·012664	·011	·021
349	·022989	·011329	·010	·021	·025862	·011998	·011	·021	·028736	·012629	·011	·021
350	·022923	·011297	$·010_5$	·021	·025788	·011965 –	·011	·021	·028653	·012593	·011	·021

N = size of sample	12: $\bar{\eta}^2$	12: $\sigma_{\bar{\eta}^2}$	12: P_1 $\lambda_1 = 2{\cdot}84$	12: P_2 $\lambda_2 = 2{\cdot}42$	13: $\bar{\eta}^2$	13: $\sigma_{\bar{\eta}^2}$	13: P_1 $\lambda_1 = 2{\cdot}80$	13: P_2 $\lambda_2 = 2{\cdot}40$	14: $\bar{\eta}^2$	14: $\sigma_{\bar{\eta}^2}$	14: P_1 $\lambda_1 = 2{\cdot}79$	14: P_2 $\lambda_2 = 2{\cdot}39$
301	·036667	·015295 –	·011	·021	·040000	·015947	·011	·021	·043333	·016569	·011	·021
302	·036545 –	·015245 –	·011	·021	·039867	·015895 +	·011	·021	·043189	·016516	·011	·021
303	·036424	·015195 +	·011	·021	·039735 +	·015844	·011	·021	·043046	·016462	·011	·021
304	·036304	·015146	·011	·021	·039604	·015793	·011	·021	·042904	·016409	·011	·021
305	·036184	·015098	·011	·021	·039474	·015742	·011	·021	·042763	·016357	·011	·021
306	·036066	·015049	·011	·021	·039344	·015692	·011	·021	·042623	·016305 –	·011	·021
307	·035948	·015001	·011	·021	·039216	·015642	·011	·021	·042484	·016253	·011	·021
308	·035831	·014953	·011	·021	·039088	·015592	·011	·021	·042345 +	·016201	·011	·021
309	·035714	·014906	·011	·021	·038961	·015542	·011	·021	·042208	·016150 –	·011	·021
310	·035599	·014859	·011	·021	·038835 –	·015493	·011	·021	·042071	·016099	·011	·021
311	·035484	·014812	·011	·021	·038710	·015445 –	·011	·021	·041935 +	·016048	·011	·021
312	·035370	·014765 +	·011	·021	·038585 +	·015396	·011	·021	·041801	·015998	·011	·021
313	·035256	·014719	·011	·021	·038462	·015348	·011	·021	·041667	·015948	·011	·021
314	·035144	·014673	·011	·021	·038339	·015300	·011	·021	·041534	·015898	·011	·021
315	·035032	·014627	·011	·021	·038217	·015252	·011	·021	·041401	·015849	·011	·021
316	·034921	·014582	·011	·021	·038095 +	·015205 +	·011	·021	·041270	·015800	·011	·021
317	·034810	·014537	·011	·021	·037975 –	·015158	·011	·021	·041139	·015751	·011	·021
318	·034700	·014492	·011	·021	·037855 –	·015111	·011	·021	·041009	·015703	·011	·021
319	·034591	·014447	·011	·021	·037736	·015065 –	·011	·021	·040881	·015654	·011	·021
320	·034483	·014403	·011	·021	·037618	·015019	·011	·021	·040752	·015606	·011	·021
321	·034375	·014359	·011	·021	·037500	·014973	·011	·021	·040625	·015559	·011	·021
322	·034268	·014315 –	·011	·021	·037383	·014927	·011	·021	·040498	·015512	·011	·021
323	·034161	·014271	·011	·021	·037267	·014882	·011	·021	·040373	·015465 –	·011	·021
324	·034056	·014228	·011	·021	·037152	·014837	·011	·021	·040248	·015418	·011	·021
325	·033951	·014185 +	·011	·021	·037037	·014792	·011	·021	·040123	·015371	·011	·021
326	·033846	·014142	·011	·021	·036923	·014748	·011	·021	·040000	·015325 +	·011	·021
327	·033742	·014100	·011	·021	·036810	·014703	·011	·021	·039877	·015279	·011	·021
328	·033639	·014058	·011	·021	·036697	·014659	·011	·021	·039755 +	·015234	·011	·021
329	·033537	·014016	·011	·021	·036585 +	·014616	·011	·021	·039634	·015188	·011	·021
330	·033435 –	·013974	·011	·021	·036474	·014572	·011	·021	·039514	·015143	·011	·021
331	·033333	·013932	·011	·021	·036364	·014529	·011	·021	·039394	·015098	·011	·021
332	·033233	·013891	·011	·021	·036254	·014486	·011	·021	·039275 –	·015054	·011	·021
333	·033133	·013850 +	·011	·021	·036145 –	·014443	·011	·021	·039157	·015010	·011	·021
334	·033033	·013809	·011	·021	·036036	·014401	·011	·021	·039039	·014966	·011	·021
335	·032934	·013769	·011	·021	·035928	·014359	·011	·021	·038922	·014922	·011	·021
336	·032836	·013729	·011	·021	·035821	·014317	·011	·021	·038806	·014878	·011	·021
337	·032738	·013688	·011	·021	·035714	·014275 +	·011	·021	·038690	·014835 +	·011	·021
338	·032641	·013649	·011	·021	·035608	·014234	·011	·021	·038576	·014792	·011	·021
339	·032544	·013609	·011	·021	·035503	·014192	·011	·021	·038462	·014749	·011	·021
340	·032448	·013570	·011	·021	·035398	·014152	·011	·021	·038348	·014707	·011	·021
341	·032353	·013531	·011	·021	·035294	·014111	·011	·021	·038235 +	·014665 –	·011	·021
342	·032258	·013492	·011	·021	·035191	·014070	·011	·021	·038123	·014623	·011	·021
343	·032164	·013453	·011	·021	·035088	·014030	·011	·021	·038012	·014581	·011	·021
344	·032070	·013415 –	·011	·021	·034985 +	·013990	·011	·021	·037901	·014539	·011	·021
345	·031977	·013376	·011	·021	·034884	·013950 +	·011	·021	·037791	·014498	·011	·021
346	·031884	·013338	·011	·021	·034783	·013911	·011	·021	·037681	·014457	·011	·021
347	·031792	·013301	·011	·021	·034682	·013871	·011	·021	·037572	·014416	·011	·021
348	·031700	·013263	·011	·021	·034582	·013832	·011	·021	·037464	·014375 +	·011	·021
349	·031609	·013226	·011	·021	·034483	·013793	·011	·021	·037356	·014335 –	·011	·021
350	·031519	·013188	·011	·021	·034384	·013754	·011	·021	·037249	·014295 –	·011	·021

TABLE IV.—(*continued*).

N = size of sample	15: $\bar{\eta}^2$	15: $\sigma_{\bar{\eta}^2}$	15: P_1 λ_1 = 2·78	15: P_2 λ_2 = 2·38	16: $\bar{\eta}^2$	16: $\sigma_{\bar{\eta}^2}$	16: P_1 λ_1 = 2·77	16: P_2 λ_2 = 2·37	17: $\bar{\eta}^2$	17: $\sigma_{\bar{\eta}^2}$	17: P_1 λ_1 = 2·76	17: P_2 λ_2 = 2·36
301	·046667	·017165 −	·011	·021	·050000	·017736	·011	·021	·053333	·018286	·010	·021
302	·046512	·017109	·011	·021	·049834	·017679	·011	·021	·053156	·018227	·010	·021
303	·046358	·017054	·011	·021	·049669	·017622	·011	·021	·052980	·018168	·010	·021
304	·046205 −	·016999	·011	·021	·049505 −	·017566	·011	·021	·052805 +	·018110	·010	·021
305	·046053	·016945 +	·011	·021	·049342	·017510	·011	·021	·052632	·018052	·010	·021
306	·045902	·016891	·011	·021	·049180	·017454	·011	·021	·052459	·017995 +	·010	·021
307	·045752	·016837	·011	·021	·049020	·017398	·011	·021	·052288	·017938	·010	·021
308	·045603	·016784	·011	·021	·048860	·017343	·011	·021	·052117	·017881	·010	·021
309	·045455 −	·016731	·011	·021	·048701	·017289	·011	·021	·051948	·017825 +	·010	·021
310	·045307	·016678	·011	·021	·048544	·017234	·011	·021	·051780	·017769	·010	·021
311	·045161	·016626	·011	·021	·048387	·017180	·011	·021	·051613	·017714	·010	·021
312	·045016	·016574	·011	·021	·048232	·017127	·011	·021	·051447	·017658	·010	·021
313	·044872	·016522	·011	·021	·048077	·017073	·011	·021	·051282	·017604	·010	·021
314	·044728	·016471	·011	·021	·047923	·017020	·011	·021	·051118	·017549	·010	·021
315	·044586	·016420	·011	·021	·047771	·016968	·011	·021	·050955 +	·017495 −	·010	·021
316	·044444	·016369	·011	·021	·047619	·016915 +	·011	·021	·050794	·017441	·010	·021
317	·044304	·016319	·011	·021	·047468	·016863	·011	·021	·050633	·017387	·010	·021
318	·044164	·016268	·011	·021	·047319	·016812	·011	·021	·050473	·017334	·010	·021
319	·044025 +	·016219	·011	·021	·047170	·016760	·011	·021	·050314	·017281	·010	·021
320	·043887	·016169	·011	·021	·047022	·016709	·011	·021	·050157	·017229	·010	·021
321	·043750	·016120	·011	·021	·046875	·016658	·011	·021	·050000	·017176	·010	·021
322	·043614	·016071	·011	·021	·046729	·016608	·011	·021	·049844	·017125 −	·010	·021
323	·043478	·016022	·011	·021	·046584	·016558	·011	·021	·049689	·017073	·010	·021
324	·043344	·015974	·011	·021	·046440	·016508	·011	·021	·049536	·017022	·010	·021
325	·043210	·015926	·011	·021	·046296	·016458	·011	·021	·049383	·016971	·010	·021
326	·043077	·015878	·011	·021	·046154	·016409	·011	·021	·049231	·016920	·010	·021
327	·042945 −	·015831	·011	·021	·046012	·016360	·011	·021	·049080	·016869	·010	·021
328	·042813	·015784	·011	·021	·045872	·016311	·011	·021	·048930	·016819	·010	·021
329	·042683	·015737	·011	·021	·045732	·016263	·011	·021	·048780	·016770	·010	·021
330	·042553	·015690	·011	·021	·045593	·016215 −	·011	·021	·048632	·016720	·010	·021
331	·042424	·015644	·011	·021	·045455 −	·016167	·011	·021	·048485 −	·016671	·010	·021
332	·042296	·015598	·011	·021	·045317	·016120	·011	·021	·048338	·016622	·010	·021
333	·042169	·015552	·011	·021	·045181	·016072	·011	·021	·048193	·016573	·010	·021
334	·042042	·015506	·011	·021	·045045 +	·016025 +	·011	·021	·048048	·016525 −	·010	·021
335	·041916	·015461	·011	·021	·044910	·015979	·011	·021	·047904	·016477	·010	·021
336	·041791	·015416	·011	·021	·044776	·015932	·011	·021	·047761	·016429	·010	·021
337	·041667	·015371	·011	·021	·044643	·015886	·011	·021	·047619	·016381	·010	·021
338	·041543	·015327	·011	·021	·044510	·015840	·011	·021	·047478	·016334	·010	·021
339	·041420	·015283	·011	·021	·044379	·015795 −	·011	·021	·047337	·016287	·010	·021
340	·041298	·015239	·011	·021	·044248	·015749	·011	·021	·047198	·016240	·010	·021
341	·041176	·015195 −	·011	·021	·044118	·015704	·011	·021	·047059	·016194	·010	·021
342	·041056	·015151	·011	·021	·043988	·015659	·011	·021	·046921	·016148	·010	·021
343	·040936	·015108	·011	·021	·043860	·015615 −	·011	·021	·046784	·016102	·010	·021
344	·040816	·015065 +	·011	·021	·043732	·015570	·011	·021	·046647	·016056	·010	·021
345	·040698	·015022	·011	·021	·043605 −	·015526	·011	·021	·046512	·016011	·010	·021
346	·040580	·014980	·011	·021	·043478	·015482	·011	·021	·046377	·015966	·010	·021
347	·040462	·014938	·011	·021	·043353	·015439	·011	·021	·046243	·015921	·010	·021
348	·040346	·014896	·011	·021	·043228	·015395 +	·011	·021	·046110	·015876	·010	·021
349	·040230	·014854	·011	·021	·043103	·015352	·011	·021	·045977	·015832	·010	·021
350	·040115 −	·014812	·011	·021	·042980	·015309	·011	·021	·045845 +	·015788	·010	·021

N = size of sample	18: $\bar{\eta}^2$	18: $\sigma_{\bar{\eta}^2}$	18: P_1 λ_1 = 2·75	18: P_2 λ_2 = 2·35	19: $\bar{\eta}^2$	19: $\sigma_{\bar{\eta}^2}$	19: P_1 λ_1 = 2·74	19: P_2 λ_2 = 2·34	20: $\bar{\eta}^2$	20: $\sigma_{\bar{\eta}^2}$	20: P_1 λ_1 = 2·73	20: P_2 λ_2 = 2·33
301	·056667	·018815 +	·010	·021	·060000	·019326	·010	·021	·063333	·019821	·010	·021
302	·056478	·018755 −	·010	·021	·059801	·019264	·010	·021	·063123	·019757	·010	·021
303	·056291	·018695 −	·010	·021	·059603	·019203	·010	·021	·062914	·019694	·010	·021
304	·056106	·018635 +	·010	·021	·059406	·019142	·010	·021	·062706	·019632	·010	·021
305	·055921	·018576	·010	·021	·059211	·019081	·010	·021	·062500	·019570	·010	·021
306	·055738	·018517	·010	·021	·059016	·019021	·010	·021	·062295 +	·019508	·010	·021
307	·055556	·018458	·010	·021	·058824	·018961	·010	·021	·062092	·019446	·010	·021
308	·055375 −	·018400	·010	·021	·058632	·018901	·010	·021	·061889	·019385 +	·010	·021
309	·055195 −	·018342	·010	·021	·058442	·018842	·010	·021	·061688	·019325 −	·010	·021
310	·055016	·018285 −	·010	·021	·058252	·018783	·010	·021	·061489	·019264	·010	·021
311	·054839	·018228	·010	·021	·058065 −	·018724	·010	·021	·061290	·019204	·010	·021
312	·054662	·018171	·010	·021	·057878	·018666	·010	·021	·061093	·019145 −	·010	·021
313	·054487	·018115 −	·010	·021	·057692	·018608	·010	·021	·060897	·019086	·010	·021
314	·054313	·018059	·010	·021	·057508	·018551	·010	·021	·060703	·019027	·010	·021
315	·054140	·018003	·010	·021	·057325 −	·018494	·010	·021	·060510	·018968	·010	·021
316	·053968	·017948	·010	·021	·057143	·018437	·010	·021	·060317	·018910	·010	·021
317	·053797	·017893	·010	·021	·056962	·018381	·010	·021	·060127	·018853	·010	·021
318	·053628	·017838	·010	·021	·056782	·018325 −	·010	·021	·059937	·018795 +	·010	·021
319	·053459	·017784	·010	·021	·056604	·018269	·010	·021	·059748	·018738	·010	·021
320	·053292	·017730	·010	·021	·056426	·018213	·010	·021	·059561	·018681	·010	·021
321	·053125	·017676	·010	·021	·056250	·018158	·010	·021	·059375	·018625 +	·010	·021
322	·052960	·017623	·010	·021	·056075 −	·018104	·010	·021	·059190	·018569	·010	·021
323	·052795 +	·017570	·010	·021	·055901	·018049	·010	·021	·059006	·018513	·010	·021
324	·052632	·017517	·010	·021	·055728	·017995 +	·010	·021	·058824	·018458	·010	·021
325	·052469	·017464	·010	·021	·055556	·017941	·010	·021	·058642	·018403	·010	·021
326	·052308	·017412	·010	·021	·055385 −	·017888	·010	·021	·058462	·018348	·010	·021
327	·052147	·017361	·010	·021	·055215 −	·017835 −	·010	·021	·058282	·018294	·010	·021
328	·051988	·017309	·010	·021	·055046	·017782	·010	·021	·058104	·018240	·010	·021
329	·051829	·017258	·010	·021	·054878	·017730	·010	·021	·057927	·018186	·010	·021
330	·051672	·017207	·010	·021	·054711	·017678	·010	·021	·057751	·018133	·010	·021
331	·051515 +	·017156	·010	·021	·054545 +	·017626	·010	·021	·057576	·018080	·010	·021
332	·051360	·017106	·010	·021	·054381	·017574	·010	·021	·057402	·018027	·010	·021
333	·051205 −	·017056	·010	·021	·054217	·017523	·010	·021	·057229	·017974	·010	·021
334	·051051	·017007	·010	·021	·054054	·017472	·010	·021	·057057	·017922	·010	·021
335	·050898	·016957	·010	·021	·053892	·017421	·010	·021	·056886	·017870	·010	·021
336	·050746	·016908	·010	·021	·053731	·017371	·010	·021	·056716	·017819	·010	·021
337	·050595 +	·016859	·010	·021	·053571	·017321	·010	·021	·056548	·017767	·010	·021
338	·050445 +	·016811	·010	·021	·053412	·017271	·010	·021	·056380	·017716	·010	·021
339	·050296	·016762	·010	·021	·053254	·017221	·010	·021	·056213	·017666	·010	·021
340	·050147	·016714	·010	·021	·053097	·017172	·010	·021	·056047	·017615 +	·010	·021
341	·050000	·016667	·010	·021	·052941	·017123	·010	·021	·055882	·017565 +	·010	·021
342	·049853	·016619	·010	·021	·052786	·017075 −	·010	·021	·055718	·017515 +	·010	·021
343	·049708	·016572	·010	·021	·052632	·017026	·010	·021	·055556	·017466	·010	·021
344	·049563	·016525 +	·010	·021	·052478	·016978	·010	·021	·055394	·017416	·010	·021
345	·049419	·016478	·010	·021	·052326	·016930	·010	·021	·055233	·017367	·010	·021
346	·049275 +	·016432	·010	·021	·052174	·016883	·010	·021	·055072	·017319	·010	·021
347	·049133	·016386	·010	·021	·052023	·016835 +	·010	·021	·054913	·017270	·010	·021
348	·048991	·016340	·010	·021	·051873	·016788	·010	·021	·054755 +	·017222	·010	·021
349	·048851	·016294	·010	·021	·051724	·016742	·010	·021	·054598	·017174	·010	·021
350	·048711	·016249	·010	·021	·051576	·016695 −	·010	·021	·054441	·017127	·010	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 $\lambda_1 = 3{\cdot}50$	3: P_2 $\lambda_2 = 2{\cdot}94$	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 $\lambda_1 = 3{\cdot}20$	4: P_2 $\lambda_2 = 2{\cdot}80$	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 $\lambda_1 = 3{\cdot}14$	5: P_2 $\lambda_2 = 2{\cdot}68$
351	·005714	·005682	·011	·019	·008571	·006949	·012	·020	·011429	·008012	·012	·020
352	·005698	·005666	·011	·019	·008547	·006929	·012	·020	·011396	·007989	·012	·020
353	·005682	·005650 −	·011	·019	·008523	·006909	·012	·020	·011364	·007967	·012	·020
354	·005666	·005634	·011	·019	·008499	·006890	·012	·020	·011331	·007945 −	·012	·020
355	·005650 −	·005618	·011	·019	·008475 −	·006871	·012	·020	·011299	·007922	·012	·020
356	·005634	·005602	·011	·019	·008451	·006851	·012	·020	·011268	·007900	·012	·020
357	·005618	·005587	·011	·019	·008427	·006832	·012	·020	·011236	·007878	·012	·020
358	·005602	·005571	·011	·019	·008403	·006813	·012	·020	·011204	·007856	·012	·020
359	·005587	·005555 +	·011	·019	·008380	·006794	·012	·020	·011173	·007835 −	·012	·020
360	·005571	·005540	·011	·019	·008357	·006776	·012	·020	·011142	·007813	·012	·020$_5$
361	·005556	·005525 −	·011	·019	·008333	·006757	·012	·020	·011111	·007791	·012	·021
362	·005540	·005510	·011	·019	·008310	·006738	·012	·020	·011080	·007770	·012	·021
363	·005525 −	·005494	·011	·019	·008287	·006720	·012	·020	·011050 −	·007749	·012	·021
364	·005510	·005479	·011	·019	·008264	·006702	·012	·020	·011019	·007728	·012	·021
365	·005495 −	·005464	·011	·019	·008242	·006683	·012	·020	·010989	·007707	·012	·021
366	·005479	·005450 −	·011	·019	·008219	·006665 +	·012	·020	·010959	·007686	·012	·021
367	·005464	·005435 −	·011	·019	·008197	·006647	·012	·020	·010929	·007665 −	·012	·021
368	·005450 −	·005420	·011	·019	·008174	·006629	·012	·020	·010899	·007644	·012	·021
369	·005435 −	·005405 +	·011	·019	·008152	·006611	·012	·020	·010870	·007623	·012	·021
370	·005420	·005391	·011	·019	·008130	·006593	·012	·020	·010840	·007603	·012	·021
371	·005405 +	·005376	·011	·019	·008108	·006576	·012	·020	·010811	·007582	·012	·021
372	·005391	·005362	·011	·019	·008086	·006558	·012	·020	·010782	·007562	·012	·021
373	·005376	·005348	·011	·019	·008065 −	·006540	·012	·020	·010753	·007542	·012	·021
374	·005362	·005333	·011	·019	·008043	·006523	·012	·020	·010724	·007522	·012	·021
375	·005348	·005319	·011	·019	·008021	·006506	·012	·020	·010695 +	·007502	·012	·021
376	·005333	·005305 −	·011	·019	·008000	·006489	·012	·020	·010667	·007482	·012	·021
377	·005319	·005291	·011	·019	·007979	·006471	·012	·020	·010638	·007462	·012	·021
378	·005305 +	·005277	·011	·019	·007958	·006454	·012	·020	·010610	·007443	·012	·021
379	·005291	·005263	·011	·019	·007937	·006437	·012	·020	·010582	·007423	·012	·021
380	·005277	·005249	·011	·019	·007916	·006420	·012	·020	·010554	·007404	·012	·021
381	·005263	·005236	·011	·019	·007895 −	·006404	·012	·020	·010526	·007385 −	·012	·021
382	·005249	·005222	·011	·019	·007874	·006387	·012	·020	·010499	·007365 +	·012	·021
383	·005236	·005208	·011	·019	·007853	·006370	·012	·020	·010471	·007346	·012	·021
384	·005222	·005195 −	·011	·019	·007833	·006354	·012	·020	·010444	·007327	·012	·021
385	·005208	·005181	·011	·019	·007813	·006337	·012	·020	·010417	·007308	·012	·021
386	·005195 −	·005168	·011	·019	·007792	·006321	·012	·020	·010390	·007289	·012	·021
387	·005181	·005155 −	·011	·019	·007772	·006305 −	·012	·020	·010363	·007271	·012	·021
388	·005168	·005141	·011	·019	·007752	·006289	·012	·020	·010336	·007252	·012	·021
389	·005155 −	·005128	·011	·019	·007732	·006273	·012	·020	·010309	·007233	·012	·021
390	·005141	·005115 +	·011	·019	·007712	·006256	·012	·020	·010283	·007215 +	·012	·021
391	·005128	·005102	·011	·019	·007692	·006241	·012	·020	·010256	·007197	·012	·021
392	·005115 +	·005089	·011	·019	·007673	·006225 −	·012	·020	·010230	·007178	·012	·021
393	·005102	·005076	·011	·019	·007653	·006209	·012	·020	·010204	·007160	·012	·021
394	·005089	·005063	·011	·019	·007634	·006193	·012	·020	·010178	·007142	·012	·021
395	·005076	·005050 +	·011	·019	·007614	·006178	·012	·020	·010152	·007124	·012	·021
396	·005063	·005038	·011	·019	·007595 −	·006162	·012	·020	·010127	·007106	·012	·021
397	·005051	·005025 +	·011	·019	·007576	·006147	·012	·020	·010101	·007088	·012	·021
398	·005038	·005012	·011	·019	·007557	·006131	·012	·020	·010076	·007071	·012	·021
399	·005025 +	·005000 −	·011	·019	·007538	·006116	·012	·020	·010050 +	·007053	·012	·021
400	·005013	·004987	·011	·019	·007519	·006101	·012	·020	·010025 +	·007036	·012	·021

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 $\lambda_1 = 3{\cdot}11$	6: P_2 $\lambda_2 = 2{\cdot}63$	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 $\lambda_1 = 3{\cdot}08$	7: P_2 $\lambda_2 = 2{\cdot}58$	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 $\lambda_1 = 3{\cdot}02$	8: P_2 $\lambda_2 = 2{\cdot}54$
351	·014286	·008945 −	·011	·020	·017143	·009784	·010	·020	·020000	·010553	·010	·021
352	·014245 +	·008920	·011	·020	·017094	·009757	·010	·020	·019943	·010523	·010	·021
353	·014205 −	·008894	·011	·020	·017045 +	·009729	·010	·020	·019886	·010494	·010	·021
354	·014164	·008870	·011	·020	·016997	·009702	·010	·020	·019830	·010464	·010	·021
355	·014124	·008845 −	·011	·020	·016949	·009675 +	·010	·020	·019774	·010435 +	·010	·021
356	·014085 −	·008820	·011	·020	·016901	·009648	·010	·020	·019718	·010406	·010	·021
357	·014045 −	·008796	·011	·020	·016854	·009621	·010	·020	·019663	·010377	·010	·021
358	·014006	·008771	·011	·020	·016807	·009595 −	·010	·020	·019608	·010349	·010	·021
359	·013966	·008747	·011	·020	·016760	·009568	·010	·020	·019553	·010320	·010	·021
360	·013928	·008723	·011	·020	·016713	·009542	·010	·020	·019499	·010292	·010	·021
361	·013889	·008699	·011	·020	·016667	·009516	·010	·020	·019444	·010263	·010	·021
362	·013850 +	·008675 −	·011	·020	·016620	·009490	·010	·020	·019391	·010235 +	·010	·021
363	·013812	·008651	·011	·020	·016575 −	·009464	·010	·020	·019337	·010207	·010	·021
364	·013774	·008628	·011	·020	·016529	·009438	·010	·020	·019284	·010180	·010	·021
365	·013736	·008604	·011	·020	·016484	·009412	·010	·020	·019231	·010152	·010	·021
366	·013699	·008581	·011	·020	·016438	·009387	·010	·020	·019178	·010125 −	·010	·021
367	·013661	·008558	·011	·020	·016393	·009361	·010	·020	·019126	·010097	·010	·021
368	·013624	·008534	·011	·020	·016349	·009336	·010	·020	·019074	·010070	·010	·021
369	·013587	·008511	·011	·020	·016304	·009311	·010	·020	·019022	·010043	·010	·021
370	·013550 +	·008489	·011	·020	·016260	·009286	·010	·020	·018970	·010016	·010	·021
371	·013514	·008466	·011	·020	·016216	·009261	·010	·020	·018919	·009990	·010	·021
372	·013477	·008443	·011	·020	·016173	·009237	·010	·020	·018868	·009963	·010	·021
373	·013441	·008421	·011	·020	·016129	·009212	·010	·020	·018817	·009936	·010	·021
374	·013405 −	·008398	·011	·020	·016086	·009188	·010	·020	·018767	·009910	·010	·021
375	·013369	·008376	·011	·020	·016043	·009163	·010	·020	·018717	·009884	·010	·021
376	·013333	·008354	·011	·020	·016000	·009139	·010	·020	·018667	·009858	·010	·021
377	·013298	·008332	·011	·020	·015957	·009115 +	·010	·020	·018617	·009832	·010	·021
378	·013263	·008310	·011	·020	·015915 +	·009091	·010	·020	·018568	·009806	·010	·021
379	·013228	·008288	·011	·020	·015873	·009067	·010	·020	·018519	·009781	·010	·021
380	·013193	·008267	·011	·020	·015831	·009044	·010	·020	·018470	·009755 +	·010	·021
381	·013158	·008245 +	·011	·020	·015789	·009020	·010	·020	·018421	·009730	·010	·021
382	·013123	·008224	·011	·020	·015748	·008997	·010	·020	·018373	·009705 −	·010	·021
383	·013089	·008202	·011	·020	·015707	·008973	·010	·020	·018325 −	·009679	·010	·021
384	·013055 −	·008181	·011	·020	·015666	·008950 +	·010	·020	·018277	·009654	·010	·021
385	·013021	·008160	·011	·020	·015625	·008927	·010	·020	·018229	·009630	·010	·021
386	·012987	·008139	·011	·020	·015584	·008904	·010	·020	·018182	·009605 −	·010	·021
387	·012953	·008118	·011	·020	·015544	·008881	·010	·020	·018135 −	·009580	·010	·021
388	·012920	·008097	·011	·020	·015504	·008859	·010	·020	·018088	·009556	·010	·021
389	·012887	·008077	·011	·020	·015464	·008836	·010	·020	·018041	·009532	·010	·021
390	·012853	·008056	·011	·020	·015424	·008814	·010	·020	·017995 −	·009507	·010	·021
391	·012821	·008036	·011	·020	·015385 −	·008791	·010	·020	·017949	·009483	·010	·021
392	·012788	·008015 +	·011	·020	·015345 +	·008769	·010	·020	·017903	·009459	·010	·021
393	·012755 +	·007995 +	·011	·020	·015306	·008747	·010	·020	·017857	·009435 +	·010	·021
394	·012723	·007975 −	·011	·020	·015267	·008725 −	·010	·020	·017812	·009412	·010	·021
395	·012690	·007955 −	·011	·020	·015228	·008703	·010	·020	·017766	·009388	·010	·021
396	·012658	·007935 −	·011	·020	·015190	·008681	·010	·020	·017722	·009365 −	·010	·021
397	·012626	·007915 +	·011	·020	·015152	·008659	·010	·020	·017677	·009341	·010	·021
398	·012594	·007895 +	·011	·020	·015113	·008638	·010	·020	·017632	·009318	·010	·021
399	·012563	·007876	·011	·020	·015075 +	·008616	·010	·020	·017588	·009295 −	·010	·021
400	·012531	·007856	·011	·020	·015038	·008595 −	·010	·020	·017544	·009272	·010	·021

TABLE IV.—(*continued*).

N = size of sample	9				10				11				12				13				14			
	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 $\lambda_1 = 2·96$	P_2 $\lambda_2 = 2·50$	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 $\lambda_1 = 2·92$	P_2 $\lambda_2 = 2·47$	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 $\lambda_1 = 2·88$	P_2 $\lambda_2 = 2·44$	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 $\lambda_1 = 2·84$	P_2 $\lambda_2 = 2·42$	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 $\lambda_1 = 2·80$	P_2 $\lambda_2 = 2·40$	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 $\lambda_1 = 2·79$	P_2 $\lambda_2 = 2·39$
351	·022857	·011265 +	·011	·021	·025714	·011931	·011	·021	·028571	·012558	·011	·021	·031429	·013151	·011	·021	·034286	·013716	·011	·021	·037143	·014255 −	·011	·021
352	·022792	·011233	·011	·021	·025641	·011897	·011	·021	·028490	·012523	·011	·021	·031339	·013115 −	·011	·021	·034188	·013678	·011	·021	·037037	·014215 +	·011	·021
353	·022727	·011202	·011	·021	·025568	·011864	·011	·021	·028409	·012488	·011	·021	·031250 −	·013078	·011	·021	·034091	·013640	·011	·021	·036932	·014176	·011	·021
354	·022663	·011171	·011	·021	·025496	·011831	·011	·021	·028329	·012453	·011	·021	·031161	·013042	·011	·021	·033994	·013602	·011	·021	·036827	·014136	·011	·021
355	·022599	·011140	·011	·021	·025424	·011798	·011	·021	·028249	·012418	·011	·021	·031073	·013006	·011	·021	·033898	·013564	·011	·021	·036723	·014097	·011	·021
356	·022535 +	·011109	·011	·021	·025352	·011766	·011	·021	·028169	·012384	·011	·021	·030986	·012970	·011	·021	·033803	·013527	·011	·021	·036620	·014058	·011	·021
357	·022472	·011078	·011	·021	·025281	·011733	·011	·021	·028090	·012350 −	·011	·021	·030899	·012934	·011	·021	·033708	·013489	·011	·021	·036517	·014020	·011	·021
358	·022409	·011047	·011	·021	·025210	·011701	·011	·021	·028011	·012316	·011	·021	·030812	·012898	·011	·021	·033613	·013452	·011	·021	·036415 −	·013981	·011	·021
359	·022346	·011017	·011	·021	·025140	·011668	·011	·021	·027933	·012282	·011	·021	·030726	·012863	·011	·021	·033520	·013416	·011	·021	·036313	·013943	·011	·021
360	·022284	·010987	·011	·021	·025070	·011636	·011	·021	·027855 +	·012248	·011	·021	·030641	·012828	·011	·021	·033426	·013379	·011	·021	·036212	·013905 +	·011	·021
361	·022222	·010957	·011	·021	·025000	·011605 −	·011	·021	·027778	·012215 −	·011	·021	·030556	·012793	·011	·021	·033333	·013343	·011	·021	·036111	·013867	·011	·021
362	·022161	·010927	·011	·021	·024931	·011573	·011	·021	·027701	·012182	·011	·021	·030471	·012758	·011	·021	·033241	·013306	·011	·021	·036011	·013830	·011	·021
363	·022099	·010897	·011	·021	·024862	·011542	·011	·021	·027624	·012149	·011	·021	·030387	·012723	·011	·021	·033149	·013270	·011	·021	·035912	·013792	·011	·021
364	·022039	·010867	·011	·021	·024793	·011510	·011	·021	·027548	·012116	·011	·021	·030303	·012689	·011	·021	·033058	·013234	·011	·021	·035813	·013755 +	·011	·021
365	·021978	·010838	·011	·021	·024725 +	·011479	·011	·021	·027473	·012083	·011	·021	·030220	·012655 −	·011	·021	·032967	·013199	·011	·021	·035714	·013718	·011	·021
366	·021918	·010809	·011	·021	·024658	·011448	·011	·021	·027397	·012050 +	·011	·021	·030137	·012621	·011	·021	·032877	·013163	·011	·021	·035616	·013681	·011	·021
367	·021858	·010779	·011	·021	·024590	·011417	·011	·021	·027322	·012018	·011	·021	·030055 −	·012587	·011	·021	·032787	·013128	·011	·021	·035519	·013645 −	·011	·021
368	·021798	·010750 +	·011	·021	·024523	·011387	·011	·021	·027248	·011986	·011	·021	·029973	·012553	·011	·021	·032698	·013093	·011	·021	·035422	·013608	·011	·021
369	·021739	·010722	·011	·021	·024457	·011356	·011	·021	·027174	·011954	·011	·021	·029891	·012520	·011	·021	·032609	·013058	·011	·021	·035326	·013572	·011	·021
370	·021680	·010693	·011	·021	·024390	·011326	·011	·021	·027100	·011922	·011	·021	·029810	·012486	·011	·021	·032520	·013023	·011	·021	·035230	·013536	·011	·021
371	·021622	·010665 −	·011	·021	·024324	·011296	·011	·021	·027027	·011890	·011	·021	·029730	·012453	·011	·021	·032432	·012989	·011	·021	·035135 +	·013500 +	·011	·021
372	·021563	·010636	·011	·021	·024259	·011266	·011	·021	·026954	·011859	·011	·021	·029650 −	·012420	·011	·021	·032345 +	·012955 −	·011	·021	·035040	·013465 −	·011	·021
373	·021505 +	·010608	·011	·021	·024194	·011236	·011	·021	·026882	·011827	·011	·021	·029570	·012388	·011	·021	·032258	·012920	·011	·021	·034946	·013429	·011	·021
374	·021448	·010580	·011	·021	·024129	·011206	·011	·021	·026810	·011796	·011	·021	·029491	·012355 −	·011	·021	·032172	·012886	·011	·021	·034853	·013394	·011	·021
375	·021390	·010552	·011	·021	·024064	·011177	·011	·021	·026738	·011765 +	·011	·021	·029412	·012323	·011	·021	·032086	·012853	·011	·021	·034759	·013359	·011	·021
376	·021333	·010524	·011	·021	·024000	·011147	·011	·021	·026667	·011734	·011	·021	·029333	·012290	·011	·021	·032000	·012819	·011	·021	·034667	·013324	·011	·021
377	·021277	·010497	·011	·021	·023936	·011118	·011	·021	·026596	·011704	·011	·021	·029255 +	·012258	·011	·021	·031915 −	·012786	·011	·021	·034574	·013289	·011	·021
378	·021220	·010469	·011	·021	·023873	·011089	·011	·021	·026525 +	·011673	·011	·021	·029178	·012226	·011	·021	·031830	·012752	·011	·021	·034483	·013255 −	·011	·021
379	·021164	·010442	·011	·021	·023810	·011060	·011	·021	·026455 +	·011643	·011	·021	·029101	·012194	·011	·021	·031746	·012719	·011	·021	·034392	·013221	·011	·021
380	·021108	·010415 −	·011	·021	·023747	·011032	·011	·021	·026385 +	·011613	·011	·021	·029024	·012163	·011	·021	·031662	·012686	·011	·021	·034301	·013186	·011	·021
381	·021053	·010388	·011	·021	·023684	·011003	·011	·021	·026316	·011582	·011	·021	·028947	·012131	·011	·021	·031579	·012654	·011	·021	·034211	·013152	·011	·021
382	·020997	·010361	·011	·021	·023622	·010974	·011	·021	·026247	·011553	·011	·021	·028871	·012100	·011	·021	·031496	·012621	·011	·021	·034121	·013119	·011	·021
383	·020942	·010334	·011	·021	·023560	·010946	·011	·021	·026178	·011523	·011	·021	·028796	·012069	·011	·021	·031414	·012589	·011	·021	·034031	·013085 −	·011	·021
384	·020888	·010307	·011	·021	·023499	·010918	·011	·021	·026110	·011493	·011	·021	·028721	·012038	·011	·021	·031332	·012556	·011	·021	·033943	·013051	·011	·021
385	·020833	·010281	·011	·021	·023438	·010890	·011	·021	·026042	·011464	·011	·021	·028646	·012007	·011	·021	·031250	·012524	·011	·021	·033854	·013018	·011	·021
386	·020779	·010254	·011	·021	·023377	·010862	·011	·021	·025974	·011434	·011	·021	·028571	·011977	·011	·021	·031169	·012492	·011	·021	·033766	·012985 −	·011	·021
387	·020725 +	·010228	·011	·021	·023316	·010834	·011	·021	·025907	·011405 +	·011	·021	·028497	·011946	·011	·021	·031088	·012461	·011	·021	·033679	·012952	·011	·021
388	·020672	·010202	·011	·021	·023256	·010807	·011	·021	·025840	·011376	·011	·021	·028424	·011916	·011	·021	·031008	·012429	·011	·021	·033592	·012919	·011	·021
389	·020619	·010176	·011	·021	·023196	·010779	·011	·021	·025773	·011347	·011	·021	·028351	·011885 +	·011	·021	·030928	·012398	·011	·021	·033505 +	·012887	·011	·021
390	·020566	·010150 +	·011	·021	·023136	·010752	·011	·021	·025707	·011319	·011	·021	·028278	·011855 +	·011	·021	·030848	·012366	·011	·021	·033419	·012854	·011	·021
391	·020513	·010125 −	·011	·021	·023077	·010725 −	·011	·021	·025641	·011290	·011	·021	·028205 +	·011826	·011	·021	·030769	·012335 +	·011	·021	·033333	·012822	·011	·021
392	·020460	·010099	·011	·021	·023018	·010698	·011	·021	·025575 +	·011262	·011	·021	·028133	·011796	·011	·021	·030691	·012304	·011	·021	·033248	·012790	·011	·021
393	·020408	·010074	·011	·021	·022959	·010671	·011	·021	·025510	·011233	·011	·021	·028061	·011766	·011	·021	·030612	·012273	·011	·021	·033163	·012758	·011	·021
394	·020356	·010048	·011	·021	·022901	·010644	·011	·021	·025445 +	·011205 +	·011	·021	·027990	·011737	·011	·021	·030534	·012243	·011	·021	·033079	·012726	·011	·021
395	·020305 −	·010023	·011	·021	·022843	·010618	·011	·021	·025381	·011177	·011	·021	·027919	·011708	·011	·021	·030457	·012212	·011	·021	·032995 −	·012694	·011	·021
396	·020253	·009998	·011	·021	·022785 −	·010591	·011	·021	·025316	·011149	·011	·021	·027848	·011678	·011	·021	·030380	·012182	·011	·021	·032911	·012663	·011	·021
397	·020202	·009973	·011	·021	·022727	·010565 −	·011	·021	·025253	·011122	·011	·021	·027778	·011649	·011	·021	·030303	·012152	·011	·021	·032828	·012631	·011	·021
398	·020151	·009949	·011	·021	·022670	·010538	·011	·021	·025189	·011094	·011	·021	·027708	·011621	·011	·021	·030227	·012122	·011	·021	·032746	·012600	·011	·021
399	·020101	·009924	·011	·021	·022613	·010512	·011	·021	·025126	·011067	·011	·021	·027638	·011592	·011	·021	·030151	·012092	·011	·021	·032663	·012569	·011	·021
400	·020050 +	·009899	·011	·021	·022556	·010486	·011	·021	·025063	·011039	·011	·021	·027569	·011563	·011	·021	·030075 +	·012062	·011	·021	·032581	·012538	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15				16			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·78$	P_2 $\lambda_2=2·38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·77$	P_2 $\lambda_2=2·37$
351	·040000	·014771	·011	·021	·042857	·015267	·011	·021
352	·039886	·014730	·011	·021	·042735 +	·015224	·011	·021
353	·039773	·014689	·011	·021	·042614	·015182	·011	·021
354	·039660	·014648	·011	·021	·042493	·015140	·011	·021
355	·039548	·014608	·011	·021	·042373	·015098	·011	·021
356	·039437	·014568	·011	·021	·042254	·015057	·011	·021
357	·039326	·014528	·011	·021	·042135 −	·015016	·011	·021
358	·039216	·014488	·011	·021	·042017	·014975 −	·011	·021
359	·039106	·014449	·011	·021	·041899	·014934	·011	·021
360	·038997	·014409	·011	·021	·041783	·014893	·011	·021
361	·038889	·014370	·011	·021	·041667	·014853	·011	·021
362	·038781	·014331	·011	·021	·041551	·014813	·011	·021
363	·038674	·014293	·011	·021	·041436	·014773	·011	·021
364	·038567	·014254	·011	·021	·041322	·014733	·011	·021
365	·038462	·014216	·011	·021	·041209	·014694	·011	·021
366	·038356	·014178	·011	·021	·041096	·014654	·011	·021
367	·038251	·014140	·011	·021	·040984	·014615 +	·011	·021
368	·038147	·014102	·011	·021	·040872	·014576	·011	·021
369	·038043	·014065 −	·011	·021	·040761	·014538	·011	·021
370	·037940	·014027	·011	·021	·040650 +	·014499	·011	·021
371	·037838	·013990	·011	·021	·040541	·014461	·011	·021
372	·037736	·013954	·011	·021	·040431	·014423	·011	·021
373	·037634	·013917	·011	·021	·040323	·014385 +	·011	·021
374	·037534	·013880	·011	·021	·040214	·014348	·011	·021
375	·037433	·013844	·011	·021	·040107	·014310	·011	·021
376	·037333	·013808	·011	·021	·040000	·014273	·011	·021
377	·037234	·013772	·011	·021	·039894	·014236	·011	·021
378	·037135 +	·013736	·011	·021	·039788	·014199	·011	·021
379	·037037	·013701	·011	·021	·039683	·014162	·011	·021
380	·036939	·013665 +	·011	·021	·039578	·014126	·011	·021
381	·036842	·013630	·011	·021	·039474	·014089	·011	·021
382	·036745 +	·013595 +	·011	·021	·039370	·014053	·011	·021
383	·036649	·013560	·011	·021	·039267	·014017	·011	·021
384	·036554	·013526	·011	·021	·039164	·013982	·011	·021
385	·036458	·013491	·011	·021	·039063	·013946	·011	·021
386	·036364	·013457	·011	·021	·038961	·013911	·011	·021
387	·036269	·013423	·011	·021	·038860	·013875 +	·011	·021
388	·036176	·013389	·011	·021	·038760	·013840	·011	·021
389	·036082	·013355 +	·011	·021	·038660	·013805 +	·011	·021
390	·035990	·013322	·011	·021	·038560	·013771	·011	·021
391	·035897	·013288	·011	·021	·038462	·013736	·011	·021
392	·035806	·013255 −	·011	·021	·038363	·013702	·011	·021
393	·035714	·013222	·011	·021	·038265 +	·013668	·011	·021
394	·035623	·013189	·011	·021	·038168	·013634	·011	·021
395	·035533	·013156	·011	·021	·038071	·013600	·011	·021
396	·035443	·013123	·011	·021	·037975 −	·013566	·011	·021
397	·035354	·013091	·011	·021	·037879	·013533	·011	·021
398	·035264	·013059	·011	·021	·037783	·013499	·011	·021
399	·035176	·013027	·011	·021	·037688	·013466	·011	·021
400	·035088	·012995 −	·011	·021	·037594	·013433	·011	·021

N = size of sample	17				18			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·76$	P_2 $\lambda_2=2·36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·75$	P_2 $\lambda_2=2·35$
351	·045714	·015744	·010	·021	·048571	·016204	·010	·021
352	·045584	·015700	·010	·021	·048433	·016159	·010	·021
353	·045455 −	·015657	·010	·021	·048295 +	·016115 −	·010	·021
354	·045326	·015614	·010$_5$	·021	·048159	·016070	·010	·021
355	·045198	·015571	·011	·021	·048023	·016026	·010	·021
356	·045070	·015528	·011	·021	·047887	·015982	·010	·021
357	·044944	·015485 +	·011	·021	·047753	·015939	·010	·021
358	·044818	·015443	·011	·021	·047619	·015895 +	·010	·021
359	·044693	·015401	·011	·021	·047486	·015852	·010	·021
360	·044568	·015359	·011	·021	·047354	·015809	·010	·021
361	·044444	·015318	·011	·021	·047222	·015766	·010	·021
362	·044321	·015277	·011	·021	·047091	·015724	·010	·021
363	·044199	·015235 +	·011	·021	·046961	·015682	·010	·021
364	·044077	·015195 −	·011	·021	·046832	·015640	·010	·021
365	·043956	·015154	·011	·021	·046703	·015598	·010	·021
366	·043836	·015113	·011	·021	·046575 +	·015556	·010	·021
367	·043716	·015073	·011	·021	·046448	·015515 −	·010	·021
368	·043597	·015033	·011	·021	·046322	·015474	·010	·021
369	·043478	·014993	·011	·021	·046196	·015433	·010	·021
370	·043360	·014954	·011	·021	·046070	·015392	·010	·021
371	·043243	·014914	·011	·021	·045946	·015352	·010	·021
372	·043127	·014875 +	·011	·021	·045822	·015311	·010	·021
373	·043011	·014836	·011	·021	·045699	·015271	·010	·021
374	·042895 +	·014797	·011	·021	·045576	·015231	·010	·021
375	·042781	·014759	·011	·021	·045455 −	·015192	·010	·021
376	·042667	·014720	·011	·021	·045333	·015152	·010	·021
377	·042553	·014682	·011	·021	·045213	·015113	·010	·021
378	·042440	·014644	·011	·021	·045093	·015074	·010	·021
379	·042328	·014606	·011	·021	·044974	·015035 +	·010	·021
380	·042216	·014569	·011	·021	·044855 −	·014997	·010	·021
381	·042105 +	·014531	·011	·021	·044737	·014958	·010	·021
382	·041995 −	·014494	·011	·021	·044619	·014920	·010	·021
383	·041885 −	·014457	·011	·021	·044503	·014882	·010	·021
384	·041775 +	·014420	·011	·021	·044386	·014844	·010	·021
385	·041667	·014384	·011	·021	·044271	·014806	·010	·021
386	·041558	·014347	·011	·021	·044156	·014769	·010	·021
387	·041451	·014311	·011	·021	·044041	·014732	·010	·021
388	·041344	·014275 +	·011	·021	·043928	·014694	·010	·021
389	·041237	·014239	·011	·021	·043814	·014658	·010	·021
390	·041131	·014203	·011	·021	·043702	·014621	·010	·021
391	·041026	·014168	·011	·021	·043590	·014584	·010	·021
392	·040921	·014132	·011	·021	·043478	·014548	·010	·021
393	·040816	·014097	·011	·021	·043367	·014512	·010	·021
394	·040712	·014062	·011	·021	·043257	·014476	·010	·021
395	·040609	·014027	·011	·021	·043147	·014440	·010	·021
396	·040506	·013993	·011	·021	·043038	·014404	·010	·021
397	·040404	·013958	·011	·021	·042929	·014369	·010	·021
398	·040302	·013924	·011	·021	·042821	·014334	·010	·021
399	·040201	·013890	·011	·021	·042714	·014298	·010	·021
400	·040100	·013856	·011	·021	·042607	·014263	·010	·021

N = size of sample	19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·74$	P_2 $\lambda_2=2·34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·73$	P_2 $\lambda_2=2·33$
351	·051429	·016649	·010	·021	·054286	·017079	·010	·021
352	·051282	·016603	·010	·021	·054131	·017032	·010	·021
353	·051136	·016557	·010	·021	·053977	·016985 +	·010	·021
354	·050992	·016511	·010	·021	·053824	·016939	·010	·021
355	·050847	·016466	·010	·021	·053672	·016892	·010	·021
356	·050704	·016421	·010	·021	·053521	·016846	·010	·021
357	·050562	·016376	·010	·021	·053371	·016800	·010	·021
358	·050420	·016332	·010	·021	·053221	·016755 −	·010	·021
359	·050279	·016288	·010	·021	·053073	·016709	·010	·021
360	·050139	·016244	·010	·021	·052925 −	·016664	·010	·021
361	·050000	·016200	·010	·021	·052778	·016619	·010	·021
362	·049861	·016156	·010	·021	·052632	·016575 −	·010	·021
363	·049724	·016113	·010	·021	·052486	·016530	·010	·021
364	·049587	·016070	·010	·021	·052342	·016486	·010	·021
365	·049451	·016027	·010	·021	·052198	·016442	·010	·021
366	·049315 +	·015984	·010	·021	·052055 −	·016398	·010	·021
367	·049180	·015942	·010	·021	·051913	·016355 +	·010	·021
368	·049046	·015900	·010	·021	·051771	·016312	·010	·021
369	·048913	·015858	·010	·021	·051630	·016269	·010	·021
370	·048780	·015816	·010	·021	·051491	·016226	·010	·021
371	·048649	·015774	·010	·021	·051351	·016183	·010	·021
372	·048518	·015733	·010	·021	·051213	·016141	·010	·021
373	·048387	·015692	·010	·021	·051075 +	·016099	·010	·021
374	·048257	·015651	·010	·021	·050938	·016057	·010	·021
375	·048128	·015610	·010	·021	·050802	·016016	·010	·021
376	·048000	·015570	·010	·021	·050667	·015974	·010	·021
377	·047872	·015530	·010	·021	·050532	·015933	·010	·021
378	·047745 +	·015490	·010	·021	·050398	·015892	·010	·021
379	·047619	·015450 −	·010	·021	·050265 −	·015851	·010	·021
380	·047493	·015410	·010	·021	·050132	·015810	·010	·021
381	·047368	·015371	·010	·021	·050000	·015770	·010	·021
382	·047244	·015331	·010	·021	·049869	·015730	·010	·021
383	·047120	·015292	·010	·021	·049738	·015690	·010	·021
384	·046997	·015254	·010	·021	·049608	·015650 −	·010	·021
385	·046875	·015215 −	·010	·021	·049479	·015610	·010	·021
386	·046753	·015176	·010	·021	·049351	·015571	·010	·021
387	·046632	·015138	·010	·021	·049223	·015532	·010	·021
388	·046512	·015100	·010	·021	·049096	·015493	·010	·021
389	·046392	·015062	·010	·021	·048969	·015454	·010	·021
390	·046272	·015025 −	·010	·021	·048843	·015415 +	·010	·021
391	·046154	·014987	·010	·021	·048718	·015377	·010	·021
392	·046036	·014950 −	·010	·021	·048593	·015339	·010	·021
393	·045918	·014913	·010	·021	·048469	·015301	·010	·021
394	·045802	·014876	·010	·021	·048346	·015263	·010	·021
395	·045685 +	·014839	·010	·021	·048223	·015225 +	·010	·021
396	·045570	·014802	·010	·021	·048101	·015188	·010	·021
397	·045455 −	·014766	·010	·021	·047980	·015150 +	·010	·021
398	·045340	·014730	·010	·021	·047859	·015113	·010	·021
399	·045226	·014694	·010	·021	·047739	·015076	·010	·021
400	·045113	·014658	·010	·021	·047619	·015040	·010	·021

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 $\lambda_1 = 3·50$	3: P_2 $\lambda_2 = 2·94$	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 $\lambda_1 = 3·20$	4: P_2 $\lambda_2 = 2·80$
401	·005000	·004975 +	·011	·019	·007500	·006086	·012	·020
402	·004988	·004963	·011	·019	·007481	·006070	·012	·020
403	·004975 +	·004950 +	·011	·019	·007463	·006055 +	·012	·020
404	·004963	·004938	·011	·019	·007444	·006041	·012	·020
405	·004950 +	·004926	·011	·019	·007426	·006026	·012	·020
406	·004938	·004914	·011	·019	·007407	·006011	·012	·020
407	·004926	·004902	·011	·019	·007389	·005996	·012	·020
408	·004914	·004890	·011	·019	·007371	·005982	·012	·020
409	·004902	·004878	·011	·019	·007353	·005967	·012	·020
410	·004890	·004866	·011	·019	·007335 −	·005952	·012	·020
411	·004878	·004854	·011	·019	·007317	·005938	·012	·020
412	·004866	·004843	·011	·019	·007299	·005924	·012	·020
413	·004854	·004831	·011	·019	·007282	·005909	·012	·020
414	·004843	·004819	·011	·019	·007264	·005895 +	·012	·020
415	·004831	·004808	·011	·019	·007246	·005881	·012	·020
416	·004819	·004796	·011	·019	·007229	·005867	·012	·020
417	·004808	·004785 −	·011	·019	·007212	·005853	·012	·020
418	·004796	·004773	·011	·019	·007194	·005839	·012	·020
419	·004785 −	·004762	·011	·019	·007177	·005825 +	·012	·020
420	·004773	·004751	·011	·019	·007160	·005811	·012	·020
421	·004762	·004739	·011	·019	·007143	·005797	·012	·020
422	·004751	·004728	·011	·019	·007126	·005784	·012	·020
423	·004739	·004717	·011	·019	·007109	·005770	·012	·020
424	·004728	·004706	·011	·019	·007092	·005757	·012	·020
425	·004717	·004695 −	·011	·019	·007075 +	·005743	·012	·020
426	·004706	·004684	·011	·019	·007059	·005730	·012	·020
427	·004695 −	·004673	·011	·019	·007042	·005716	·012	·020
428	·004684	·004662	·011	·019	·007026	·005703	·012	·020
429	·004673	·004651	·011	·019	·007009	·005690	·012	·020
430	·004662	·004640	·011	·019	·006993	·005677	·012	·020
431	·004651	·004630	·011	·019	·006977	·005663	·012	·020
432	·004640	·004619	·011	·019	·006961	·005650 +	·012	·020
433	·004630	·004608	·011	·019	·006944	·005637	·012	·020
434	·004619	·004598	·011	·019	·006928	·005624	·012	·020
435	·004608	·004587	·011	·019	·006912	·005612	·012	·020
436	·004598	·004577	·011	·019	·006897	·005599	·012	·020
437	·004587	·004566	·011	·019	·006881	·005586	·012	·020
438	·004577	·004556	·011	·019	·006865 −	·005573	·012	·020
439	·004566	·004545 +	·011	·019	·006849	·005561	·012	·020
440	·004556	·004535 +	·011	·019	·006834	·005548	·012	·020
441	·004545 +	·004525 −	·011	·019	·006818	·005535 +	·012	·020
442	·004535 +	·004515 −	·011	·019	·006803	·005523	·012	·020
443	·004525 +	·004504	·011	·019	·006787	·005511	·012	·020
444	·004515 −	·004494	·011	·019	·006772	·005498	·012	·020
445	·004505 −	·004484	·011	·019	·006757	·005486	·012	·020
446	·004494	·004474	·011	·019	·006742	·005474	·012	·020
447	·004484	·004464	·011	·019	·006726	·005461	·012	·020
448	·004474	·004454	·011	·019	·006711	·005449	·012	·020
449	·004464	·004444	·011	·019	·006696	·005437	·012	·020
450	·004454	·004435 −	·011	·019	·006682	·005425 +	·012	·020

N = size of sample	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 $\lambda_1 = 3·14$	5: P_2 $\lambda_2 = 2·68$	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 $\lambda_1 = 3·11$	6: P_2 $\lambda_2 = 2·63$
401	·010000	·007018	·012	·021	·012500	·007837	·011	·020
402	·009975 +	·007001	·012	·021	·012469	·007817	·011	·020
403	·009950 +	·006983	·012	·021	·012438	·007798	·011	·020
404	·009926	·006966	·012	·021	·012407	·007779	·011	·020
405	·009901	·006949	·012	·021	·012376	·007760	·011	·020
406	·009877	·006932	·012	·021	·012346	·007741	·011	·020
407	·009852	·006915 +	·012	·021	·012315 +	·007722	·011	·020
408	·009828	·006898	·012	·021	·012285 +	·007703	·011	·020
409	·009804	·006882	·012	·021	·012255 −	·007684	·011	·020
410	·009780	·006865 −	·012	·021	·012225 −	·007666	·011	·020
411	·009756	·006848	·012	·021	·012195 +	·007647	·011	·020
412	·009732	·006832	·012	·021	·012165 +	·007629	·011	·020
413	·009709	·006815 +	·012	·021	·012136	·007610	·011	·020
414	·009685 +	·006799	·012	·021	·012107	·007592	·011	·020
415	·009662	·006783	·012	·021	·012077	·007574	·011	·020
416	·009639	·006766	·012	·021	·012048	·007556	·011	·020
417	·009615 +	·006750 +	·012	·021	·012019	·007538	·011	·020
418	·009592	·006734	·012	·021	·011990	·007520	·011	·020
419	·009569	·006718	·012	·021	·011962	·007502	·011	·020
420	·009547	·006702	·012	·021	·011933	·007484	·011	·020
421	·009524	·006686	·012	·021	·011905 −	·007467	·011	·020
422	·009501	·006671	·012	·021	·011876	·007449	·011	·020
423	·009479	·006655 −	·012	·021	·011848	·007431	·011	·020
424	·009456	·006639	·012	·021	·011820	·007414	·011	·020
425	·009434	·006624	·012	·021	·011792	·007397	·011	·020
426	·009412	·006608	·012	·021	·011765 −	·007379	·011	·020
427	·009390	·006593	·012	·021	·011737	·007362	·011	·020
428	·009368	·006577	·012	·021	·011710	·007345 +	·011	·020
429	·009346	·006562	·012	·021	·011682	·007328	·011	·020
430	·009324	·006547	·012	·021	·011655 +	·007311	·011	·020
431	·009302	·006532	·012	·021	·011628	·007294	·011	·020
432	·009281	·006517	·012	·021	·011601	·007278	·011	·020
433	·009259	·006502	·012	·021	·011574	·007261	·011	·020
434	·009238	·006487	·012	·021	·011547	·007244	·011	·020
435	·009217	·006472	·012	·021	·011521	·007228	·011	·020
436	·009195 +	·006457	·012	·021	·011494	·007211	·011	·020
437	·009174	·006443	·012	·021	·011468	·007195 −	·011	·020
438	·009153	·006428	·012	·021	·011442	·007178	·011	·020
439	·009132	·006413	·012	·021	·011416	·007162	·011	·020
440	·009112	·006399	·012	·021	·011390	·007146	·011	·020
441	·009091	·006384	·012	·021	·011364	·007130	·011	·020
442	·009070	·006370	·012	·021	·011338	·007114	·011	·020
443	·009050 −	·006356	·012	·021	·011312	·007098	·011	·020
444	·009029	·006342	·012	·021	·011287	·007082	·011	·020
445	·009009	·006327	·012	·021	·011261	·007066	·011	·020
446	·008989	·006313	·012	·021	·011236	·007050 +	·011	·020
447	·008969	·006299	·012	·021	·011211	·007035 −	·011	·020
448	·008949	·006285 +	·012	·021	·011186	·007019	·011	·020
449	·008929	·006271	·012	·021	·011161	·007004	·011	·020
450	·008909	·006257	·012	·021	·011136	·006988	·011	·020

N = size of sample	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 $\lambda_1 = 3·08$	7: P_2 $\lambda_2 = 2·58$	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 $\lambda_1 = 3·02$	8: P_2 $\lambda_2 = 2·54$
401	·015000	·008574	·010	·020	·017500	·009249	·010	·021
402	·014963	·008552	·010	·020	·017456	·009226	·010	·021
403	·014925 +	·008531	·010	·020	·017413	·009203	·010	·021
404	·014888	·008510	·010	·020	·017370	·009181	·010	·021
405	·014851	·008490	·010	·020	·017327	·009158	·010	·021
406	·014815 −	·008469	·010	·020	·017284	·009136	·010	·021
407	·014778	·008448	·010	·020	·017241	·009114	·010	·021
408	·014742	·008428	·010	·020	·017199	·009092	·010	·021
409	·014706	·008407	·010	·020	·017157	·009070	·010	·021
410	·014670	·008387	·010	·020	·017115 −	·009048	·010	·021
411	·014634	·008367	·010	·020	·017073	·009026	·010	·021
412	·014599	·008346	·010	·020	·017032	·009004	·010	·021
413	·014563	·008326	·010	·020	·016990	·008982	·010	·021
414	·014528	·008306	·010	·020	·016949	·008961	·010	·021
415	·014493	·008287	·010	·020	·016908	·008940	·010	·021
416	·014458	·008267	·010	·020	·016867	·008918	·010	·021
417	·014423	·008247	·010	·020	·016827	·008897	·010	·021
418	·014388	·008228	·010	·020	·016787	·008876	·010	·021
419	·014354	·008208	·010	·020	·016746	·008855 −	·010	·021
420	·014320	·008189	·010	·020	·016706	·008834	·010	·021
421	·014286	·008169	·010	·020	·016667	·008813	·010	·021
422	·014252	·008150 +	·010	·020	·016627	·008792	·010	·021
423	·014218	·008131	·010	·020	·016588	·008772	·010	·021
424	·014184	·008112	·010	·020	·016548	·008751	·010	·021
425	·014151	·008093	·010	·020	·016509	·008731	·010	·021
426	·014118	·008074	·010	·020	·016471	·008711	·010	·021
427	·014085 −	·008055 +	·010	·020	·016432	·008690	·010	·021
428	·014052	·008037	·010	·020	·016393	·008670	·010	·021
429	·014019	·008018	·010	·020	·016355 +	·008650 +	·010	·021
430	·013986	·008000	·010	·020	·016317	·008630	·010	·021
431	·013953	·007981	·010	·020	·016279	·008610	·010	·021
432	·013921	·007963	·010	·020	·016241	·008591	·010	·021
433	·013889	·007945 −	·010	·020	·016204	·008571	·010	·021
434	·013857	·007926	·010	·020	·016166	·008551	·010	·021
435	·013825 −	·007908	·010	·020	·016129	·008532	·010	·021
436	·013793	·007890	·010	·020	·016092	·008512	·010	·021
437	·013761	·007872	·010	·020	·016055 +	·008493	·010	·021
438	·013730	·007854	·010	·020	·016018	·008474	·010	·021
439	·013699	·007837	·010	·020	·015982	·008455 −	·010	·021
440	·013667	·007819	·010	·020	·015945 +	·008436	·010	·021
441	·013636	·007801	·010	·020	·015909	·008417	·010	·021
442	·013605 +	·007784	·010	·020	·015873	·008398	·010	·021
443	·013575 −	·007766	·010	·020	·015837	·008379	·010	·021
444	·013544	·007749	·010	·020	·015801	·008360	·010	·021
445	·013514	·007732	·010	·020	·015766	·008342	·010	·021
446	·013483	·007715 −	·010	·020	·015730	·008323	·010	·021
447	·013453	·007697	·010	·020	·015695 +	·008305 −	·010	·021
448	·013423	·007680	·010	·020	·015660	·008286	·010	·021
449	·013393	·007663	·010	·020	·015625	·008268	·010	·021
450	·013363	·007646	·010	·020	·015590	·008250 −	·010	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	9				10				11			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}96$	P_2 $\lambda_2 = 2{\cdot}50$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}92$	P_2 $\lambda_2 = 2{\cdot}47$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}88$	P_2 $\lambda_2 = 2{\cdot}44$
401	·020000	·009875 −	·011	·021	·022500	·010460	·011	·021	·025000	·011012	·011	·021
402	·019950 +	·009851	·011	·021	·022444	·010435 −	·011	·021	·024938	·010985 +	·011	·021
403	·019900	·009826	·011	·021	·022388	·010409	·011	·021	·024876	·010958	·011	·021
404	·019851	·009802	·011	·021	·022333	·010384	·011	·021	·024814	·010931	·011	·021
405	·019802	·009778	·011	·021	·022277	·010358	·011	·021	·024752	·010905 −	·011	·021
406	·019753	·009754	·011	·021	·022222	·010333	·011	·021	·024691	·010878	·011	·021
407	·019704	·009731	·011	·021	·022167	·010308	·011	·021	·024631	·010852	·011	·021
408	·019656	·009707	·011	·021	·022113	·010283	·011	·021	·024570	·010826	·011	·021
409	·019608	·009684	·011	·021	·022059	·010258	·011	·021	·024510	·010800	·011	·021
410	·019560	·009660	·011	·021	·022005 −	·010233	·011	·021	·024450 −	·010774	·011	·021
411	·019512	·009637	·011	·021	·021951	·010209	·011	·021	·024390	·010748	·011	·021
412	·019465 −	·009614	·011	·021	·021898	·010184	·011	·021	·024331	·010722	·011	·021
413	·019417	·009591	·011	·021	·021845 −	·010160	·011	·021	·024272	·010696	·011	·021
414	·019370	·009568	·011	·021	·021792	·010136	·011	·021	·024213	·010671	·011	·021
415	·019324	·009545 +	·011	·021	·021739	·010112	·011	·021	·024155 −	·010645 +	·011	·021
416	·019277	·009522	·011	·021	·021687	·010087	·011	·021	·024096	·010620	·011	·021
417	·019231	·009500 −	·011	·021	·021635 −	·010064	·011	·021	·024038	·010595 −	·011	·021
418	·019185 −	·009477	·011	·021	·021583	·010040	·011	·021	·023981	·010570	·011	·021
419	·019139	·009455 −	·011	·021	·021531	·010016	·011	·021	·023923	·010545 −	·011	·021
420	·019093	·009432	·011	·021	·021480	·009992	·011	·021	·023866	·010520	·011	·021
421	·019048	·009410	·011	·021	·021429	·009969	·011	·021	·023810	·010495 +	·011	·021
422	·019002	·009388	·011	·021	·021378	·009946	·011	·021	·023753	·010471	·011	·021
423	·018957	·009366	·011	·021	·021327	·009922	·011	·021	·023697	·010446	·011	·021
424	·018913	·009344	·011	·021	·021277	·009899	·011	·021	·023641	·010422	·011	·021
425	·018868	·009323	·011	·021	·021226	·009876	·011	·021	·023585 −	·010398	·011	·021
426	·018824	·009301	·011	·021	·021176	·009853	·011	·021	·023529	·010374	·011	·021
427	·018779	·009279	·011	·021	·021127	·009830	·011	·021	·023474	·010350 −	·011	·021
428	·018735 +	·009258	·011	·021	·021077	·009808	·011	·021	·023419	·010326	·011	·021
429	·018692	·009236	·011	·021	·021028	·009785 +	·011	·021	·023364	·010302	·011	·021
430	·018648	·009215 +	·011	·021	·020979	·009763	·011	·021	·023310	·010278	·011	·021
431	·018605 −	·009194	·011	·021	·020930	·009740	·011	·021	·023256	·010255 −	·011	·021
432	·018561	·009173	·011	·021	·020882	·009718	·011	·021	·023202	·010231	·011	·021
433	·018519	·009152	·011	·021	·020833	·009696	·011	·021	·023148	·010208	·011	·021
434	·018476	·009131	·011	·021	·020785 +	·009674	·011	·021	·023095 −	·010185 −	·011	·021
435	·018433	·009110	·011	·021	·020737	·009652	·011	·021	·023041	·010162	·011	·021
436	·018391	·009090	·011	·021	·020690	·009630	·011	·021	·022989	·010139	·011	·021
437	·018349	·009069	·011	·021	·020642	·009608	·011	·021	·022936	·010116	·011	·021
438	·018307	·009048	·011	·021	·020595 −	·009586	·011	·021	·022883	·010093	·011	·021
439	·018265 −	·009028	·011	·021	·020548	·009565 −	·011	·021	·022831	·010070	·011	·021
440	·018223	·009008	·011	·021	·020501	·009543	·011	·021	·022779	·010048	·011	·021
441	·018182	·008987	·011	·021	·020455 −	·009522	·011	·021	·022727	·010025 +	·011	·021
442	·018141	·008967	·011	·021	·020408	·009500 +	·011	·021	·022676	·010003	·011	·021
443	·018100	·008947	·011	·021	·020362	·009479	·011	·021	·022624	·009980	·011	·021
444	·018059	·008927	·011	·021	·020316	·009458	·011	·021	·022573	·009958	·011	·021
445	·018018	·008907	·011	·021	·020270	·009437	·011	·021	·022523	·009936	·011	·021
446	·017978	·008888	·011	·021	·020225 −	·009416	·011	·021	·022472	·009914	·011	·021
447	·017937	·008868	·011	·021	·020179	·009395 +	·011	·021	·022422	·009892	·011	·021
448	·017897	·008848	·011	·021	·020134	·009374	·011	·021	·022371	·009870	·011	·021
449	·017857	·008829	·011	·021	·020089	·009354	·011	·021	·022321	·009848	·011	·021
450	·017817	·008809	·011	·021	·020045 −	·009333	·011	·021	·022272	·009827	·011	·021

N = size of sample	12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}84$	P_2 $\lambda_2 = 2{\cdot}42$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}80$	P_2 $\lambda_2 = 2{\cdot}40$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}79$	P_2 $\lambda_2 = 2{\cdot}39$
401	·027500	·011535 −	·011	·021	·030000	·012032	·011	·021	·032500	·012507	·011	·021
402	·027431	·011507	·011	·021	·029925 +	·012003	·011	·021	·032419	·012477	·011	·021
403	·027363	·011478	·011	·021	·029851	·011974	·011	·021	·032338	·012446	·011	·021
404	·027295 +	·011450 +	·011	·021	·029777	·011944	·011	·021	·032258	·012416	·011	·021
405	·027228	·011423	·011	·021	·029703	·011915 +	·011	·021	·032178	·012386	·011	·021
406	·027160	·011395 −	·011	·021	·029630	·011886	·011	·021	·032099	·012356	·011	·021
407	·027094	·011367	·011	·021	·029557	·011858	·011	·021	·032020	·012326	·011	·021
408	·027027	·011340	·011	·021	·029484	·011829	·011	·021	·031941	·012296	·011	·021
409	·026961	·011312	·011	·021	·029412	·011801	·011	·021	·031863	·012267	·011	·021
410	·026895 −	·011285 +	·011	·021	·029340	·011772	·011	·021	·031785 −	·012237	·011	·021
411	·026829	·011258	·011	·021	·029268	·011744	·011	·021	·031707	·012208	·011	·021
412	·026764	·011231	·011	·021	·029197	·011716	·011	·021	·031630	·012179	·011	·021
413	·026699	·011204	·011	·021	·029126	·011688	·011	·021	·031553	·012150 −	·011	·021
414	·026634	·011178	·011	·021	·029056	·011660	·011	·021	·031477	·012121	·011	·021
415	·026570	·011151	·011	·021	·028986	·011632	·011	·021	·031401	·012092	·011	·021
416	·026506	·011125 −	·011	·021	·028916	·011605 −	·011	·021	·031325 +	·012064	·011	·021
417	·026442	·011098	·011	·021	·028846	·011578	·011	·021	·031250 −	·012035 +	·011	·021
418	·026279	·011072	·011	·021	·028777	·011550 +	·011	·021	·031175 +	·012007	·011	·021
419	·026316	·011046	·011	·021	·028708	·011523	·011	·021	·031100	·011979	·011	·021
420	·026253	·011020	·011	·021	·028640	·011496	·011	·021	·031026	·011951	·011	·021
421	·026190	·010994	·011	·021	·028571	·011469	·011	·021	·030952	·011923	·011	·021
422	·026128	·010969	·011	·021	·028504	·011442	·011	·021	·030879	·011895 −	·011	·021
423	·026066	·010943	·011	·021	·028436	·011416	·011	·021	·030806	·011867	·011	·021
424	·026005 −	·010918	·011	·021	·028369	·011389	·011	·021	·030733	·011840	·011	·021
425	·025943	·010892	·011	·021	·028302	·011363	·011	·021	·030660	·011812	·011	·021
426	·025882	·010867	·011	·021	·028235 +	·011336	·011	·021	·030588	·011785 +	·011	·021
427	·025822	·010842	·011	·021	·028169	·011310	·011	·021	·030516	·011758	·011	·021
428	·025761	·010817	·011	·021	·028103	·011284	·011	·021	·030445 −	·011731	·011	·021
429	·025701	·010792	·011	·021	·028037	·011258	·011	·021	·030374	·011704	·011	·021
430	·025641	·010767	·011	·021	·027972	·011233	·011	·021	·030303	·011677	·011	·021
431	·025581	·010743	·011	·021	·027907	·011207	·011	·021	·030233	·011650 +	·011	·021
432	·025522	·010718	·011	·021	·027842	·011181	·011	·021	·030162	·011624	·011	·021
433	·025463	·010694	·011	·021	·027778	·011156	·011	·021	·030093	·011598	·011	·021
434	·025404	·010669	·011	·021	·027714	·011130	·011	·021	·030023	·011571	·011	·021
435	·025346	·010645 +	·011	·021	·027650 −	·011105 +	·011	·021	·029954	·011545 +	·011	·021
436	·025287	·010621	·011	·021	·027586	·011080	·011	·021	·029885 +	·011519	·011	·021
437	·025229	·010597	·011	·021	·027523	·011055 +	·011	·021	·029817	·011493	·011	·021
438	·025172	·010573	·011	·021	·027460	·011030	·011	·021	·029748	·011467	·011	·021
439	·025114	·010549	·011	·021	·027397	·011006	·011	·021	·029680	·011441	·011	·021
440	·025057	·010526	·011	·021	·027335 −	·010981	·011	·021	·029613	·011416	·011	·021
441	·025000	·010502	·011	·021	·027273	·010956	·011	·021	·029545 +	·011390	·011	·021
442	·024943	·010479	·011	·021	·027211	·010932	·011	·021	·029478	·011365 −	·011	·021
443	·024887	·010455 +	·011	·021	·027149	·010908	·011	·021	·029412	·011340	·011	·021
444	·024831	·010432	·011	·021	·027088	·010883	·011	·021	·029345 +	·011315 −	·011	·021
445	·024775 −	·010409	·011	·021	·027027	·010859	·011	·021	·029279	·011290	·011	·021
446	·024719	·010386	·011	·021	·026966	·010835 +	·011	·021	·029213	·011265 −	·011	·021
447	·024664	·010363	·011	·021	·026906	·010811	·011	·021	·029148	·011240	·011	·021
448	·024609	·010340	·011	·021	·026846	·010787	·011	·021	·029083	·011215 +	·011	·021
449	·024554	·010317	·011	·021	·026786	·010764	·011	·021	·029018	·011190	·011	·021
450	·024499	·010295 −	·011	·021	·026726	·010740	·011	·021	·028953	·011166	·011	·021

TABLE IV.—(*continued*).

N — size of sample	15: $\bar{\eta}^2$	15: $\sigma_{\bar{\eta}^2}$	15: P_1 $\lambda_1 = 2\cdot78$	15: P_2 $\lambda_2 = 2\cdot38$	16: $\bar{\eta}^2$	16: $\sigma_{\bar{\eta}^2}$	16: P_1 $\lambda_1 = 2\cdot77$	16: P_2 $\lambda_2 = 2\cdot37$
401	·035000	·012963	·011	·021	·037500	·013400	·011	·021
402	·034913	·012931	·011	·021	·037406	·013368	·011	·021
403	·034826	·012900	·011	·021	·037313	·013335 +	·011	·021
404	·034739	·012868	·011	·021	·037221	·013303	·011	·021
405	·034653	·012837	·011	·021	·037129	·013271	·011	·021
406	·034568	·012806	·011	·021	·037037	·013239	·011	·021
407	·034483	·012775 +	·011	·021	·036946	·013207	·011	·021
408	·034398	·012744	·011	·021	·036855 +	·013175 −	·011	·021
409	·034314	·012714	·011	·021	·036765 −	·013143	·011	·021
410	·034230	·012683	·011	·021	·036675 −	·013112	·011	·021
411	·034146	·012653	·011	·021	·036585 +	·013081	·011	·021
412	·034063	·012623	·011	·021	·036496	·013049	·011	·021
413	·033981	·012593	·011	·021	·036408	·013018	·011	·021
414	·033898	·012563	·011	·021	·036320	·012988	·011	·021
415	·033816	·012533	·011	·021	·036232	·012957	·011	·021
416	·033735 −	·012504	·011	·021	·036145 −	·012926	·011	·021
417	·033654	·012474	·011	·021	·036058	·012896	·011	·021
418	·033573	·012445 −	·011	·021	·035971	·012866	·011	·021
419	·033493	·012416	·011	·021	·035885 +	·012835 +	·011	·021
420	·033413	·012387	·011	·021	·035800	·012805 +	·011	·021
421	·033333	·012358	·011	·021	·035714	·012776	·011	·021
422	·033254	·012329	·011	·021	·035629	·012746	·011	·021
423	·033175 +	·012300	·011	·021	·035545 +	·012716	·011	·021
424	·033097	·012272	·011	·021	·035461	·012687	·011	·021
425	·033019	·012243	·011	·021	·035377	·012658	·011	·021
426	·032941	·012215 +	·011	·021	·035294	·012628	·011	·021
427	·032864	·012187	·011	·021	·035211	·012599	·011	·021
428	·032787	·012159	·011	·021	·035129	·012571	·011	·021
429	·032710	·012131	·011	·021	·035047	·012542	·011	·021
430	·032634	·012103	·011	·021	·034965 +	·012513	·011	·021
431	·032558	·012076	·011	·021	·034884	·012485 −	·011	·021
432	·032483	·012048	·011	·021	·034803	·012456	·011	·021
433	·032407	·012021	·011	·021	·034722	·012428	·011	·021
434	·032333	·011994	·011	·021	·034642	·012400	·011	·021
435	·032258	·011967	·011	·021	·034562	·012372	·011	·021
436	·032184	·011940	·011	·021	·034483	·012344	·011	·021
437	·032110	·011913	·011	·021	·034404	·012316	·011	·021
438	·032037	·011886	·011	·021	·034325 −	·012289	·011	·021
439	·031963	·011859	·011	·021	·034247	·012261	·011	·021
440	·031891	·011833	·011	·021	·034169	·012234	·011	·021
441	·031818	·011806	·011	·021	·034091	·012207	·011	·021
442	·031746	·011780	·011	·021	·034014	·012179	·011	·021
443	·031674	·011754	·011	·021	·033937	·012152	·011	·021
444	·031603	·011728	·011	·021	·033860	·012125 +	·011	·021
445	·031532	·011702	·011	·021	·033784	·012099	·011	·021
446	·031461	·011676	·011	·021	·033708	·012072	·011	·021
447	·031390	·011651	·011	·021	·033632	·012046	·011	·021
448	·031320	·011625 −	·011	·021	·033557	·012019	·011	·021
449	·031250	·011600	·011	·021	·033482	·011993	·011	·021
450	·031180	·011574	·011	·021	·033408	·011967	·011	·021

N — size of sample	17: $\bar{\eta}^2$	17: $\sigma_{\bar{\eta}^2}$	17: P_1 $\lambda_1 = 2\cdot76$	17: P_2 $\lambda_2 = 2\cdot36$	18: $\bar{\eta}^2$	18: $\sigma_{\bar{\eta}^2}$	18: P_1 $\lambda_1 = 2\cdot75$	18: P_2 $\lambda_2 = 2\cdot35$
401	·040000	·013822	·011	·021	·042500	·014229	·010$_5$	·021
402	·039900	·013788	·011	·021	·042394	·014194	·011	·021
403	·039801	·013755 −	·011	·021	·042289	·014160	·011	·021
404	·039702	·013721	·011	·021	·042184	·014125 +	·011	·021
405	·039604	·013688	·011	·021	·042079	·014091	·011	·021
406	·039506	·013655 +	·011	·021	·041975 +	·014057	·011	·021
407	·039409	·013622	·011	·021	·041872	·014024	·011	·021
408	·039312	·013590	·011	·021	·041769	·013990	·011	·021
409	·039216	·013557	·011	·021	·041667	·013956	·011	·021
410	·039120	·013525 −	·011	·021	·041565 −	·013923	·011	·021
411	·039024	·013492	·011	·021	·041463	·013890	·011	·021
412	·038929	·013460	·011	·021	·041363	·013857	·011	·021
413	·038835 −	·013428	·011	·021	·041262	·013824	·011	·021
414	·038741	·013397	·011	·021	·041162	·013792	·011	·021
415	·038647	·013365 +	·011	·021	·041063	·013759	·011	·021
416	·038554	·013334	·011	·021	·040964	·013727	·011	·021
417	·038462	·013302	·011	·021	·040865 +	·013694	·011	·021
418	·038369	·013271	·011	·021	·040767	·013662	·011	·021
419	·038278	·013240	·011	·021	·040670	·013630	·011	·021
420	·038186	·013209	·011	·021	·040573	·013599	·011	·021
421	·038095 +	·013178	·011	·021	·040476	·013567	·011	·021
422	·038005 −	·013148	·011	·021	·040380	·013536	·011	·021
423	·037915 −	·013117	·011	·021	·040284	·013504	·011	·021
424	·037825 +	·013087	·011	·021	·040189	·013473	·011	·021
425	·037736	·013057	·011	·021	·040094	·013442	·011	·021
426	·037647	·013027	·011	·021	·040000	·013411	·011	·021
427	·037559	·012997	·011	·021	·039906	·013380	·011	·021
428	·037471	·012967	·011	·021	·039813	·013350 −	·011	·021
429	·037383	·012937	·011	·021	·039720	·013319	·011	·021
430	·037296	·012908	·011	·021	·039627	·013289	·011	·021
431	·037209	·012878	·011	·021	·039535 −	·013259	·011	·021
432	·037123	·012849	·011	·021	·039443	·013229	·011	·021
433	·037037	·012820	·011	·021	·039352	·013199	·011	·021
434	·036952	·012791	·011	·021	·039261	·013169	·011	·021
435	·036866	·012762	·011	·021	·039171	·013139	·011	·021
436	·036782	·012734	·011	·021	·039080	·013110	·011	·021
437	·036697	·012705 +	·011	·021	·038991	·013080	·011	·021
438	·036613	·012677	·011	·021	·038902	·013051	·011	·021
439	·036530	·012648	·011	·021	·038813	·013022	·011	·021
440	·036446	·012620	·011	·021	·038724	·012993	·011	·021
441	·036364	·012592	·011	·021	·038636	·012964	·011	·021
442	·036281	·012564	·011	·021	·038549	·012935 +	·011	·021
443	·036199	·012536	·011	·021	·038462	·012907	·011	·021
444	·036117	·012508	·011	·021	·038375 −	·012878	·011	·021
445	·036036	·012481	·011	·021	·038288	·012850 −	·011	·021
446	·035955 +	·012453	·011	·021	·038202	·012822	·011	·021
447	·035874	·012426	·011	·021	·038117	·012794	·011	·021
448	·035794	·012399	·011	·021	·038031	·012766	·011	·021
449	·035714	·012372	·011	·021	·037946	·012738	·011	·021
450	·035635 −	·012345 −	·011	·021	·037862	·012710	·011	·021

N — size of sample	19: $\bar{\eta}^2$	19: $\sigma_{\bar{\eta}^2}$	19: P_1 $\lambda_1 = 2\cdot74$	19: P_2 $\lambda_2 = 2\cdot34$	20: $\bar{\eta}^2$	20: $\sigma_{\bar{\eta}^2}$	20: P_1 $\lambda_1 = 2\cdot73$	20: P_2 $\lambda_2 = 2\cdot33$
401	·045000	·014622	·010	·021	·047500	·015003	·010	·021
402	·044888	·014587	·010	·021	·047382	·014967	·010	·021
403	·044776	·014551	·010	·021	·047264	·014931	·010	·021
404	·044665 +	·014516	·010	·021	·047146	·014894	·010	·021
405	·044554	·014481	·010	·021	·047030	·014859	·010	·021
406	·044444	·014446	·010	·021	·046914	·014823	·010	·021
407	·044335 −	·014412	·010	·021	·046798	·014787	·010	·021
408	·044226	·014377	·010	·021	·046683	·014752	·010	·021
409	·044118	·014343	·010	·021	·046569	·014717	·010	·021
410	·044010	·014309	·010	·021	·046455 −	·014682	·010	·021
411	·043902	·014275 −	·010	·021	·046341	·014647	·010	·021
412	·043796	·014241	·010	·021	·046229	·014612	·010	·021
413	·043689	·014207	·010	·021	·046117	·014578	·010	·021
414	·043584	·014174	·010	·021	·046005 −	·014543	·010	·021
415	·043478	·014140	·010	·021	·045894	·014509	·010	·021
416	·043373	·014107	·010	·021	·045783	·014475 +	·010	·021
417	·043269	·014074	·010	·021	·045673	·014441	·010	·021
418	·043165 +	·014041	·010	·021	·045564	·014408	·010	·021
419	·043062	·014008	·010	·021	·045455 −	·014374	·010	·021
420	·042959	·013976	·010	·021	·045346	·014341	·010	·021
421	·042857	·013943	·010	·021	·045238	·014307	·010	·021
422	·042755 +	·013911	·010	·021	·045131	·014274	·010	·021
423	·042654	·013879	·010	·021	·045024	·014241	·010	·021
424	·042553	·013847	·010	·021	·044917	·014208	·010	·021
425	·042453	·013815 −	·010	·021	·044811	·014176	·010	·021
426	·042353	·013783	·010	·021	·044706	·014143	·010	·021
427	·042254	·013752	·010	·021	·044601	·014111	·010	·021
428	·042155 −	·013720	·010	·021	·044496	·014079	·010	·021
429	·042056	·013689	·010	·021	·044393	·014047	·010	·021
430	·041958	·013658	·010	·021	·044289	·014015 −	·010	·021
431	·041860	·013627	·010	·021	·044186	·013983	·010	·021
432	·041763	·013596	·010	·021	·044084	·013951	·010	·021
433	·041667	·013565 +	·010	·021	·043981	·013920	·010	·021
434	·041570	·013535 −	·010	·021	·043880	·013889	·010	·021
435	·041475 −	·013504	·010	·021	·043779	·013857	·010	·021
436	·041379	·013474	·010	·021	·043678	·013826	·010	·021
437	·041284	·013444	·010	·021	·043578	·013795 +	·010	·021
438	·041190	·013414	·010	·021	·043478	·013765 −	·010	·021
439	·041096	·013384	·010	·021	·043379	·013734	·010	·021
440	·041002	·013354	·010	·021	·043280	·013704	·010	·021
441	·040909	·013324	·010	·021	·043182	·013673	·010	·021
442	·040816	·013295 −	·010	·021	·043084	·013643	·010	·021
443	·040724	·013265 +	·010	·021	·042986	·013613	·010	·021
444	·040632	·013236	·010	·021	·042889	·013583	·010	·021
445	·040541	·013207	·010	·021	·042793	·013553	·010	·021
446	·040449	·013178	·010	·021	·042697	·013523	·010	·021
447	·040359	·013149	·010	·021	·042601	·013494	·010	·021
448	·040268	·013121	·010	·021	·042506	·013464	·010	·021
449	·040179	·013092	·010	·021	·042411	·013435 −	·010	·021
450	·040089	·013063	·010	·021	·042316	·013406	·010	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 λ_1 = 3·50	3: P_2 λ_2 = 2·94	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 λ_1 = 3·20	4: P_2 λ_2 = 2·80	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 λ_1 = 3·14	5: P_2 λ_2 = 2·68
451	·004444	·004425 −	·011	·019	·006667	·005413	·012	·020	·008889	·006244	·012	·021
452	·004435 −	·004415 −	·011	·019	·006652	·005401	·012	·020	·008869	·006230	·012	·021
453	·004425 −	·004405 +	·011	·019	·006637	·005389	·012	·020	·008850 −	·006216	·012	·021
454	·004415 +	·004396	·011	·019	·006623	·005377	·012	·020	·008830	·006202	·012	·021
455	·004405 +	·004386	·011	·019	·006608	·005366	·012	·020	·008811	·006189	·012	·021
456	·004396	·004376	·011	·019	·006593	·005354	·012	·020	·008791	·006175 +	·012	·021
457	·004386	·004367	·011	·019	·006579	·005342	·012	·020	·008772	·006162	·012	·021
458	·004376	·004357	·011	·019	·006565 −	·005331	·012	·020	·008753	·006149	·012	·021
459	·004367	·004348	·011	·019	·006550 +	·005319	·012	·020	·008734	·006135 +	·012	·021
460	·004357	·004338	·011	·019	·006536	·005308	·012	·020	·008715 −	·006122	·012	·021
461	·004348	·004329	·011	·019	·006522	·005296	·012	·020	·008696	·006109	·012	·021
462	·004338	·004320	·011	·019	·006508	·005285 −	·012	·020	·008677	·006096	·012	·021
463	·004329	·004310	·011	·019	·006494	·005273	·012	·020	·008658	·006082	·012	·021
464	·004320	·004301	·011	·019	·006479	·005262	·012	·020	·008639	·006069	·012	·021
465	·004310	·004292	·011	·019	·006466	·005251	·012	·020	·008621	·006056	·012	·021
466	·004301	·004283	·011	·019	·006452	·005239	·012	·020	·008602	·006043	·012	·021
467	·004292	·004273	·011	·019	·006438	·005228	·012	·020	·008584	·006031	·012	·021
468	·004283	·004264	·011	·019	·006424	·005217	·012	·020	·008565 +	·006018	·012	·021
469	·004274	·004255 +	·011	·019	·006410	·005206	·012	·020	·008547	·006005 −	·012	·021
470	·004264	·004246	·011	·019	·006397	·005195 −	·012	·020	·008529	·005992	·012	·021
471	·004255 +	·004237	·011	·019	·006383	·005184	·012	·020	·008511	·005980	·012	·021
472	·004246	·004228	·011	·019	·006369	·005173	·012	·020	·008493	·005967	·012	·021
473	·004237	·004219	·011	·019	·006356	·005162	·012	·020	·008475 −	·005954	·012	·021
474	·004228	·004210	·011	·019	·006342	·005151	·012	·020	·008457	·005942	·012	·021
475	·004219	·004202	·011	·019	·006329	·005140	·012	·020	·008439	·005929	·012	·021
476	·004211	·004193	·011	·019	·006316	·005130	·012	·020	·008421	·005917	·012	·021
477	·004202	·004184	·011	·019	·006303	·005119	·012	·020	·008403	·005905 −	·012	·021
478	·004193	·004175 +	·011	·019	·006289	·005108	·012	·020	·008386	·005892	·012	·021
479	·004184	·004167	·011	·019	·006276	·005098	·012	·020	·008368	·005880	·012	·021
480	·004175 +	·004158	·011	·019	·006263	·005087	·012	·020	·008351	·005868	·012	·021
481	·004167	·004149	·011	·019	·006250	·005077	·012	·020	·008333	·005856	·012	·021
482	·004158	·004141	·011	·019	·006237	·005066	·012	·020	·008316	·005844	·012	·021
483	·004149	·004132	·011	·019	·006224	·005056	·012	·020	·008299	·005832	·012	·021
484	·004141	·004124	·011	·019	·006211	·005045 +	·012	·020	·008282	·005820	·012	·021
485	·004132	·004115 +	·011	·019	·006198	·005035 −	·012	·020	·008264	·005808	·012	·021
486	·004124	·004107	·011	·019	·006186	·005025 −	·012	·020	·008247	·005796	·012	·021
487	·004115 +	·004098	·011	·019	·006173	·005014	·012	·020	·008230	·005784	·012	·021
488	·004107	·004090	·011	·019	·006160	·005004	·012	·020	·008214	·005772	·012	·021
489	·004098	·004082	·011	·019	·006148	·004994	·012	·020	·008197	·005760	·012	·021
490	·004090	·004073	·011	·019	·006135 −	·004984	·012	·020	·008180	·005749	·012	·021
491	·004082	·004065 +	·011	·019	·006122	·004973	·012	·020	·008163	·005737	·012	·021
492	·004073	·004057	·011	·019	·006110	·004963	·012	·020	·008147	·005725 +	·012	·021
493	·004065 +	·004049	·011	·019	·006098	·004953	·012	·020	·008130	·005714	·012	·021
494	·004057	·004040	·011	·019	·006085 +	·004943	·012	·020	·008114	·005702	·012	·021
495	·004049	·004032	·011	·019	·006073	·004933	·012	·020	·008097	·005691	·012	·021
496	·004040	·004024	·011	·019	·006061	·004924	·012	·020	·008081	·005679	·012	·021
497	·004032	·004016	·011	·019	·006048	·004914	·012	·020	·008065 −	·005668	·012	·021
498	·004024	·004008	·011	·019	·006036	·004904	·012	·020	·008048	·005657	·012	·021
499	·004016	·004000	·011	·019	·006024	·004894	·012	·020	·008032	·005645 +	·012	·021
500	·004008	·003992	·011	·019	·006012	·004884	·012	·020	·008016	·005634	·012	·021

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 λ_1 = 3·11	6: P_2 λ_2 = 2·63	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 λ_1 = 3·08	7: P_2 λ_2 = 2·58	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 λ_1 = 3·02	8: P_2 λ_2 = 2·54
451	·011111	·006973	·011	·021	·013333	·007630	·010	·020	·015556	·008232	·010	·021
452	·011086	·006957	·011	·021	·013304	·007613	·010	·020	·015521	·008214	·010	·021
453	·011062	·006942	·011	·021	·013274	·007596	·010	·020	·015487	·008196	·010	·021
454	·011038	·006927	·011	·021	·013245 +	·007579	·010	·020	·015453	·008178	·010	·021
455	·011013	·006912	·011	·021	·013216	·007563	·010	·020	·015419	·008160	·010	·021
456	·010989	·006897	·011	·021	·013187	·007546	·010	·020	·015385 −	·008142	·010	·021
457	·010965 −	·006882	·011	·021	·013158	·007530	·010	·020	·015351	·008124	·010	·021
458	·010941	·006867	·011	·021	·013129	·007514	·010	·020	·015317	·008107	·010	·021
459	·010917	·006852	·011	·021	·013100	·007497	·010	·020	·015284	·008089	·010	·021
460	·010893	·006837	·011	·021	·013072	·007481	·010	·020	·015251	·008072	·010	·021
461	·010870	·006822	·011	·021	·013043	·007465 +	·010	·020	·015217	·008054	·010	·021
462	·010846	·006808	·011	·021	·013015 +	·007449	·010	·020	·015184	·008037	·010	·021
463	·010823	·006793	·011	·021	·012987	·007433	·010	·020	·015152	·008020	·010	·021
464	·010799	·006778	·011	·021	·012959	·007417	·010	·020	·015119	·008003	·010	·021
465	·010776	·006764	·011	·021	·012931	·007401	·010	·020	·015086	·007986	·010	·021
466	·010753	·006749	·011	·021	·012903	·007386	·010	·020	·015054	·007969	·010	·021
467	·010730	·006735 +	·011	·021	·012876	·007370	·010	·020	·015021	·007952	·010	·021
468	·010707	·006721	·011	·021	·012848	·007354	·010	·020	·014989	·007935 −	·010	·021
469	·010684	·006706	·011	·021	·012821	·007339	·010	·020	·014957	·007918	·010	·021
470	·010661	·006692	·011	·021	·012793	·007323	·010	·020	·014925 +	·007901	·010	·021
471	·010638	·006678	·011	·021	·012766	·007308	·010	·020	·014894	·007885 −	·010	·021
472	·010616	·006664	·011	·021	·012739	·007292	·010	·020	·014862	·007868	·010	·021
473	·010593	·006650 +	·011	·021	·012712	·007277	·010	·020	·014831	·007852	·010	·021
474	·010571	·006636	·011	·021	·012685 −	·007262	·010	·020	·014799	·007835 +	·010	·021
475	·010549	·006622	·011	·021	·012658	·007247	·010	·020	·014768	·007819	·010	·021
476	·010526	·006608	·011	·021	·012632	·007231	·010	·020	·014737	·007803	·010	·021
477	·010504	·006595 −	·011	·021	·012605 +	·007216	·010	·026	·014706	·007786	·010	·021
478	·010482	·006581	·011	·021	·012579	·007201	·010	·020	·014675 +	·007770	·010	·021
479	·010460	·006567	·011	·021	·012552	·007186	·010	·020	·014644	·007754	·010	·021
480	·010438	·006554	·011	·021	·012526	·007172	·010	·020	·014614	·007738	·010	·021
481	·010417	·006540	·011	·021	·012500	·007157	·010	·020	·014583	·007722	·010	·021
482	·010395 +	·006527	·011	·021	·012474	·007142	·010	·020	·014553	·007706	·010	·021
483	·010373	·006513	·011	·021	·012448	·007127	·010	·020	·014523	·007690	·010	·021
484	·010352	·006500	·011	·021	·012422	·007113	·010	·020	·014493	·007674	·010	·021
485	·010331	·006486	·011	·021	·012397	·007098	·010	·020	·014463	·007659	·010	·021
486	·010309	·006473	·011	·021	·012371	·007084	·010	·020	·014433	·007643	·010	·021
487	·010288	·006460	·011	·021	·012346	·007069	·010	·020	·014403	·007628	·010	·021
488	·010267	·006447	·011	·021	·012320	·007055 −	·010	·020	·014374	·007612	·010	·021
489	·010246	·006434	·011	·021	·012295 +	·007040	·010	·020	·014344	·007597	·010	·021
490	·010225 −	·006421	·011	·021	·012270	·007026	·010	·020	·014315 −	·007581	·010	·021
491	·010204	·006408	·011	·021	·012245 −	·007012	·010	·020	·014286	·007566	·010	·021
492	·010183	·006395 −	·011	·021	·012220	·006998	·010	·020	·014257	·007551	·010	·021
493	·010163	·006382	·011	·021	·012195 +	·006984	·010	·020	·014228	·007535 +	·010	·021
494	·010142	·006369	·011	·021	·012170	·006970	·010	·020	·014199	·007520	·010	·021
495	·010121	·006356	·011	·021	·012146	·006956	·010	·020	·014170	·007505 +	·010	·021
496	·010101	·006343	·011	·021	·012121	·006942	·010	·020	·014141	·007490	·010	·021
497	·010081	·006331	·011	·021	·012097	·006928	·010	·020	·014113	·007475 +	·010	·021
498	·010060	·006318	·011	·021	·012072	·006914	·010	·020	·014085 −	·007460	·010	·021
499	·010040	·006305 +	·011	·021	·012048	·006900	·010	·020	·014056	·007445 +	·010	·021
500	·010020	·006293	·011	·021	·012024	·006886	·010	·020	·014028	·007431	·010	·021

TABLE IV.—(*continued*).

N = size of sample	9				10				11			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}96$	P_2 $\lambda_2 = 2{\cdot}50$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}92$	P_2 $\lambda_2 = 2{\cdot}47$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}88$	P_2 $\lambda_2 = 2{\cdot}44$
451	·017778	·008790	·011	·021	·020000	·009313	·011	·021	·022222	·009805 +	·011	·021
452	·017738	·008771	·011	·021	·019956	·009292	·011	·021	·022173	·009784	·011	·021
453	·017699	·008752	·011	·021	·019912	·009272	·011	·021	·022124	·009762	·011	·021
454	·017660	·008732	·011	·021	·019868	·009252	·011	·021	·022075 +	·009741	·011	·021
455	·017621	·008713	·011	·021	·019824	·009232	·011	·021	·022026	·009720	·011	·021
456	·017582	·008694	·011	·021	·019780	·009212	·011	·021	·021978	·009699	·011	·021
457	·017544	·008676	·011	·021	·019737	·009192	·011	·021	·021930	·009678	·011	·021
458	·017505 +	·008657	·011	·021	·019694	·009172	·011	·021	·021882	·009657	·011	·021
459	·017467	·008638	·011	·021	·019651	·009152	·011	·021	·021834	·009636	·011	·021
460	·017429	·008620	·011	·021	·019608	·009132	·011	·021	·021786	·009616	·011	·021
461	·017391	·008601	·011	·021	·019565 +	·009113	·011	·021	·021739	·009595 −	·011	·021
462	·017354	·008583	·011	·021	·019523	·009093	·011	·021	·021692	·009574	·011	·021
463	·017316	·008564	·011	·021	·019481	·009074	·011	·021	·021645 +	·009554	·011	·021
464	·017279	·008546	·011	·021	·019438	·009054	·011	·021	·021598	·009534	·011	·021
465	·017241	·008528	·011	·021	·019397	·009035 +	·011	·021	·021552	·009513	·011	·021
466	·017204	·008510	·011	·021	·019355 −	·009016	·011	·021	·021505 +	·009493	·011	·021
467	·017167	·008491	·011	·021	·019313	·008997	·011	·021	·021459	·009473	·011	·021
468	·017131	·008474	·011	·021	·019272	·008978	·011	·021	·021413	·009453	·011	·021
469	·017094	·008456	·011	·021	·019231	·008959	·011	·021	·021368	·009433	·011	·021
470	·017058	·008438	·011	·021	·019190	·008940	·011	·021	·021322	·009413	·011	·021
471	·017021	·008420	·011	·021	·019149	·008921	·011	·021	·021277	·009393	·011	·021
472	·016985 +	·008402	·011	·021	·019108	·008902	·011	·021	·021231	·009374	·011	·021
473	·016949	·008385 −	·011	·021	·019068	·008884	·011	·021	·021186	·009354	·011	·021
474	·016913	·008367	·011	·021	·019027	·008865 +	·011	·021	·021142	·009335 −	·011	·021
475	·016878	·008350 −	·011	·021	·018987	·008847	·011	·021	·021097	·009315 +	·011	·021
476	·016842	·008332	·011	·021	·018947	·008828	·011	·021	·021053	·009296	·011	·021
477	·016807	·008315 −	·011	·021	·018908	·008810	·011	·021	·021008	·009277	·011	·021
478	·016771	·008298	·011	·021	·018868	·008792	·011	·021	·020964	·009257	·011	·021
479	·016736	·008281	·011	·021	·018828	·008774	·011	·021	·020921	·009238	·011	·021
480	·016701	·008263	·011	·021	·018789	·008755 +	·011	·021	·020877	·009219	·011	·021
481	·016667	·008246	·011	·021	·018750	·008737	·011	·021	·020833	·009200	·011	·021
482	·016632	·008229	·011	·021	·018711	·008719	·011	·021	·020790	·009181	·011	·021
483	·016598	·008213	·011	·021	·018672	·008702	·011	·021	·020747	·009163	·011	·021
484	·016563	·008196	·011	·021	·018634	·008684	·011	·021	·020704	·009144	·011	·021
485	·016529	·008179	·011	·021	·018595 +	·008666	·011	·021	·020661	·009125 +	·011	·021
486	·016495 −	·008162	·011	·021	·018557	·008648	·011	·021	·020619	·009107	·011	·021
487	·016461	·008146	·011	·021	·018519	·008631	·011	·021	·020576	·009088	·011	·021
488	·016427	·008129	·011	·021	·018480	·008613	·011	·021	·020534	·009070	·011	·021
489	·016393	·008113	·011	·021	·018443	·008596	·011	·021	·020492	·009051	·011	·021
490	·016360	·008096	·011	·021	·018405 −	·008578	·011	·021	·020450 −	·009033	·011	·021
491	·016327	·008080	·011	·021	·018367	·008561	·011	·021	·020408	·009015 −	·011	·021
492	·016293	·008064	·011	·021	·018330	·008544	·011	·021	·020367	·008997	·011	·021
493	·016260	·008047	·011	·021	·018293	·008527	·011	·021	·020325 +	·008979	·011	·021
494	·016227	·008031	·011	·021	·018256	·008510	·011	·021	·020284	·008961	·011	·021
495	·016194	·008015 +	·011	·021	·018219	·008493	·011	·021	·020243	·008943	·011	·021
496	·016162	·007999	·011	·021	·018182	·008476	·011	·021	·020202	·008925 −	·011	·021
497	·016129	·007983	·011	·021	·018145 +	·008459	·011	·021	·020161	·008907	·011	·021
498	·016097	·007967	·011	·021	·018109	·008442	·011	·021	·020121	·008889	·011	·021
499	·016064	·007951	·011	·021	·018072	·008425 +	·011	·021	·020080	·008872	·011	·021
500	·016032	·007936	·011	·021	·018036	·008408	·011	·021	·020040	·008854	·011	·021

N = size of sample	12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}84$	P_2 $\lambda_2 = 2{\cdot}42$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}80$	P_2 $\lambda_2 = 2{\cdot}40$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}79$	P_2 $\lambda_2 = 2{\cdot}39$
451	·024444	·010272	·011	·021	·026667	·010717	·011	·021	·028889	·011142	·011	·021
452	·024390	·010250 −	·011	·021	·026608	·010693	·011	·021	·028825 −	·011117	·011	·021
453	·024336	·010227	·011	·021	·026549	·010670	·011	·021	·028761	·011093	·011	·021
454	·024283	·010205 +	·011	·021	·026490	·010647	·011	·021	·028698	·011069	·011	·021
455	·024229	·010183	·011	·021	·026432	·010624	·011	·021	·028634	·011045 +	·011	·021
456	·024176	·010161	·011	·021	·026374	·010601	·011	·021	·028571	·011021	·011	·021
457	·024123	·010139	·011	·021	·026316	·010578	·011	·021	·028509	·010997	·011	·021
458	·024070	·010117	·011	·021	·026258	·010555 +	·011	·021	·028446	·010974	·011	·021
459	·024017	·010095 +	·011	·021	·026201	·010532	·011	·021	·028384	·010950 +	·011	·021
460	·023965 +	·010074	·011	·021	·026144	·010510	·011	·021	·028322	·010927	·011	·021
461	·023913	·010052	·011	·021	·026087	·010487	·011	·021	·028261	·010903	·011	·021
462	·023861	·010031	·011	·021	·026030	·010465 −	·011	·021	·028200	·010880	·011	·021
463	·023810	·010009	·011	·021	·025974	·010443	·011	·021	·028139	·010857	·011	·021
464	·023758	·009988	·011	·021	·025918	·010420	·011	·021	·028078	·010834	·011	·021
465	·023707	·009967	·011	·021	·025862	·010398	·011	·021	·028017	·010811	·011	·021
466	·023656	·009946	·011	·021	·025806	·010376	·011	·021	·027957	·010788	·011	·021
467	·023605 +	·009924	·011	·021	·025751	·010354	·011	·021	·027897	·010765 +	·011	·021
468	·023555 −	·009904	·011	·021	·025696	·010333	·011	·021	·027837	·010743	·011	·021
469	·023504	·009883	·011	·021	·025641	·010311	·011	·021	·027778	·010720	·011	·021
470	·023454	·009862	·011	·021	·025586	·010289	·011	·021	·027719	·010698	·011	·021
471	·023404	·009841	·011	·021	·025532	·010268	·011	·021	·027660	·010675 +	·011	·021
472	·023355 −	·009821	·011	·021	·025478	·010246	·011	·021	·027601	·010653	·011	·021
473	·023305 +	·009800	·011	·021	·025424	·010225 −	·011	·021	·027542	·010631	·011	·021
474	·023256	·009780	·011	·021	·025370	·010203	·011	·021	·027484	·010609	·011	·021
475	·023207	·009759	·011	·021	·025316	·010182	·011	·021	·027426	·010587	·011	·021
476	·023158	·009739	·011	·021	·025263	·010161	·011	·021	·027368	·010565 −	·011	·021
477	·023109	·009719	·011	·021	·025210	·010140	·011	·021	·027311	·010543	·011	·021
478	·023061	·009699	·011	·021	·025157	·010119	·011	·021	·027254	·010521	·011	·021
479	·023013	·009679	·011	·021	·025105 −	·010098	·011	·021	·027197	·010499	·011	·021
480	·022965 −	·009659	·011	·021	·025052	·010078	·011	·021	·027140	·010478	·011	·021
481	·022917	·009639	·011	·021	·025000	·010057	·011	·021	·027083	·010456	·011	·021
482	·022869	·009619	·011	·021	·024948	·010036	·011	·021	·027027	·010435 −	·011	·021
483	·022822	·009600	·011	·021	·024896	·010016	·011	·021	·026971	·010414	·011	·021
484	·022774	·009580	·011	·021	·024845 −	·009995 +	·011	·021	·026915 +	·010392	·011	·021
485	·022727	·009560	·011	·021	·024793	·009975 +	·011	·021	·026860	·010371	·011	·021
486	·022680	·009541	·011	·021	·024742	·009955 −	·011	·021	·026804	·010350 +	·011	·021
487	·022634	·009522	·011	·021	·024691	·009935 −	·011	·021	·026749	·010329	·011	·021
488	·022587	·009502	·011	·021	·024641	·009914	·011	·021	·026694	·010308	·011	·021
489	·022541	·009483	·011	·021	·024590	·009894	·011	·021	·026639	·010288	·011	·021
490	·022495 −	·009464	·011	·021	·024540	·009875 −	·011	·021	·026585 −	·010267	·011	·021
491	·022449	·009445 −	·011	·021	·024490	·009855 −	·011	·021	·026531	·010246	·011	·021
492	·022403	·009426	·011	·021	·024440	·009835 −	·011	·021	·026477	·010226	·011	·021
493	·022358	·009407	·011	·021	·024390	·009815 +	·011	·021	·026423	·010205 +	·011	·021
494	·022312	·009388	·011	·021	·024341	·009796	·011	·021	·026369	·010185 −	·011	·021
495	·022267	·009370	·011	·021	·024291	·009776	·011	·021	·026316	·010165 −	·011	·021
496	·022222	·009351	·011	·021	·024242	·009757	·011	·021	·026263	·010144	·011	·021
497	·022177	·009332	·011	·021	·024194	·009737	·011	·021	·026210	·010124	·011	·021
498	·022133	·009314	·011	·021	·024145 −	·009718	·011	·021	·026157	·010104	·011	·021
499	·022088	·009295 +	·011	·021	·024096	·009699	·011	·021	·026104	·010084	·011	·021
500	·022044	·009277	·011	·021	·024048	·009679	·011	·021	·026052	·010064	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15				16				17				18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·78$	P_2 $\lambda_2=2·38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·77$	P_2 $\lambda_2=2·37$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·76$	P_2 $\lambda_2=2·36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·75$	P_2 $\lambda_2=2·35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·74$	P_2 $\lambda_2=2·34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·73$	P_2 $\lambda_2=2·33$
451	·031111	·011549	·011	·021	·033333	·011941	·011	·021	·035556	·012318	·011	·021	·037778	·012682	·011	·021	·040000	·013035 +	·010	·021	·042222	·013377	·010	·021
452	·031042	·011524	·011	·021	·033259	·011915 −	·011	·021	·035477	·012291	·011	·021	·037694	·012655 −	·011	·021	·039911	·013007	·010	·021	·042129	·013348	·010	·021
453	·030973	·011499	·011	·021	·033186	·011889	·011	·021	·035398	·012265 −	·011	·021	·037611	·012628	·011	·021	·039823	·012979	·010	·021	·042035 +	·013319	·010	·021
454	·030905 +	·011474	·011	·021	·033113	·011863	·011	·021	·035320	·012238	·011	·021	·037528	·012600	·011	·021	·039735 +	·012951	·010	·021	·041943	·013290	·010	·021
455	·030837	·011449	·011	·021	·033040	·011837	·011	·021	·035242	·012212	·011	·021	·037445 −	·012573	·011	·021	·039648	·012923	·010	·021	·041850 +	·013262	·010	·021
456	·030769	·011424	·011	·021	·032967	·011812	·011	·021	·035165 −	·012185 +	·011	·021	·037363	·012546	·011	·021	·039560	·012895 +	·010	·021	·041758	·013233	·010	·021
457	·030702	·011400	·011	·021	·032895 −	·011786	·011	·021	·035088	·012159	·011	·021	·037281	·012519	·011	·021	·039474	·012867	·010	·021	·041667	·013205 −	·010	·021
458	·030635 −	·011375 +	·011	·021	·032823	·011761	·011	·021	·035011	·012133	·011	·021	·037199	·012492	·011	·021	·039387	·012840	·010	·021	·041575 +	·013177	·010	·021
459	·030568	·011351	·011	·021	·032751	·011736	·011	·021	·034934	·012107	·011	·021	·037118	·012466	·011	·021	·039301	·012813	·010	·021	·041485 −	·013149	·010	·021
460	·030501	·011327	·011	·021	·032680	·011711	·011	·021	·034858	·012081	·011	·021	·037037	·012439	·011	·021	·039216	·012785 +	·010$_5$	·021	·041394	·013121	·010	·021
461	·030435 −	·011302	·011	·021	·032609	·011686	·011	·021	·034783	·012056	·011	·021	·036957	·012413	·011	·021	·039130	·012758	·011	·021	·041304	·013093	·010	·021
462	·030369	·011278	·011	·021	·032538	·011661	·011	·021	·034707	·012030	·011	·021	·036876	·012386	·011	·021	·039046	·012731	·011	·021	·041215 −	·013065 +	·010	·021
463	·030303	·011254	·011	·021	·032468	·011636	·011	·021	·034632	·012004	·011	·021	·036797	·012360	·011	·021	·038961	·012704	·011	·021	·041126	·013037	·010	·021
464	·030238	·011230	·011	·021	·032397	·011612	·011	·021	·034557	·011979	·011	·021	·036717	·012334	·011	·021	·038877	·012677	·011	·021	·041037	·013010	·010	·021
465	·030172	·011207	·011	·021	·032328	·011587	·011	·021	·034483	·011954	·011	·021	·036638	·012308	·011	·021	·038793	·012651	·011	·021	·040948	·012983	·010	·021
466	·030108	·011183	·011	·021	·032258	·011563	·011	·021	·034409	·011929	·011	·021	·036559	·012282	·011	·021	·038710	·012624	·011	·021	·040860	·012955 +	·010	·021
467	·030043	·011159	·011	·021	·032189	·011538	·011	·021	·034335 −	·011903	·011	·021	·036481	·012256	·011	·021	·038627	·012597	·011	·021	·040773	·012928	·010	·021
468	·029979	·011136	·011	·021	·032120	·011514	·011	·021	·034261	·011878	·011	·021	·036403	·012230	·011	·021	·038544	·012571	·011	·021	·040685 +	·012901	·010	·021
469	·029915 −	·011113	·011	·021	·032051	·011490	·011	·021	·034188	·011854	·011	·021	·036325 −	·012205 −	·011	·021	·038462	·012545 −	·011	·021	·040598	·012874	·010	·021
470	·029851	·011089	·011	·021	·031983	·011466	·011	·021	·034115 +	·011829	·011	·021	·036247	·012179	·011	·021	·038380	·012519	·011	·021	·040512	·012847	·010	·021
471	·029787	·011066	·011	·021	·031915 −	·011442	·011	·021	·034043	·011804	·011	·021	·036170	·012154	·011	·021	·038298	·012493	·011	·021	·040426	·012821	·010	·021
472	·029724	·011043	·011	·021	·031847	·011418	·011	·021	·033970	·011780	·011	·021	·036093	·012129	·011	·021	·038217	·012467	·011	·021	·040340	·012794	·010	·021
473	·029661	·011020	·011	·021	·031780	·011394	·011	·021	·033898	·011755 +	·011	·021	·036017	·012104	·011	·021	·038136	·012441	·011	·021	·040254	·012768	·010	·021
474	·029598	·010997	·011	·021	·031712	·011371	·011	·021	·033827	·011731	·011	·021	·035941	·012079	·011	·021	·038055 −	·012415 +	·011	·021	·040169	·012741	·010	·021
475	·029536	·010974	·011	·021	·031646	·011347	·011	·021	·033755 +	·011706	·011	·021	·035865 −	·012054	·011	·021	·037975 −	·012390	·011	·021	·040084	·012715 −	·010	·021
476	·029474	·010952	·011	·021	·031579	·011324	·011	·021	·033684	·011682	·011	·021	·035789	·012029	·011	·021	·037895 −	·012364	·011	·021	·040000	·012689	·010	·021
477	·029412	·010929	·011	·021	·031513	·011300	·011	·021	·033613	·011658	·011	·021	·035714	·012004	·011	·021	·037815 +	·012339	·011	·021	·039916	·012663	·010	·021
478	·029350 +	·010906	·011	·021	·031447	·011277	·011	·021	·033543	·011634	·011	·021	·035639	·011979	·011	·021	·037736	·012313	·011	·021	·039832	·012637	·010	·021
479	·029289	·010884	·011	·021	·031381	·011254	·011	·021	·033473	·011610	·011	·021	·035565 −	·011955 −	·011	·021	·037657	·012288	·011	·021	·039749	·012611	·010	·021
480	·029228	·010862	·011	·021	·031315 +	·011231	·011	·021	·033403	·011587	·011	·021	·035491	·011930	·011	·021	·037578	·012263	·011	·021	·039666	·012585 +	·010	·021
481	·029167	·010839	·011	·021	·031250	·011208	·011	·021	·033333	·011563	·011	·021	·035417	·011906	·011	·021	·037500	·012238	·011	·021	·039583	·012560	·010	·021
482	·029106	·010817	·011	·021	·031185 +	·011185 −	·011	·021	·033264	·011539	·011	·021	·035343	·011882	·011	·021	·037422	·012213	·011	·021	·039501	·012534	·010	·021
483	·029046	·010795 +	·011	·021	·031120	·011162	·011	·021	·033195 +	·011516	·011	·021	·035270	·011858	·011	·021	·037344	·012188	·011	·021	·039419	·012509	·010	·021
484	·028986	·010773	·011	·021	·031056	·011139	·011	·021	·033126	·011493	·011	·021	·035197	·011834	·011	·021	·037267	·012164	·011	·021	·039337	·012483	·010	·021
485	·028926	·010751	·011	·021	·030992	·011117	·011	·021	·033058	·011469	·011	·021	·035124	·011810	·011	·021	·037190	·012139	·011	·021	·039256	·012458	·010	·021
486	·028866	·010730	·011	·021	·030928	·011094	·011	·021	·032990	·011446	·011	·021	·035052	·011786	·011	·021	·037113	·012114	·011	·021	·039175 +	·012433	·010	·021
487	·028807	·010708	·011	·021	·030864	·011072	·011	·021	·032922	·011423	·011	·021	·034979	·011762	·011	·021	·037037	·012090	·011	·021	·039095 −	·012408	·010	·021
488	·028747	·010686	·011	·021	·030801	·011050 −	·011	·021	·032854	·011400	·011	·021	·034908	·011738	·011	·021	·036961	·012066	·011	·021	·039014	·012383	·010	·021
489	·028689	·010665 −	·011	·021	·030738	·011027	·011	·021	·032787	·011377	·011	·021	·034836	·011715 −	·011	·021	·036885 +	·012042	·011	·021	·038934	·012358	·010	·021
490	·028630	·010643	·011	·021	·030675 −	·011005 +	·011	·021	·032720	·011354	·011	·021	·034765 −	·011691	·011	·021	·036810	·012017	·011	·021	·038855 −	·012334	·010	·021
491	·028571	·010622	·011	·021	·030612	·010983	·011	·021	·032653	·011331	·011	·021	·034694	·011668	·011	·021	·036735 −	·011993	·011	·021	·038776	·012309	·010	·021
492	·028513	·010601	·011	·021	·030550 −	·010961	·011	·021	·032587	·011309	·011	·021	·034623	·011645 −	·011	·021	·036660	·011970	·011	·021	·038697	·012285 −	·010	·021
493	·028455 +	·010579	·011	·021	·030488	·010939	·011	·021	·032520	·011286	·011	·021	·034553	·011621	·011	·021	·036585 +	·011946	·011	·021	·038618	·012260	·010	·021
494	·028398	·010558	·011	·021	·030426	·010918	·011	·021	·032454	·011264	·011	·021	·034483	·011598	·011	·021	·036511	·011922	·011	·021	·038540	·012236	·010	·021
495	·028340	·010537	·011	·021	·030364	·010896	·011	·021	·032389	·011241	·011	·021	·034413	·011575 +	·011	·021	·036437	·011898	·011	·021	·038462	·012212	·010	·021
496	·028283	·010516	·011	·021	·030303	·010874	·011	·021	·032323	·011219	·011	·021	·034343	·011552	·011	·021	·036364	·011875 −	·011	·021	·038384	·012187	·010	·021
497	·028226	·010496	·011	·021	·030242	·010853	·011	·021	·032258	·011197	·011	·021	·034274	·011530	·011	·021	·036290	·011851	·011	·021	·038306	·012163	·010	·021
498	·028169	·010475 −	·011	·021	·030181	·010831	·011	·021	·032193	·011175 −	·011	·021	·034205 +	·011507	·011	·021	·036217	·011828	·011	·021	·038229	·012139	·010	·021
499	·028112	·010454	·011	·021	·030120	·010810	·011	·021	·032129	·011153	·011	·021	·034137	·011484	·011	·021	·036145 −	·011805 −	·011	·021	·038153	·012116	·010	·021
500	·028056	·010434	·011	·021	·030060	·010789	·011	·021	·032064	·011131	·011	·021	·034068	·011462	·011	·021	·036072	·011782	·011	·021	·038076	·012092	·010	·021

TABLE IV.—(*continued*).

$N =$ size of sample	3				4				5			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·50	P_2 $\lambda_2 =$ 2·94	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·20	P_2 $\lambda_2 =$ 2·80	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·12	P_2 $\lambda_2 =$ 2·68
501	·004000	·003984	·011	·019	·006000	·004875 −	·012$_5$	·020	·008000	·005623	·012	·021
502	·003992	·003976	·011	·019	·005988	·004865 −	·013	·020	·007984	·005612	·012	·021
503	·003984	·003968	·011	·019	·005976	·004855 +	·013	·020	·007968	·005601	·012	·021
504	·003976	·003960	·011	·019	·005964	·004846	·013	·020	·007952	·005590	·012	·021
505	·003968	·003953	·011	·019	·005952	·004836	·013	·020	·007937	·005579	·012	·021
506	·003960	·003945 −	·011	·019	·005941	·004826	·013	·020	·007921	·005568	·012	·021
507	·003953	·003937	·011	·019	·005929	·004817	·013	·020	·007905 +	·005557	·012	·021
508	·003945 −	·003929	·011	·019	·005917	·004808	·013	·020	·007890	·005546	·012	·021
509	·003937	·003922	·011	·019	·005906	·004798	·013	·020	·007874	·005535 −	·012	·021
510	·003929	·003914	·011	·019	·005894	·004789	·013	·020	·007859	·005524	·012	·021
511	·003922	·003906	·011	·019	·005882	·004779	·013	·020	·007843	·005513	·012	·021
512	·003914	·003899	·011	·019	·005871	·004770	·013	·020	·007828	·005503	·012	·021
513	·003906	·003891	·011	·019	·005859	·004761	·013	·020	·007813	·005492	·012	·021
514	·003899	·003883	·011	·019	·005848	·004752	·013	·020	·007797	·005481	·012	·021
515	·003891	·003876	·011	·019	·005837	·004742	·013	·020	·007782	·005471	·012	·021
516	·003883	·003868	·011	·019	·005825 +	·004733	·013	·020	·007767	·005460	·012	·021
517	·003876	·003861	·011	·019	·005814	·004724	·013	·020	·007752	·005450 −	·012	·021
518	·003868	·003854	·011	·019	·005803	·004715 +	·013	·020	·007737	·005439	·012	·021
519	·003861	·003846	·011	·019	·005792	·004706	·013	·020	·007722	·005429	·012	·021
520	·003854	·003839	·011	·019	·005780	·004697	·013	·020	·007707	·005418	·012	·021
521	·003846	·003831	·011	·019	·005769	·004688	·013	·020	·007692	·005408	·012	·021
522	·003839	·003824	·011	·019	·005758	·004679	·013	·020	·007678	·005398	·012	·021
523	·003831	·003817	·011	·019	·005747	·004670	·013	·020	·007663	·005387	·012	·021
524	·003824	·003809	·011	·019	·005736	·004661	·013	·020	·007648	·005377	·012	·021
525	·003817	·003802	·011	·019	·005725 +	·004652	·013	·020	·007634	·005367	·012	·021
526	·003810	·003795 +	·011	·019	·005714	·004644	·013	·020	·007619	·005357	·012	·021
527	·003802	·003788	·011	·019	·005703	·004635 −	·013	·020	·007605 −	·005347	·012	·021
528	·003795 +	·003781	·011	·019	·005693	·004626	·013	·020	·007590	·005337	·012	·021
529	·003788	·003774	·011	·019	·005682	·004617	·013	·020	·007576	·005326	·012	·021
530	·003781	·003766	·011	·019	·005671	·004609	·013	·020	·007561	·005316	·012	·021
531	·003774	·003759	·011	·019	·005660	·004600	·013	·020	·007547	·005306	·012	·021
532	·003766	·003752	·011	·019	·005650 −	·004591	·013	·020	·007533	·005297	·012	·021
533	·003759	·003745 +	·011	·019	·005639	·004583	·013	·020	·007519	·005287	·012	·021
534	·003752	·003738	·011	·019	·005629	·004574	·013	·020	·007505 −	·005277	·012	·021
535	·003745 +	·003731	·011	·019	·005618	·004566	·013	·020	·007491	·005267	·012	·021
536	·003738	·003724	·011	·019	·005607	·004557	·013	·020	·007477	·005257	·012	·021
537	·003731	·003717	·011	·019	·005597	·004549	·013	·020	·007463	·005247	·012	·021
538	·003724	·003711	·011	·019	·005587	·004540	·013	·020	·007449	·005238	·012	·021
539	·003717	·003704	·011	·019	·005576	·004532	·013	·020	·007435 −	·005228	·012	·021
540	·003711	·003697	·011	·019	·005566	·004523	·013	·020	·007421	·005218	·012	·021
541	·003704	·003690	·011	·019	·005556	·004515 +	·013	·020	·007407	·005209	·012	·021
542	·003697	·003683	·011	·019	·005545 +	·004507	·013	·020	·007394	·005199	·012	·021
543	·003690	·003676	·011	·019	·005535 +	·004499	·013	·020	·007380	·005190	·012	·021
544	·003683	·003670	·011	·019	·005525 −	·004490	·013	·020	·007366	·005180	·012	·021
545	·003676	·003663	·011	·019	·005515 −	·004482	·013	·020	·007353	·005171	·012	·021
546	·003670	·003656	·011	·019	·005505 −	·004474	·013	·020	·007339	·005161	·012	·021
547	·003663	·003650 −	·011	·019	·005495 −	·004466	·013	·020	·007326	·005152	·012	·021
548	·003656	·003643	·011	·019	·005484	·004458	·013	·020	·007313	·005142	·012	·021
549	·003650 −	·003636	·011	·019	·005474	·004450 −	·013	·020	·007299	·005133	·012	·021
550	·003643	·003630	·011	·019	·005464	·004441	·013	·020	·007286	·005124	·012	·021

$N =$ size of sample	6				7				8			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·11	P_2 $\lambda_2 =$ 2·63	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·08	P_2 $\lambda_2 =$ 2·58	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·02	P_2 $\lambda_2 =$ 2·54
501	·010000	·006280	·011	·021	·012000	·006873	·010	·020	·014000	·007416	·010	·021
502	·009980	·006268	·011	·021	·011976	·006859	·010	·020	·013972	·007401	·010	·021
503	·009960	·006255 +	·011	·021	·011952	·006846	·010	·020	·013944	·007387	·010	·021
504	·009940	·006243	·011	·021	·011928	·006832	·010	·020	·013917	·007372	·010	·021
505	·009921	·006231	·011	·021	·011905 −	·006819	·010	·020	·013889	·007358	·010	·021
506	·009901	·006219	·011	·021	·011881	·006805 +	·010	·020	·013861	·007343	·010	·021
507	·009881	·006206	·011	·021	·011858	·006792	·010	·020	·013834	·007329	·010	·021
508	·009862	·006194	·011	·021	·011834	·006779	·010	·020	·013807	·007314	·010	·021
509	·009843	·006182	·011	·021	·011811	·006765 +	·010	·020	·013780	·007300	·010	·021
510	·009823	·006170	·011	·021	·011788	·006752	·010	·020	·013752	·007286	·010	·021
511	·009804	·006158	·011	·021	·011765 −	·006739	·010	·020	·013725 +	·007272	·010	·021
512	·009785 −	·006146	·011	·021	·011742	·006726	·010	·020	·013699	·007258	·010	·021
513	·009766	·006134	·011	·021	·011719	·006713	·010	·020	·013672	·007244	·010	·021
514	·009747	·006122	·011	·021	·011696	·006700	·010	·020	·013645 +	·007230	·010	·021
515	·009728	·006110	·011	·021	·011673	·006687	·010	·020	·013619	·007216	·010	·021
516	·009709	·006099	·011	·021	·011650 +	·006674	·010	·020	·013592	·007202	·010	·021
517	·009690	·006087	·011	·021	·011628	·006661	·010	·020	·013566	·007188	·010	·021
518	·009671	·006075 +	·011	·021	·011605 +	·006649	·010	·020	·013540	·007174	·010	·021
519	·009653	·006064	·011	·021	·011583	·006636	·010	·020	·013514	·007160	·010	·021
520	·009634	·006052	·011	·021	·011561	·006623	·010	·020$_5$	·013487	·007147	·010	·021
521	·009615 +	·006040	·011	·021	·011538	·006610	·010	·021	·013462	·007133	·010	·021
522	·009597	·006029	·011	·021	·011516	·006598	·010	·021	·013436	·007120	·010	·021
523	·009579	·006017	·011	·021	·011494	·006585 +	·010	·021	·013410	·007106	·010	·021
524	·009560	·006006	·011	·021	·011472	·006573	·010	·021	·013384	·007093	·010	·021
525	·009542	·005995 −	·011	·021	·011450 +	·006560	·010	·021	·013359	·007079	·010	·021
526	·009524	·005983	·011	·021	·011429	·006548	·010	·021	·013333	·007066	·010	·021
527	·009506	·005972	·011	·021	·011407	·006536	·010	·021	·013308	·007053	·010	·021
528	·009488	·005961	·011	·021	·011385 +	·006523	·010	·021	·013283	·007039	·010	·021
529	·009470	·005949	·011	·021	·011364	·006511	·010	·021	·013258	·007026	·010	·021
530	·009452	·005938	·011	·021	·011342	·006499	·010	·021	·013233	·007013	·010$_5$	·021
531	·009434	·005927	·011	·021	·011321	·006487	·010	·021	·013208	·007000	·011	·021
532	·009416	·005916	·011	·021	·011299	·006475 −	·010	·021	·013183	·006987	·011	·021
533	·009398	·005905 +	·011	·021	·011278	·006463	·010	·021	·013158	·006974	·011	·021
534	·009381	·005894	·011	·021	·011257	·006450 +	·010	·021	·013133	·006961	·011	·021
535	·009363	·005883	·011	·021	·011236	·006438	·010	·021	·013109	·006948	·011	·021
536	·009346	·005872	·011	·021	·011215 −	·006427	·010	·021	·013084	·006935 −	·011	·021
537	·009328	·005861	·011	·021	·011194	·006415 −	·010	·021	·013060	·006922	·011	·021
538	·009311	·005850 +	·011	·021	·011173	·006403	·010	·021	·013035 +	·006909	·011	·021
539	·009294	·005840	·011	·021	·011152	·006391	·010	·021	·013011	·006897	·011	·021
540	·009276	·005829	·011	·021	·011132	·006379	·010	·021	·012987	·006884	·011	·021
541	·009259	·005818	·011	·021	·011111	·006367	·010	·021	·012963	·006871	·011	·021
542	·009242	·005807	·011	·021	·011091	·006356	·010	·021	·012939	·006859	·011	·021
543	·009225 +	·005797	·011	·021	·011070	·006344	·010	·021	·012915 +	·006846	·011	·021
544	·009208	·005786	·011	·021	·011050 −	·006333	·010	·021	·012891	·006834	·011	·021
545	·009191	·005776	·011	·021	·011029	·006321	·010	·021	·012868	·006821	·011	·021
546	·009174	·005765 +	·011	·021	·011009	·006309	·010	·021	·012844	·006809	·011	·021
547	·009158	·005755 −	·011	·021	·010989	·006298	·010	·021	·012821	·006796	·011	·021
548	·009141	·005744	·011	·021	·010969	·006287	·010	·021	·012797	·006784	·011	·021
549	·009124	·005734	·011	·021	·010949	·006275 +	·010	·021	·012774	·006772	·011	·021
550	·009107	·005723	·011	·021	·010929	·006264	·010	·021	·012750 +	·006760	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	9				10				11			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·96$	P_2 $\lambda_2=2·50$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·92$	P_2 $\lambda_2=2·47$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·88$	P_2 $\lambda_2=2·44$
501	·016000	·007920	·011	·021	·018000	·008392	·011	·021	·020000	·008837	·011	·021
502	·015968	·007904	·011	·021	·017964	·008375 +	·011	·021	·019960	·008819	·011	·021
503	·015936	·007889	·011	·021	·017928	·008359	·011	·021	·019920	·008802	·011	·021
504	·015905 −	·007873	·011	·021	·017893	·008342	·011	·021	·019881	·008785 −	·011	·021
505	·015873	·007858	·011	·021	·017857	·008326	·011	·021	·019841	·008767	·011	·021
506	·015842	·007842	·011	·021	·017822	·008310	·011	·021	·019802	·008750 +	·011	·021
507	·015810	·007827	·011	·021	·017787	·008293	·011	·021	·019763	·008733	·011	·021
508	·015779	·007812	·011	·021	·017751	·008277	·011	·021	·019724	·008716	·011	·021
509	·015748	·007796	·011	·021	·017717	·008261	·011	·021	·019685 +	·008699	·011	·021
510	·015717	·007781	·011	·021	·017682	·008245 +	·011	·021	·019646 −	·008682	·011	·021
511	·015686	·007766	·011	·021	·017647	·008229	·011	·021	·019608	·008666	·011	·021
512	·015656	·007751	·011	·021	·017613	·008213	·011	·021	·019569	·008649	·011	·021
513	·015625	·007736	·011	·021	·017578	·008197	·011	·021	·019531	·008632	·011	·021
514	·015595 −	·007721	·011	·021	·017544	·008181	·011	·021	·019493	·008615 +	·011	·021
515	·015564	·007706	·011	·021	·017510	·008166	·011	·021	·019455 +	·008599	·011	·021
516	·015534	·007692	·011	·021	·017476	·008150 +	·011	·021	·019417	·008582	·011	·021
517	·015504	·007677	·011	·021	·017442	·008134	·011	·021	·019380	·008566	·011	·021
518	·015474	·007662	·011	·021	·017408	·008119	·011	·021	·019342	·008550 −	·011	·021
519	·015444	·007647	·011	·021	·017375 −	·008103	·011	·021	·019305 +	·008533	·011	·021
520	·015414	·007633	·011	·021	·017341	·008088	·011	·021	·019268	·008517	·011	·021
521	·015385 −	·007618	·011	·021	·017308	·008073	·011	·021	·019231	·008501	·011	·021
522	·015355 +	·007604	·011	·021	·017274	·008057	·011	·021	·019194	·008485 −	·011	·021
523	·015326	·007589	·011	·021	·017241	·008042	·011	·021	·019157	·008469	·011	·021
524	·015296	·007575 −	·011	·021	·017208	·008027	·011	·021	·019120	·008453	·011	·021
525	·015267	·007561	·011	·021	·017176	·008012	·011	·021	·019084	·008437	·011	·021
526	·015238	·007546	·011	·021	·017143	·007996	·011	·021	·019048	·008421	·011	·021
527	·015209	·007532	·011	·021	·017110	·007981	·011	·021	·019011	·008405 −	·011	·021
528	·015180	·007518	·011	·021	·017078	·007966	·011	·021	·018975 +	·008389	·011	·021
529	·015152	·007504	·011	·021	·017045 +	·007951	·011	·021	·018939	·008374	·011	·021
530	·015123	·007490	·011	·021	·017013	·007937	·011	·021	·018904	·008358	·011	·021
531	·015094	·007476	·011	·021	·016981	·007922	·011	·021	·018868	·008342	·011	·021
532	·015066	·007462	·011	·021	·016949	·007907	·011	·021	·018832	·008327	·011	·021
533	·015038	·007448	·011	·021	·016917	·007892	·011	·021	·018797	·008311	·011	·021
534	·015009	·007434	·011	·021	·016886	·007878	·011	·021	·018762	·008296	·011	·021
535	·014981	·007420	·011	·021	·016854	·007863	·011	·021	·018727	·008281	·011	·021
536	·014953	·007407	·011	·021	·016822	·007849	·011	·021	·018692	·008265 +	·011	·021
537	·014925 +	·007393	·011	·021	·016791	·007834	·011	·021	·018657	·008250 −	·011	·021
538	·014898	·007379	·011	·021	·016760	·007820	·011	·021	·018622	·008235 −	·011	·021
539	·014870	·007366	·011	·021	·016729	·007805 +	·011	·021	·018587	·008220	·011	·021
540	·014842	·007352	·011	·021	·016698	·007791	·011	·021	·018553	·008205 −	·011	·021
541	·014815 −	·007339	·011	·021	·016667	·007777	·011	·021	·018519	·008190	·011	·021
542	·014787	·007325 +	·011	·021	·016636	·007762	·011	·021	·018484	·008175 −	·011	·021
543	·014760	·007312	·011	·021	·016605 +	·007748	·011	·021	·018450 +	·008160	·011	·021
544	·014733	·007299	·011	·021	·016575 −	·007734	·011	·021	·018416	·008145 −	·011	·021
545	·014706	·007285 +	·011	·021	·016544	·007720	·011	·021	·018382	·008130	·011	·021
546	·014679	·007272	·011	·021	·016514	·007706	·011	·021	·018349	·008115 +	·011	·021
547	·014652	·007259	·011	·021	·016484	·007692	·011	·021	·018315 +	·008101	·011	·021
548	·014625 +	·007246	·011	·021	·016453	·007678	·011	·021	·018282	·008086	·011	·021
549	·014599	·007233	·011	·021	·016423	·007664	·011	·021	·018248	·008071	·011	·021
550	·014572	·007220	·011	·021	·016393	·007650 +	·011	·021	·018215 −	·008057	·011	·021

N = size of sample	12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·84$	P_2 $\lambda_2=2·42$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·80$	P_2 $\lambda_2=2·40$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2·79$	P_2 $\lambda_2=2·39$
501	·022000	·009259	·011	·021	·024000	·009660	·011	·021	·026000	·010045 −	·011	·021
502	·021956	·009240	·011	·021	·023952	·009641	·011	·021	·025948	·010025 −	·011	·021
503	·021912	·009222	·011	·021	·023904	·009622	·011	·021	·025896	·010005 +	·011	·021
504	·021869	·009204	·011	·021	·023857	·009604	·011	·021	·025845 −	·009986	·011	·021
505	·021825 +	·009186	·011	·021	·023810	·009585 −	·011	·021	·025794	·009966	·011	·021
506	·021782	·009168	·011	·021	·023762	·009566	·011	·021	·025743	·009947	·011	·021
507	·021739	·009150 +	·011	·021	·023715 +	·009547	·011	·021	·025692	·009927	·011	·021
508	·021696	·009132	·011	·021	·023669	·009529	·011	·021	·025641	·009908	·011	·021
509	·021654	·009115 −	·011	·021	·023622	·009510	·011	·021	·025591	·009889	·011	·021
510	·021611	·009097	·011	·021	·023576	·009492	·011	·021	·025540	·009870	·011	·021
511	·021569	·009079	·011	·021	·023529	·009474	·011	·021	·025490	·009851	·011	·021
512	·021526	·009062	·011	·021	·023483	·009455 +	·011	·021	·025440	·009832	·011	·021
513	·021484	·009044	·011	·021	·023438	·009437	·011	·021	·025391	·009813	·011	·021
514	·021442	·009027	·011	·021	·023392	·009419	·011	·021	·025341	·009794	·011	·021
515	·021401	·009010	·011	·021	·023346	·009401	·011	·021	·025292	·009775 +	·011	·021
516	·021359	·008992	·011	·021	·023301	·009383	·011	·021	·025243	·009756	·011	·021
517	·021318	·008975 +	·011	·021	·023256	·009365 −	·011	·021	·025194	·009738	·011	·021
518	·021277	·008958	·011	·021	·023211	·009347	·011	·021	·025145 +	·009719	·011	·021
519	·021236	·008941	·011	·021	·023166	·009329	·011	·021	·025097	·009701	·011	·021
520	·021195 −	·008924	·011	·021	·023121	·009312	·011	·021	·025048	·009682	·011	·021
521	·021154	·008907	·011	·021	·023077	·009294	·011	·021	·025000	·009664	·011	·021
522	·021113	·008890	·011	·021	·023033	·009276	·011	·021	·024952	·009646	·011	·021
523	·021073	·008873	·011	·021	·022989	·009259	·011	·021	·024904	·009627	·011	·021
524	·021033	·008857	·011	·021	·022945 −	·009241	·011	·021	·024857	·009609	·011	·021
525	·020992	·008840	·011	·021	·022901	·009224	·011	·021	·024809	·009591	·011	·021
526	·020952	·008823	·011	·021	·022857	·009207	·011	·021	·024762	·009573	·011	·021
527	·020913	·008807	·011	·021	·022814	·009189	·011	·021	·024715 −	·009555 +	·011	·021
528	·020873	·008790	·011	·021	·022770	·009172	·011	·021	·024668	·009537	·011	·021
529	·020833	·008774	·011	·021	·022727	·009155 +	·011	·021	·024621	·009520	·011	·021
530	·020794	·008757	·011	·021	·022684	·009138	·011	·021	·024575 −	·009502	·011	·021
531	·020755 −	·008741	·011	·021	·022642	·009121	·011	·021	·024528	·009484	·011	·021
532	·020716	·008725 −	·011	·021	·022599	·009104	·011	·021	·024482	·009467	·011	·021
533	·020677	·008709	·011	·021	·022556	·009087	·011	·021	·024436	·009449	·011	·021
534	·020638	·008692	·011	·021	·022514	·009070	·011	·021	·024390	·009432	·011	·021
535	·020599	·008676	·011	·021	·022472	·009054	·011	·021	·024345 −	·009414	·011	·021
536	·020561	·008660	·011	·021	·022430	·009037	·011	$·021_5$	·024299	·009397	·011	·021
537	·020522	·008644	·011	·021	·022388	·009020	·011	·022	·024254	·009380	·011	·021
538	·020484	·008629	·011	·021	·022346	·009004	·011	·022	·024209	·009362	·011	·021
539	·020446	·008613	·011	·021	·022305 −	·008987	·011	·022	·024164	·009345 +	·011	·021
540	·020408	·008597	·011	·021	·022263	·008971	·011	·022	·024119	·009328	·011	·021
541	·020370	·008581	·011	·021	·022222	·008954	·011	·022	·024074	·009311	·011	·021
542	·020333	·008565 +	·011	·021	·022181	·008938	·011	·022	·024030	·009294	·011	·021
543	·020295 +	·008550 −	·011	·021	·022140	·008922	·011	·022	·023985 +	·009277	·011	·021
544	·020258	·008534	·011	·021	·022099	·008905 +	·011	·022	·023941	·009260	·011	·021
545	·020221	·008519	·011	·021	·022059	·008889	·011	·022	·023897	·009244	·011	·021
546	·020183	·008503	·011	·021	·022018	·008873	·011	·022	·023853	·009227	·011	·021
547	·020147	·008488	·011	·021	·021978	·008857	·011	·022	·023810	·009210	·011	·021
548	·020110	·008473	·011	·021	·021938	·008841	·011	·022	·023766	·009194	·011	·021
549	·020073	·008457	·011	·021	·021898	·008825 +	·011	·022	·023723	·009177	·011	·021
550	·020036	·008442	·011	·021	·021858	·008809	·011	·022	·023679	·009161	·011	·021

TABLE IV.—(*continued*).

N = size of sample	15				16			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}78$	P_2 $\lambda_2 = 2{\cdot}38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}77$	P_2 $\lambda_2 = 2{\cdot}37$
501	·028000	·010413	·011	·021	·030000	·010767	·011	·021
502	·027944	·010393	·011	·021	·029940	·010746	·011	·021
503	·027888	·010372	·011	·021	·029880	·010725 +	·011	·021
504	·027833	·010352	·011	·021	·029821	·010704	·011	·021
505	·027778	·010332	·011	·021	·029762	·010683	·011	·021
506	·027723	·010312	·011	·021	·029703	·010663	·011	·021
507	·027668	·010292	·011	·021	·029644	·010642	·011	·021
508	·027613	·010272	·011	·021	·029586	·010621	·011	·021
509	·027559	·010252	·011	·021	·029528	·010601	·011	·021
510	·027505 −	·010232	·011	·021	·029470	·010580	·011	·021
511	·027451	·010212	·011	·021	·029412	·010560	·011	·021
512	·027397	·010192	·011	·021	·029354	·010540	·011	·021
513	·027344	·010173	·011	·021	·029297	·010519	·011	·021
514	·027290	·010153	·011	·021	·029240	·010499	·011	·021
515	·027237	·010134	·011	·021	·029183	·010479	·011	·021
516	·027184	·010115 −	·011	·021	·029126	·010459	·011	·021
517	·027132	·010095 +	·011	·021	·029070	·010439	·011	·021
518	·027079	·010076	·011	·021	·029014	·010419	·011	·021
519	·027027	·010057	·011	·021	·028958	·010400	·011	·021
520	·026975 −	·010038	·011	·021	·028902	·010380	·011	·021
521	·026923	·010019	·011	·021	·028846	·010360	·011	·021
522	·026871	·010000	·011	·021	·028791	·010341	·011	·021
523	·026820	·009981	·011	·021	·028736	·010321	·011	·021
524	·026769	·009962	·011	·021	·028681	·010302	·011	·021
525	·026718	·009944	·011	·021	·028626	·010282	·011	·021
526	·026667	·009925 −	·011	·021	·028571	·010263	·011	·021
527	·026616	·009906	·011	·021	·028517	·010244	·011	·021
528	·026565 +	·009888	·011	·021	·028463	·010225 −	·011	·021
529	·026515 +	·009869	·011	·021	·028409	·010206	·011	·021
530	·026465 +	·009851	·011	·021	·028355 +	·010187	·011	·021
531	·026415 +	·009833	·011	·021	·028302	·010168	·011	·021
532	·026365 +	·009814	·011	·021	·028249	·010149	·011	·021
533	·026316	·009796	·011	·021	·028195 +	·010130	·011	·021
534	·026266	·009778	·011	·021	·028143	·010112	·011	·021
535	·026217	·009760	·011	·021	·028090	·010093	·011	·021
536	·026168	·009742	·011	·021	·028037	·010074	·011	·021
537	·026119	·009724	·011	·021	·027985 +	·010056	·011	·021
538	·026071	·009706	·011	·021	·027933	·010038	·011	·021
539	·026022	·009689	·011	·021	·027881	·010019	·011	·021
540	·025974	·009671	·011	·021	·027829	·010001	·011	·021
541	·025926	·009653	·011	·021	·027778	·009983	·011	·021
542	·025878	·009636	·011	·021	·027726	·009965 −	·011	·021
543	·025830	·009618	·011	·021	·027675 +	·009946	·011	·021
544	·025783	·009601	·011	·021	·027624	·009928	·011	·021
545	·025735 +	·009583	·011	·021	·027574	·009910	·011	·021
546	·025688	·009566	·011	·021	·027523	·009893	·011	·021
547	·025641	·009549	·011	·021	·027473	·009875 −	·011	·021
548	·025594	·009532	·011	·021	·027422	·009857	·011	·021
549	·025547	·009515 −	·011	·021	·027372	·009839	·011	·021
550	·025501	·009497	·011	·021	·027322	·009822	·011	·021

N = size of sample	17				18			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}76$	P_2 $\lambda_2 = 2{\cdot}36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}75$	P_2 $\lambda_2 = 2{\cdot}35$
501	·032000	·011109	·011	·021	·034000	·011439	·011	·021
502	·031936	·011087	·011	·021	·033932	·011417	·011	·021
503	·031873	·011066	·011	·021	·033865 −	·011394	·011	·021
504	·031809	·011044	·011	·021	·033797	·011372	·011	·021
505	·031746	·011022	·011	·021	·033730	·011350 +	·011	·021
506	·031683	·011001	·011	·021	·033663	·011328	·011	·021
507	·031621	·010980	·011	·021	·033597	·011306	·011	·021
508	·031558	·010958	·011	·021	·033531	·011284	·011	·021
509	·031496	·010937	·011	·021	·033465 −	·011262	·011	·021
510	·031434	·010916	·011	·021	·033399	·011241	·011	·021
511	·031373	·010895 +	·011	·021	·033333	·011219	·011	·021
512	·031311	·010874	·011	·021	·033268	·011198	·011	·021
513	·031250	·010853	·011	·021	·033203	·011176	·011	·021
514	·031189	·010833	·011	·021	·033138	·011155 −	·011	·021
515	·031128	·010812	·011	·021	·033074	·011133	·011	·021
516	·031068	·010791	·011	·021	·033010	·011112	·011	·021
517	·031008	·010771	·011	·021	·032946	·011091	·011	·021
518	·030948	·010750 +	·011	·021	·032882	·011070	·011	·021
519	·030888	·010730	·011	·021	·032819	·011049	·011	·021
520	·030829	·010710	·011	·021	·032755 +	·011028	·011	·021
521	·030769	·010689	·011	·021	·032692	·011007	·011	·021
522	·030710	·010669	·011	·021	·032630	·010987	·011	·021
523	·030651	·010649	·011	·021	·032567	·010966	·011	·021
524	·030593	·010629	·011	·021	·032505 −	·010945 +	·011	·021
525	·030534	·010609	·011	·021	·032443	·010925 −	·011	·021
526	·030476	·010589	·011	·021	·032381	·010905 −	·011	·021
527	·030418	·010570	·011	·021	·032319	·010884	·011	·021
528	·030361	·010550 −	·011	·021	·032258	·010864	·011	·021
529	·030303	·010530	·011	·021	·032197	·010844	·011	·021
530	·030246	·010511	·011	·021	·032136	·010824	·011	·021
531	·030189	·010491	·011	·021	·032075 +	·010804	·011	·021
532	·030132	·010472	·011	·021	·032015 +	·010784	·011	·021
533	·030075 +	·010452	·011	·021	·031955 −	·010764	·011	·021
534	·030019	·010433	·011	·021	·031895 −	·010744	·011	·021
535	·029963	·010414	·011	·021	·031835 +	·010724	·011	·021
536	·029907	·010395 −	·011	·021	·031776	·010704	·011	·021
537	·029851	·010376	·011	·021	·031716	·010685 −	·011	·021
538	·029795 +	·010357	·011	·021	·031657	·010665 +	·011	·021
539	·029740	·010338	·011	·021	·031599	·010646	·011	·021
540	·029685 −	·010319	·011	·021	·031540	·010626	·011	·021
541	·029630	·010300	·011	·021	·031481	·010607	·011	·021
542	·029575 −	·010282	·011	·021	·031423	·010588	·011	·021
543	·029520	·010263	·011	·021	·031365 +	·010569	·011	·021
544	·029466	·010244	·011	·021	·031308	·010550 −	·011	·021
545	·029412	·010226	·011	·021	·031250 −	·010531	·011	·021
546	·029358	·010207	·011	·021	·031193	·010512	·011	·021
547	·029304	·010189	·011	·021	·031136	·010493	·011	·021
548	·029250 +	·010171	·011	·021	·031079	·010474	·011	·021
549	·029197	·010152	·011	·021	·031022	·010455 +	·011	·021
550	·029144	·010134	·011	·021	·030965 +	·010436	·011	·021

N = size of sample	19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}74$	P_2 $\lambda_2 = 2{\cdot}34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}73$	P_2 $\lambda_2 = 2{\cdot}33$
501	·036000	·011759	·011	·021	·038000	·012068	·010	·021
502	·035928	·011736	·011	·021	·037924	·012045 −	·010	·021
503	·035857	·011713	·011	·021	·037849	·012021	·011	·021
504	·035785 +	·011690	·011	·021	·037773	·011998	·011	·021
505	·035714	·011667	·011	·021	·037698	·011974	·011	·021
506	·035644	·011645 −	·011	·021	·037624	·011951	·011	·021
507	·035573	·011622	·011	·021	·037549	·011928	·011	·021
508	·035503	·011600	·011	·021	·037475 +	·011905 +	·011	·021
509	·035433	·011577	·011	·021	·037402	·011882	·011	·021
510	·035363	·011555 −	·011	·021	·037328	·011859	·011	·021
511	·035294	·011533	·011	·021	·037255 −	·011837	·011	·021
512	·035225 +	·011511	·011	·021	·037182	·011814	·011	·021
513	·035156	·011489	·011	·021	·037109	·011791	·011	·021
514	·035088	·011467	·011	·021	·037037	·011769	·011	·021
515	·035019	·011445 −	·011	·021	·036965 −	·011746	·011	·021
516	·034951	·011423	·011	·021	·036893	·011724	·011	·021
517	·034884	·011401	·011	·021	·036822	·011702	·011	·021
518	·034816	·011380	·011	·021	·036750 +	·011680	·011	·021
519	·034749	·011358	·011	·021	·036680	·011658	·011	·021
520	·034682	·011337	·011	·021	·036609	·011636	·011	·021
521	·034615 +	·011315 +	·011	·021	·036538	·011614	·011	·021
522	·034549	·011294	·011	·021	·036468	·011592	·011	·021
523	·034483	·011273	·011	·021	·036398	·011570	·011	·021
524	·034417	·011252	·011	·021	·036329	·011549	·011	·021
525	·034351	·011231	·011	·021	·036260	·011527	·011	·021
526	·034286	·011210	·011	·021	·036190	·011505 +	·011	·021
527	·034221	·011189	·011	·021	·036122	·011484	·011	·021
528	·034156	·011168	·011	·021	·036053	·011463	·011	·021
529	·034091	·011147	·011	·021	·035985 −	·011441	·011	·021
530	·034026	·011127	·011	·021	·035917	·011420	·011	·021
531	·033962	·011106	·011	·021	·035849	·011399	·011	·021
532	·033898	·011085 +	·011	·021	·035782	·011378	·011	·021
533	·033835 −	·011065 −	·011	·021	·035714	·011357	·011	·021
534	·033771	·011045 −	·011	·021	·035647	·011336	·011	·021
535	·033708	·011024	·011	·021	·035581	·011315 +	·011	·021
536	·033645 −	·011004	·011	·021	·035514	·011295 −	·011	·021
537	·033582	·010984	·011	·021	·035448	·011274	·011	·021
538	·033520	·010964	·011	·021	·035382	·011254	·011	·021
539	·033457	·010944	·011	·021	·035316	·011233	·011	·021
540	·033395 +	·010924	·011	·021	·035250 +	·011213	·011	·021
541	·033333	·010904	·011	·021	·035185 +	·011192	·011	·021
542	·033272	·010884	·011	·021	·035120	·011172	·011	·021
543	·033210	·010865 −	·011	·021	·035055 +	·011152	·011	·021
544	·033149	·010845 +	·011	·021	·034991	·011132	·011	·021
545	·033088	·010826	·011	·021	·034926	·011112	·011	·021
546	·033028	·010806	·011	·021	·034862	·011092	·011	·021
547	·032967	·010787	·011	·021	·034799	·011072	·011	·021
548	·032907	·010767	·011	·021	·034735 −	·011052	·011	·021
549	·032847	·010748	·011	·021	·034672	·011032	·011	·021
550	·032787	·010729	·011	·021	·034608	·011012	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	$n=3$: $\bar{\eta}^2$	$n=3$: $\sigma_{\bar{\eta}^2}$	$n=3$: P_1 $\lambda_1=3·50$	$n=3$: P_2 $\lambda_2=2·94$	$n=4$: $\bar{\eta}^2$	$n=4$: $\sigma_{\bar{\eta}^2}$	$n=4$: P_1 $\lambda_1=3·20$	$n=4$: P_2 $\lambda_2=2·80$	$n=5$: $\bar{\eta}^2$	$n=5$: $\sigma_{\bar{\eta}^2}$	$n=5$: P_1 $\lambda_1=3·14$	$n=5$: P_2 $\lambda_2=2·68$
551	·003636	·003623	·011	·019	·005455 −	·004433	·013	·020	·007273	·005115 −	·012	·021
552	·003630	·003617	·011	·019	·005445 −	·004425 +	·013	·020	·007260	·005105 +	·012	·021
553	·003623	·003610	·011	·019	·005435 −	·004417	·013	·020	·007246	·005096	·012	·021
554	·003617	·003604	·011	·019	·005425 −	·004409	·013	·020	·007233	·005087	·012	·021
555	·003610	·003597	·011	·019	·005415 +	·004402	·013	·020	·007220	·005078	·012	·021
556	·003604	·003591	·011	·019	·005405 +	·004394	·013	·020	·007207	·005069	·012	·021
557	·003597	·003584	·011	·019	·005396	·004386	·013	·020	·007194	·005060	·012	·021
558	·003591	·003578	·011	·019	·005386	·004378	·013	·020	·007181	·005051	·012	·021
559	·003584	·003571	·011	·019	·005376	·004370	·013	·020	·007168	·005042	·012	·021
560	·003578	·003565 +	·011	·019	·005367	·004362	·013	·020	·007156	·005033	·012	·021
561	·003571	·003559	·011	·019	·005357	·004355 −	·013	·020	·007143	·005024	·012	·021
562	·003565 +	·003552	·011	·019	·005348	·004347	·013	·020	·007130	·005015 −	·012	·021
563	·003559	·003546	·011	·019	·005338	·004339	·013	·020	·007117	·005006	·012	·021
564	·003552	·003540	·011	·019	·005329	·004331	·013	·020	·007105 −	·004997	·012	·021
565	·003546	·003534	·011	·019	·005319	·004324	·013	·020	·007092	·004988	·012	·021
566	·003540	·003527	·011	·019	·005310	·004316	·013	·020	·007080	·004980	·012	·021
567	·003534	·003521	·011	·019	·005300	·004309	·013	·020	·007067	·004971	·012	·021
568	·003527	·003515 −	·011	·019	·005291	·004301	·013	·020	·007055 −	·004962	·012	·021
569	·003521	·003509	·011	·019	·005282	·004294	·013	·020	·007042	·004953	·012	·021
570	·003515 −	·003503	·011	·019	·005272	·004286	·013	·020	·007030	·004945 −	·012	·021
571	·003509	·003496	·011	·019	·005263	·004279	·013	·020	·007018	·004936	·012	·021
572	·003503	·003490	·011	·019	·005254	·004271	·013	·020	·007005 +	·004927	·012	·021
573	·003497	·003484	·011	·019	·005245 −	·004264	·013	·020	·006993	·004919	·012	·021
574	·003490	·003478	·011	·019	·005236	·004256	·013	·020	·006981	·004910	·012	·021
575	·003484	·003472	·011	·019	·005226	·004249	·013	·020	·006969	·004902	·012	·021
576	·003478	·003466	·011	·019	·005217	·004241	·013	·020	·006957	·004893	·012	·021
577	·003472	·003460	·011	·019	·005208	·004234	·013	·020	·006944	·004885 −	·012	·021
578	·003466	·003454	·011	·019	·005199	·004227	·013	·020	·006932	·004876	·012	·021
579	·003460	·003448	·011	·019	·005190	·004220	·013	·020	·006920	·004868	·012	·021
580	·003454	·003442	·011	·019	·005181	·004212	·013	·020	·006908	·004860	·012	·021
581	·003448	·003436	·011	·019	·005172	·004205 +	·013	·020	·006897	·004851	·012	·021
582	·003442	·003431	·011	·019	·005164	·004198	·013	·020	·006885 −	·004843	·012	·021
583	·003436	·003425 −	·011	·019	·005155 −	·004191	·013	·020	·006873	·004835 −	·012	·021
584	·003431	·003419	·011	·019	·005146	·004184	·013	·020	·006861	·004827	·012	·021
585	·003425 −	·003413	·011	·019	·005137	·004176	·013	·020	·006849	·004818	·012	·021
586	·003419	·003407	·011	·019	·005128	·004169	·013	·020	·006838	·004810	·012	·021
587	·003413	·003401	·011	·019	·005119	·004162	·013	·020	·006826	·004802	·012	·021
588	·003407	·003396	·011	·019	·005111	·004155 +	·013	·020	·006814	·004794	·012	·021
589	·003401	·003390	·011	·019	·005102	·004148	·013	·020	·006803	·004786	·012	·021
590	·003396	·003384	·011	·019	·005093	·004141	·013	·020	·006791	·004778	·012	·021
591	·003390	·003378	·011	·019	·005085 −	·004134	·013	·020	·006780	·004770	·012	·021
592	·003384	·003373	·011	·019	·005076	·004127	·013	·020	·006768	·004762	·012	·021
593	·003378	·003367	·011	·019	·005068	·004120	·013	·020	·006757	·004754	·012	·021
594	·003373	·003361	·011	·019	·005059	·004113	·013	·020	·006745 +	·004746	·012	·021
595	·003367	·003356	·011	·019	·005051	·004106	·013	·020	·006734	·004738	·012	·021
596	·003361	·003350 +	·011	·019	·005042	·004100	·013	·020	·006723	·004730	·012	·021
597	·003356	·003344	·011	·019	·005034	·004093	·013	·020	·006711	·004722	·012	·021
598	·003350 +	·003339	·011	·019	·005025 +	·004086	·013	·020	·006700	·004714	·012	·021
599	·003344	·003333	·011	·019	·005017	·004079	·013	·020	·006689	·004706	·012	·021
600	·003339	·003328	·011	·019	·005008	·004072	·013	·020	·006678	·004698	·012	·021

N = size of sample	$n=6$: $\bar{\eta}^2$	$n=6$: $\sigma_{\bar{\eta}^2}$	$n=6$: P_1 $\lambda_1=3·11$	$n=6$: P_2 $\lambda_2=2·63$	$n=7$: $\bar{\eta}^2$	$n=7$: $\sigma_{\bar{\eta}^2}$	$n=7$: P_1 $\lambda_1=3·08$	$n=7$: P_2 $\lambda_2=2·58$	$n=8$: $\bar{\eta}^2$	$n=8$: $\sigma_{\bar{\eta}^2}$	$n=8$: P_1 $\lambda_1=3·02$	$n=8$: P_2 $\lambda_2=2·54$
551	·009091	·005713	·011	·021	·010909	·006253	·010	·021	·012727	·006747	·011	·021
552	·009074	·005703	·011	·021	·010889	·006241	·010	·021	·012704	·006735 +	·011	·021
553	·009058	·005692	·011	·021	·010870	·006230	·010	·021	·012681	·006723	·011	·021
554	·009042	·005682	·011	·021	·010850 −	·006219	·010	·021	·012658	·006711	·011	·021
555	·009025 +	·005672	·011	·021	·010830	·006208	·010	·021	·012635 +	·006699	·011	·021
556	·009009	·005662	·011	·021	·010811	·006197	·010	·021	·012613	·006687	·011	·021
557	·008993	·005652	·011	·021	·010791	·006186	·010	·021	·012590	·006675 +	·011	·021
558	·008977	·005642	·011	·021	·010772	·006175 −	·010	·021	·012567	·006663	·011	·021
559	·008961	·005632	·011	·021	·010753	·006164	·010	·021	·012545 −	·006651	·011	·021
560	·008945 −	·005622	·011	·021	·010733	·006153	·010	·021	·012522	·006640	·011	·021
561	·008929	·005612	·011	·021	·010714	·006142	·010	·021	·012500	·006628	·011	·021
562	·008913	·005602	·011	·021	·010695 +	·006131	·010	·021	·012478	·006616	·011	·021
563	·008897	·005592	·011	·021	·010676	·006120	·010	·021	·012456	·006604	·011	·021
564	·008881	·005582	·011	·021	·010657	·006109	·010	·021	·012433	·006593	·011	·021
565	·008865 +	·005572	·011	·021	·010638	·006098	·010	·021	·012411	·006581	·011	·021
566	·008850 −	·005562	·011	·021	·010619	·006088	·010	·021	·012389	·006570	·011	·021
567	·008834	·005553	·011	·021	·010601	·006077	·010	·021	·012367	·006558	·011	·021
568	·008818	·005543	·011	·021	·010582	·006066	·010	·021	·012346	·006547	·011	·021
569	·008803	·005533	·011	·021	·010563	·006056	·010	·021	·012324	·006535 +	·011	·021
570	·008787	·005523	·011	·021	·010545 −	·006045 +	·010	·021	·012302	·006524	·011	·021
571	·008772	·005514	·011	·021	·010526	·006035 −	·010	·021	·012281	·006512	·011	·021
572	·008757	·005504	·011	·021	·010508	·006024	·010	·021	·012259	·006501	·011	·021
573	·008741	·005495 −	·011	·021	·010490	·006014	·010	·021	·012238	·006490	·011	·021
574	·008726	·005485 +	·011	·021	·010471	·006003	·010	·021	·012216	·006479	·011	·021
575	·008711	·005476	·011	·021	·010453	·005993	·010	·021	·012195 +	·006467	·011	·021
576	·008696	·005466	·011	·021	·010435 −	·005983	·010	·021	·012174	·006456	·011	·021
577	·008681	·005457	·011	·021	·010417	·005972	·010	·021	·012153	·006445 +	·011	·021
578	·008666	·005447	·011	·021	·010399	·005962	·010	·021	·012132	·006434	·011	·021
579	·008651	·005438	·011	·021	·010381	·005952	·010	·021	·012111	·006423	·011	·021
580	·008636	·005429	·011	·021	·010363	·005942	·010	·021	·012090	·006412	·011	·021
581	·008621	·005419	·011	·021	·010345 −	·005931	·010	·021	·012069	·006401	·011	·021
582	·008606	·005410	·011	·021	·010327	·005921	·010	·021	·012048	·006390	·011	·021
583	·008591	·005401	·011	·021	·010309	·005911	·010	·021	·012027	·006379	·011	·021
584	·008576	·005392	·011	·021	·010292	·005901	·010	·021	·012007	·006368	·011	·021
585	·008562	·005382	·011	·021	·010274	·005891	·010	·021	·011986	·006358	·011	·021
586	·008547	·005372	·011	·021	·010256	·005881	·010	·021	·011966	·006347	·011	·021
587	·008532	·005364	·011	·021	·010239	·005871	·010	·021	·011945 +	·006336	·011	·021
588	·008518	·005355 +	·011	·021	·010221	·005861	·010	·021	·011925 +	·006325 +	·011	·021
589	·008503	·005346	·011	·021	·010204	·005851	·010	·021	·011905 −	·006315 −	·011	·021
590	·008489	·005337	·011	·021	·010187	·005841	·010	·021	·011885 −	·006304	·011	·021
591	·008475 −	·005328	·011	·021	·010169	·005832	·010	·021	·011864	·006293	·011	·021
592	·008460	·005319	·011	·021	·010152	·005822	·010	·021	·011844	·006283	·011	·021
593	·008446	·005310	·011	·021	·010135 +	·005812	·010	·021	·011824	·006272	·011	·021
594	·008432	·005301	·011	·021	·010118	·005802	·010	·021	·011804	·006262	·011	·021
595	·008418	·005292	·011	·021	·010101	·005793	·010	·021	·011785 −	·006251	·011	·021
596	·008403	·005284	·011	·021	·010084	·005783	·010	·021	·011765 −	·006241	·011	·021
597	·008389	·005275 −	·011	·021	·010067	·005773	·010	·021	·011745 −	·006231	·011	·021
598	·008375 +	·005266	·011	·021	·010050 +	·005764	·010	·021	·011725 +	·006220	·011	·021
599	·008361	·005257	·011	·021	·010033	·005754	·010	·021	·011706	·006210	·011	·021
600	·008347	·005248	·011	·021	·010017	·005745 −	·010	·021	·011686	·006200	·011	·021

TABLE IV.—(*continued*).

N = size of sample	9				10				11				12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·96$	P_2 $\lambda_2 = 2·50$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·92$	P_2 $\lambda_2 = 2·47$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·88$	P_2 $\lambda_2 = 2·44$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·84$	P_2 $\lambda_2 = 2·42$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·80$	P_2 $\lambda_2 = 2·40$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·79$	P_2 $\lambda_2 = 2·39$
551	·014545 +	·007207	·011	·021	·016364	·007637	·011	·021	·018182	·008042	·011	·021	·020000	·008427	·011	·021	·021818	·008794	·011	·022	·023636	·009144	·011	·021
552	·014519	·007194	·011	·021	·016334	·007623	·011	·021	·018149	·008028	·011	·021	·019964	·008412	·011	·021	·021779	·008778	·011	·022	·023593	·009128	·011	·021
553	·014493	·007181	·011	·021	·016304	·007609	·011	·021	·018116	·008013	·011	·021	·019928	·008397	·011	·021	·021739	·008762	·011	·022	·023551	·009111	·011	·021
554	·014467	·007168	·011	·021	·016275 −	·007596	·011	·021	·018083	·007999	·011	·021	·019892	·008382	·011	·021	·021700	·008746	·011	·022	·023508	·009095 +	·011	·021
555	·014440	·007155 −	·011	·021	·016245 +	·007582	·011	·021	·018051	·007985 −	·011	·021	·019856	·008367	·011	·021	·021661	·008731	·011	·022	·023466	·009079	·011	·021
556	·014414	·007142	·011	·021	·016216	·007569	·011	·021	·018018	·007971	·011	·021	·019820	·008352	·011	·021	·021622	·008715 +	·011	·022	·023423	·009063	·011	·021
557	·014388	·007129	·011	·021	·016187	·007555 +	·011	·021	·017986	·007956	·011	·021	·019784	·008337	·011	·021	·021583	·008700	·011	·022	·023381	·009047	·011	·021
558	·014363	·007117	·011	·021	·016158	·007542	·011	·021	·017953	·007942	·011	·021	·019749	·008322	·011	·021	·021544	·008684	·011	·022	·023339	·009031	·011	·021
559	·014337	·007104	·011	·021	·016129	·007528	·011	·021	·017921	·007928	·011	·021	·019713	·008308	·011	·021	·021505 +	·008669	·011	·022	·023297	·009015 −	·011	·021
560	·014311	·007092	·011	·021	·016100	·007515 −	·011	·021	·017889	·007914	·011	·021	·019678	·008293	·011	·021	·021467	·008654	·011	·022	·023256	·008999	·011	·021
561	·014286	·007079	·011	·021	·016071	·007502	·011	·021	·017857	·007900	·011	·021	·019643	·008278	·011	·021	·021429	·008639	·011	·022	·023214	·008983	·011	·021
562	·014260	·007067	·011	·021	·016043	·007488	·011	·021	·017825 +	·007886	·011	·021	·019608	·008264	·011	·021	·021390	·008623	·011	·022	·023173	·008967	·011	·021
563	·014235 −	·007054	·011	·021	·016014	·007475 +	·011	·021	·017794	·007872	·011	·021	·019573	·008249	·011	·021	·021352	·008608	·011	·022	·023132	·008952	·011	·021
564	·014210	·007042	·011	·021	·015986	·007462	·011	·021	·017762	·007859	·011	·021	·019538	·008235 −	·011	·021	·021314	·008593	·011	·022	·023091	·008936	·011	·021
565	·014184	·007029	·011	·021	·015957	·007449	·011	·021	·017730	·007845 −	·011	·021	·019504	·008220	·011	·021	·021277	·008578	·011	·022	·023050 −	·008920	·011	·021
566	·014159	·007017	·011	·021	·015929	·007436	·011	·021	·017699	·007831	·011	·021	·019469	·008206	·011	·021	·021239	·008563	·011	·022	·023009	·008905 −	·011	·021
567	·014134	·007005 −	·011	·021	·015901	·007423	·011	·021	·017668	·007817	·011	·021	·019435 −	·008192	·011	·021	·021201	·008548	·011	·022	·022968	·008889	·011	·021
568	·014109	·006992	·011	·021	·015873	·007410	·011	·021	·017637	·007804	·011	·021	·019400	·008177	·011	·021	·021164	·008533	·011	·022	·022928	·008874	·011	·021
569	·014085 −	·006980	·011	·021	·015845 +	·007397	·011	·021	·017606	·007790	·011	·021	·019366	·008163	·011	·021	·021127	·008518	·011	·022	·022887	·008858	·011	·021
570	·014060	·006968	·011	·021	·015817	·007384	·011	·021	·017575 −	·007777	·011	·021	·019332	·008149	·011	·021	·021090	·008504	·011	·022	·022847	·008843	·011	·021
571	·014035 +	·006956	·011	·021	·015789	·007371	·011	·021	·017544	·007763	·011	·021	·019298	·008135 −	·011	·021	·021053	·008489	·011	·022	·022807	·008828	·011	·021
572	·014011	·006944	·011	·021	·015762	·007359	·011	·021	·017513	·007750 −	·011	·021	·019264	·008121	·011	·021	·021016	·008474	·011	·022	·022767	·008812	·011	·021
573	·013986	·006932	·011	·021	·015734	·007346	·011	·021	·017483	·007736	·011	·021	·019231	·008107	·011	·021	·020979	·008460	·011	·022	·022727	·008797	·011	·021
574	·013962	·006920	·011	·021	·015707	·007333	·011	·021	·017452	·007723	·011	·021	·019197	·008093	·011	·021	·020942	·008445 −	·011	·022	·022688	·008782	·011	·021
575	·013937	·006908	·011	·021	·015679	·007320	·011	·021	·017422	·007710	·011	·021	·019164	·008079	·011	·021	·020906	·008430	·011	·022	·022648	·008767	·011	·021
576	·013913	·006896	·011	·021	·015652	·007308	·011	·021	·017391	·007696	·011	·021	·019130	·008065 −	·011	·021	·020870	·008416	·011	·022	·022609	·008752	·011	·021
577	·013889	·006884	·011	·021	·015625 −	·007295 +	·011	·021	·017361	·007683	·011	·021	·019097	·008051	·011	·021	·020833	·008402	·011	·022	·022569	·008737	·011	·021
578	·013865 −	·006872	·011	·021	·015598	·007283	·011	·021	·017331	·007670	·011	·021	·019064	·008037	·011	·021	·020797	·008387	·011	·022	·022530	·008722	·011	·021
579	·013841	·006860	·011	·021	·015571	·007270	·011	·021	·017301	·007657	·011	·021	·019031	·008023	·011	·021	·020761	·008373	·011	·022	·022491	·008707	·011	·021
580	·013817	·006849	·011	·021	·015544	·007258	·011	·021	·017271	·007644	·011	·021	·018998	·008010	·011	·021	·020725 +	·008359	·011	·022	·022453	·008692	·011	·021
581	·013793	·006837	·011	·021	·015517	·007245 +	·011	·021	·017241	·007631	·011	·021	·018966	·007996	·011	·021	·020690	·008344	·011	·022	·022414	·008677	·011	·021
582	·013769	·006825 +	·011	·021	·015491	·007233	·011	·021	·017212	·007618	·011	·021	·018933	·007982	·011	·021	·020654	·008330	·011	·022	·022375 +	·008663	·011	·021
583	·013746	·006814	·011	·021	·015464	·007221	·011	·021	·017182	·007605 −	·011	·021	·018900	·007969	·011	·021	·020619	·008316	·011	·022	·022337	·008648	·011	·021
584	·013722	·006802	·011	·021	·015437	·007209	·011	·021	·017153	·007592	·011	·021	·018868	·007955 +	·011	·021	·020583	·008302	·011	·022	·022298	·008633	·011	·021
585	·013699	·006791	·011	·021	·015411	·007196	·011	·021	·017123	·007579	·011	·021	·018836	·007942	·011	·021	·020548	·008288	·011	·022	·022260	·008619	·011	·021
586	·013675 +	·006779	·011	·021	·015385 −	·007184	·011	·021	·017094	·007566	·011	·021	·018803	·007929	·011	·021	·020513	·008274	·011	·022	·022222	·008604	·011	·021
587	·013652	·006768	·011	·021	·015358	·007172	·011	·021	·017065 −	·007553	·011	·021	·018771	·007915 +	·011	·021	·020478	·008260	·011	·022	·022184	·008590	·011	·021
588	·013629	·006756	·011	·021	·015332	·007160	·011	·021	·017036	·007541	·011	·021	·018739	·007902	·011	·021	·020443	·008246	·011	·022	·022147	·008575 +	·011	·021
589	·013605 +	·006745 −	·011	·021	·015306	·007148	·011	·021	·017007	·007528	·011	·021	·018707	·007889	·011	·021	·020408	·008232	·011	·022	·022109	·008561	·011	·021
590	·013582	·006733	·011	·021	·015280	·007136	·011	·021	·016978	·007515 +	·011	·021	·018676	·007875 +	·011	·021	·020374	·008218	·011	·022	·022071	·008547	·011	·021
591	·013559	·006722	·011	·021	·015254	·007124	·011	·021	·016949	·007503	·011	·021	·018644	·007862	·011	·021	·020339	·008205 −	·011	·022	·022034	·008532	·011	·021
592	·013536	·006711	·011	·021	·015228	·007112	·011	·021	·016920	·007490	·011	·021	·018613	·007849	·011	·021	·020305 −	·008191	·011	·022	·021997	·008518	·011	·021
593	·013514	·006700	·011	·021	·015203	·007100	·011	·021	·016892	·007478	·011	·021	·018581	·007836	·011	·021	·020270	·008177	·011	·022	·021959	·008504	·011	·021
594	·013491	·006688	·011	·021	·015177	·007088	·011	·021	·016863	·007465 +	·011	·021	·018550	·007823	·011	·021	·020236	·008164	·011	·022	·021922	·008490	·011	·021
595	·013468	·006677	·011	·021	·015152	·007076	·011	·021	·016835 +	·007453	·011	·021	·018519	·007810	·011	·021	·020202	·008150 −	·011	·022	·021886	·008475 +	·011	·021
596	·013445 +	·006666	·011	·021	·015126	·007064	·011	·021	·016807	·007440	·011	·021	·018487	·007797	·011	·021	·020168	·008136	·011	·022	·021849	·008461	·011	·021
597	·013423	·006655 +	·011	·021	·015101	·007053	·011	·021	·016779	·007428	·011	·021	·018456	·007784	·011	·021	·020134	·008123	·011	·022	·021812	·008447	·011	·021
598	·013400	·006644	·011	·021	·015075 +	·007041	·011	·021	·016750 +	·007416	·011	·021	·018425 +	·007771	·011	·021	·020101	·008110	·011	·022	·021776	·008433	·011	·021
599	·013378	·006633	·011	·021	·015050 +	·007029	·011	·021	·016722	·007403	·011	·021	·018395 −	·007758	·011	·021	·020067	·008096	·011	·022	·021739	·008420	·011	·021
600	·013356	·006622	·011	·021	·015025 +	·007018	·011	·021	·016694	·007391	·011	·021	·018364	·007745 +	·011	·021	·020033	·008083	·011	·022	·021703	·008406	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15				16				17				18				19				20			
	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 λ_1 = 2·78	P_2 λ_2 = 2·38	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 λ_1 = 2·77	P_2 λ_2 = 2·37	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 λ_1 = 2·76	P_2 λ_2 = 2·36	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 λ_1 = 2·75	P_2 λ_2 = 2·35	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 λ_1 = 2·74	P_2 λ_2 = 2·34	$\bar\eta^2$	$\sigma_{\bar\eta^2}$	P_1 λ_1 = 2·73	P_2 λ_2 = 2·33
551	·025455 −	·009480	·011	·021	·027273	·009804	·011	·021	·029091	·010116	·011	·021	·030909	·010418	·011	·021	·032727	·010710	·011	·021	·034545 +	·010993	·011	·021
552	·025408	·009464	·011	·021	·027223	·009787	·011	·021	·029038	·010098	·011	·021	·030853	·010399	·011	·021	·032668	·010691	·011	·021	·034483	·010973	·011	·021
553	·025362	·009447	·011	·021	·027174	·009769	·011	·021	·028986	·010080	·011	·021	·030797	·010381	·011	·021	·032609	·010672	·011	·021	·034420	·010954	·011	·021
554	·025316	·009430	·011	·021	·027125 −	·009752	·011	·021	·028933	·010062	·011	·021	·030741	·010362	·011	·021	·032550 −	·010653	·011	·021	·034358	·010934	·011	·021
555	·025271	·009413	·011	·021	·027076	·009734	·011	·021	·028881	·010044	·011	·021	·030686	·010344	·011	·021	·032491	·010634	·011	·021	·034296	·010915 −	·011	·021
556	·025225 +	·009396	·011	·021	·027027	·009717	·011	·021	·028829	·010026	·011	·021	·030631	·010325 +	·011	·021	·032432	·010615 −	·011	·021	·034234	·010896	·011	·021
557	·025180	·009380	·011	·021	·026978	·009700	·011	·021	·028777	·010009	·011	·021	·030576	·010307	·011	·021	·032374	·010596	·011	·021	·034173	·010876	·011	·021
558	·025135 −	·009363	·011	·021	·026930	·009683	·011	·021	·028725 +	·009991	·011	·021	·030521	·010289	·011	·021	·032316	·010578	·011	·021	·034111	·010857	·011	·021
559	·025090	·009347	·011	·021	·026882	·009666	·011	·021	·028674	·009973	·011	·021	·030466	·010271	·011	·021	·032258	·010559	·011	·021	·034050 +	·010838	·011	·021
560	·025045 −	·009330	·011	·021	·026834	·009649	·011	·021	·028623	·009956	·011	·021	·030411	·010253	·011	·021	·032200	·010540	·011	·021	·033989	·010819	·011	·021
561	·025000	·009314	·011	·021	·026786	·009632	·011	·021	·028571	·009938	·011	·021	·030357	·010235 −	·011	·021	·032143	·010522	·011	·021	·033929	·010800	·011	·021
562	·024955 +	·009297	·011	·021	·026738	·009615 −	·011	·021	·028520	·009921	·011	·021	·030303	·010217	·011	·021	·032086	·010504	·011	·021	·033868	·010781	·011	·021
563	·024911	·009281	·011	·021	·026690	·009598	·011	·021	·028470	·009904	·011	·021	·030249	·010199	·011	·021	·032028	·010485 +	·011	·021	·033808	·010763	·011	·021
564	·024867	·009265 −	·011	·021	·026643	·009581	·011	·021	·028419	·009886	·011	·021	·030195 +	·010181	·011	·021	·031972	·010467	·011	·021	·033748	·010744	·011	·021
565	·024823	·009249	·011	·021	·026596	·009564	·011	·021	·028369	·009869	·011	·021	·030142	·010164	·011	·021	·031915 −	·010449	·011	·021	·033688	·010725 +	·011	·021
566	·024779	·009232	·011	·021	·026549	·009548	·011	·021	·028319	·009852	·011	·021	·030088	·010146	·011	·021	·031858	·010431	·011	·021	·033628	·010707	·011	·021
567	·024735 −	·009216	·011	·021	·026502	·009531	·011	·021	·028269	·009835 −	·011	·021	·030035 +	·010128	·011	·021	·031802	·010412	·011	·021	·033569	·010688	·011	·021
568	·024691	·009200	·011	·021	·026455 +	·009515 −	·011	·021	·028219	·009818	·011	·021	·029982	·010111	·011	·021	·031746	·010394	·011	·021	·033510	·010669	·011	·021
569	·024648	·009184	·011	·021	·026408	·009498	·011	·021	·028169	·009801	·011	·021	·029930	·010093	·011	·021	·031690	·010376	·011	·021	·033451	·010651	·011	·021
570	·024605 −	·009168	·011	·021	·026362	·009482	·011	·021	·028120	·009784	·011	·021	·029877	·010076	·011	·021	·031634	·010359	·011	·021	·033392	·010633	·011	·021
571	·024561	·009153	·011	·021	·026316	·009465 +	·011	·021	·028070	·009767	·011	·021	·029825 −	·010058	·011	·021	·031579	·010341	·011	·021	·033333	·010614	·011	·021
572	·024518	·009137	·011	·021	·026270	·009449	·011	·021	·028021	·009750 +	·011	·021	·029772	·010041	·011	·021	·031524	·010323	·011	·021	·033275 −	·010596	·011	·021
573	·024476	·009121	·011	·021	·026224	·009433	·011	·021	·027972	·009733	·011	·021	·029720	·010024	·011	·021	·031469	·010305 +	·011	·021	·033217	·010578	·011	·021
574	·024433	·009105 +	·011	·021	·026178	·009416	·011	·021	·027923	·009717	·011	·021	·029668	·010007	·011	·021	·031414	·010288	·011	·021	·033159	·010560	·011	·021
575	·024390	·009090	·011	·021	·026132	·009400	·011	·021	·027875 −	·009700	·011	·021	·029617	·009990	·011	·021	·031359	·010270	·011	·021	·033101	·010542	·011	·021
576	·024348	·009074	·011	·021	·026087	·009384	·011	·021	·027826	·009683	·011	·021	·029565 +	·009972	·011	·021	·031304	·010252	·011	·021	·033043	·010524	·011	·021
577	·024306	·009059	·011	·021	·026042	·009368	·011	·021	·027778	·009667	·011	·021	·029514	·009955 +	·011	·021	·031250 −	·010235 −	·011	·021	·032986	·010506	·011	·021
578	·024263	·009043	·011	·021	·025997	·009352	·011	·021	·027730	·009650 +	·011	·021	·029463	·009938	·011	·021	·031196	·010217	·011	·021	·032929	·010488	·011	·021
579	·024221	·009028	·011	·021	·025952	·009336	·011	·021	·027682	·009634	·011	·021	·029412	·009922	·011	·021	·031142	·010200	·011	·021	·032872	·010470	·011	·021
580	·024180	·009012	·011	·021	·025907	·009320	·011	·021	·027634	·009618	·011	·021	·029361	·009905 −	·011	·021	·031088	·010183	·011	·021	·032815 +	·010452	·011	·021
581	·024138	·008997	·011	·021	·025862	·009305 −	·011	·021	·027586	·009601	·011	·021	·029310	·009888	·011	·021	·031034	·010166	·011	·021	·032759	·010435 −	·011	·021
582	·024096	·008982	·011	·021	·025818	·009289	·011	·021	·027539	·009585 −	·011	·021	·029260	·009871	·011	·021	·030981	·010148	·011	·021	·032702	·010417	·011	·021
583	·024055 −	·008967	·011	·021	·025773	·009273	·011	·021	·027491	·009569	·011	·021	·029210	·009855 −	·011	·021	·030928	·010131	·011	·021	·032646	·010400	·011	·021
584	·024014	·008951	·011	·021	·025729	·009257	·011	·021	·027444	·009553	·011	·021	·029160	·009838	·011	·021	·030875 −	·010114	·011	·021	·032590	·010382	·011	·021
585	·023973	·008936	·011	·021	·025685 −	·009242	·011	·021	·027397	·009536	·011	·021	·029110	·009821	·011	·021	·030822	·010097	·011	·021	·032534	·010365 −	·011	·021
586	·023932	·008921	·011	·021	·025641	·009226	·011	·021	·027350 +	·009520	·011	·021	·029060	·009805 −	·011	·021	·030769	·010080	·011	·021	·032479	·010347	·011	·021
587	·023891	·008906	·011	·021	·025597	·009211	·011	·021	·027304	·009504	·011	·021	·029010	·009788	·011	·021	·030717	·010063	·011	·021	·032423	·010330	·011	·021
588	·023850 +	·008891	·011	·021	·025554	·009195 +	·011	·021	·027257	·009488	·011	·021	·028961	·009772	·011	·021	·030664	·010046	·011	·021	·032368	·010313	·011	·021
589	·023810	·008876	·011	·021	·025510	·009180	·011	·021	·027211	·009473	·011	·021	·028912	·009756	·011	·021	·030612	·010030	·011	·021	·032313	·010295 +	·011	·021
590	·023769	·008861	·011	·021	·025467	·009164	·011	·021	·027165 −	·009457	·011	·021	·028862	·009739	·011	·021	·030560	·010013	·011	·021	·032258	·010278	·011	·021
591	·023729	·008847	·011	·021	·025424	·009149	·011	·021	·027119	·009441	·011	·021	·028814	·009723	·011	·021	·030508	·009996	·011	·021	·032203	·010261	·011	·021
592	·023689	·008832	·011	·021	·025381	·009134	·011	·021	·027073	·009425 +	·011	·021	·028765 −	·009707	·011	·021	·030457	·009980	·011	·021	·032149	·010244	·011	·021
593	·023649	·008817	·011	·021	·025338	·009119	·011	·021	·027027	·009410	·011	·021	·028716	·009691	·011	·021	·030405 +	·009963	·011	·021	·032095 −	·010227	·011	·021
594	·023609	·008802	·011	·021	·025295 +	·009104	·011	·021	·026981	·009394	·011	·021	·028668	·009675 −	·011	·021	·030354	·009947	·011	·021	·032040	·010210	·011	·021
595	·023569	·008788	·011	·021	·025253	·009088	·011	·021	·026936	·009378	·011	·021	·028620	·009659	·011	·021	·030303	·009930	·011	·021	·031987	·010193	·011	·021
596	·023529	·008773	·011	·021	·025210	·009073	·011	·021	·026891	·009363	·011	·021	·028571	·009643	·011	·021	·030252	·009914	·011	·021	·031933	·010177	·011	·021
597	·023490	·008759	·011	·021	·025168	·009058	·011	·021	·026846	·009347	·011	·021	·028523	·009627	·011	·021	·030201	·009897	·011	·021	·031879	·010160	·011	·021
598	·023451	·008744	·011	·021	·025126	·009043	·011	·021	·026801	·009332	·011	·021	·028476	·009611	·011	·021	·030151	·009881	·011	·021	·031826	·010143	·011	·021
599	·023411	·008730	·011	·021	·025084	·009028	·011	·021	·026756	·009317	·011	·021	·028428	·009595 +	·011	·021	·030100	·009865 −	·011	·021	·031773	·010126	·011	·021
600	·023372	·008716	·011	·021	·025042	·009014	·011	·021	·026711	·009301	·011	·021	·028381	·009579	·011	·021	·030050 +	·009849	·011	·021	·031720	·010110	·011	·021

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 $\lambda_1 = 3{\cdot}50$	3: P_2 $\lambda_2 = 2{\cdot}94$	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 $\lambda_1 = 3{\cdot}20$	4: P_2 $\lambda_2 = 2{\cdot}80$	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 $\lambda_1 = 3{\cdot}14$	5: P_2 $\lambda_2 = 2{\cdot}68$
601	·003333	·003322	·011	·019	·005000	·004065 +	·013	·020	·006667	·004690	·012	·021
602	·003328	·003317	·011	·019	·004992	·004059	·013	·020	·006656	·004683	·012	·021
603	·003322	·003311	·011	·019	·004983	·004052	·013	·020	·006645 −	·004675 −	·012	·021
604	·003317	·003306	·011	·019	·004975 +	·004045 +	·013	·020	·006633	·004667	·012	·021
605	·003311	·003300	·011	·019	·004967	·004039	·013	·020	·006623	·004660	·012	·021
606	·003306	·003295 −	·011	·019	·004959	·004032	·013	·020	·006612	·004652	·012	·021
607	·003300	·003289	·011	·019	·004950 +	·004025 +	·013	·020	·006601	·004644	·012	·021
608	·003295 −	·003284	·011	·019	·004942	·004019	·013	·020	·006590	·004637	·012	·021
609	·003289	·003279	·011	·019	·004934	·004012	·013	·020	·006579	·004629	·012	·021
610	·003284	·003273	·011	·019	·004926	·004006	·013	·020	·006568	·004622	·012	·021
611	·003279	·003268	·011	·019	·004918	·003999	·013	·020	·006557	·004614	·012	·021
612	·003273	·003263	·011	·019	·004910	·003993	·013	·020	·006547	·004606	·012	·021
613	·003268	·003257	·011	·019	·004902	·003986	·013	·020	·006536	·004599	·012	·021
614	·003263	·003252	·011	·019	·004894	·003980	·013	·020	·006525 +	·004592	·012	·021
615	·003257	·003247	·011	·019	·004886	·003973	·013	·020	·006515 −	·004584	·012	·021
616	·003252	·003241	·011	·019	·004878	·003967	·013	·020	·006504	·004577	·012	·021
617	·003247	·003236	·011	·019	·004870	·003960	·013	·020	·006494	·004569	·012	·021
618	·003241	·003231	·011	·019	·004862	·003954	·013	·020	·006483	·004562	·012	·021
619	·003236	·003226	·011	·019	·004854	·003948	·013	·020	·006472	·004555 −	·012	·021
620	·003231	·003221	·011	·019	·004847	·003941	·013	·020	·006462	·004547	·012	·021
621	·003226	·003215 +	·011	·019	·004839	·003935 −	·013	·020	·006452	·004540	·012	·021
622	·003221	·003210	·011	·019	·004831	·003929	·013	·020	·006441	·004533	·012	·021
623	·003215 +	·003205 +	·011	·019	·004823	·003922	·013	·020	·006431	·004525 +	·012	·021
624	·003210	·003200	·011	·019	·004815 +	·003916	·013	·020	·006421	·004518	·012	·021
625	·003205 +	·003195 −	·011	·019	·004808	·003910	·013	·020	·006410	·004511	·012	·021
626	·003200	·003190	·011	·019	·004800	·003904	·013	·020	·006400	·004504	·012	·021
627	·003195 −	·003185 −	·011	·019	·004792	·003897	·013	·020	·006390	·004497	·012	·021
628	·003190	·003180	·011	·019	·004785 −	·003891	·013	·020	·006380	·004489	·012	·021
629	·003185 −	·003175 −	·011	·019	·004777	·003885 −	·013	·020	·006369	·004482	·012	·021
630	·003180	·003170	·011	·019	·004769	·003879	·013	·020	·006359	·004475 +	·012	·021
631	·003175 −	·003165 −	·011	·019	·004762	·003873	·013	·020	·006349	·004468	·012	·021
632	·003170	·003160	·011	·019	·004754	·003867	·013	·020	·006339	·004461	·012	·021
633	·003165 −	·003155 −	·011	·019	·004747	·003860	·013	·020	·006329	·004454	·012	·021
634	·003160	·003150 −	·011	·019	·004739	·003854	·013	·020	·006319	·004447	·012	·021
635	·003155 −	·003145 −	·011	·019	·004732	·003848	·013	·020	·006309	·004440	·012	·021
636	·003150 −	·003140	·011	·019	·004724	·003842	·013	·020	·006299	·004433	·012	·021
637	·003145 −	·003135 −	·011	·019	·004717	·003836	·013	·020	·006289	·004426	·012	·021
638	·003140	·003130	·011	·019	·004710	·003830	·013	·020	·006279	·004419	·012	·021
639	·003135 −	·003125 −	·011	·019	·004702	·003824	·013	·020	·006270	·004412	·012	·021
640	·003130	·003120	·011	·019	·004695 −	·003818	·013	·020	·006260	·004406	·012	·021
641	·003125	·003115 +	·011	·019	·004688	·003812	·013	·020	·006250	·004399	·012	·021
642	·003120	·003110	·011	·019	·004680	·003806	·013	·020	·006240	·004392	·012	·021
643	·003115 +	·003106	·011	·019	·004673	·003801	·013	·020	·006231	·004385 +	·012	·021
644	·003110	·003101	·011	·019	·004666	·003795 −	·013	·020	·006221	·004378	·012	·021
645	·003106	·003096	·011	·019	·004658	·003789	·013	·020	·006211	·004372	·012	·021
646	·003101	·003091	·011	·019	·004651	·003783	·013	·020	·006202	·004365 −	·012	·021
647	·003096	·003086	·011	·019	·004644	·003777	·013	·020	·006192	·004358	·012	·021
648	·003091	·003082	·011	·019	·004637	·003771	·013	·020	·006182	·004351	·012	·021
649	·003086	·003077	·011	·019	·004630	·003766	·013	·020	·006173	·004345 −	·012	·021
650	·003082	·003072	·011	·019	·004622	·003760	·013	·020	·006163	·004338	·012	·021

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 $\lambda_1 = 3{\cdot}11$	6: P_2 $\lambda_2 = 2{\cdot}63$	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 $\lambda_1 = 3{\cdot}08$	7: P_2 $\lambda_2 = 2{\cdot}58$	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 $\lambda_1 = 3{\cdot}02$	8: P_2 $\lambda_2 = 2{\cdot}54$
601	·008333	·005240	·011	·021	·010000	·005735 +	·010	·021	·011667	·006189	·011	·021
602	·008319	·005231	·011	·021	·009983	·005726	·010	·021	·011647	·006179	·011	·021
603	·008306	·005222	·011	·021	·009967	·005716	·010	·021	·011628	·006169	·011	·021
604	·008292	·005214	·011	·021	·009950 +	·005707	·010	·021	·011609	·006159	·011	·021
605	·008278	·005205 +	·011	·021	·009934	·005697	·010	·021	·011589	·006149	·011	·021
606	·008264	·005197	·011	·021	·009917	·005688	·010	·021	·011570	·006138	·011	·021
607	·008251	·005188	·011	·021	·009901	·005679	·010	·021	·011551	·006128	·011	·021
608	·008237	·005180	·011	·021	·009885 −	·005669	·010	·021	·011532	·006118	·011	·021
609	·008224	·005171	·011	·021	·009868	·005660	·010	·021	·011513	·006108	·011	·021
610	·008210	·005163	·011	·021	·009852	·005651	·010	·021	·011494	·006099	·011	·021
611	·008197	·005154	·011	·021	·009836	·005642	·010	·021	·011475 +	·006089	·011	·021
612	·008183	·005146	·011	·021	·009820	·005632	·010	·021	·011457	·006079	·011	·021
613	·008170	·005138	·011	·021	·009804	·005623	·010	·021	·011438	·006069	·011	·021
614	·008157	·005129	·011	·021	·009788	·005614	·010	·021	·011419	·006059	·011	·021
615	·008143	·005121	·011	·021	·009772	·005605 +	·010	·021	·011401	·006049	·011	·021
616	·008130	·005113	·011	·021	·009756	·005596	·010	·021	·011382	·006039	·011	·021
617	·008117	·005104	·011	·021	·009740	·005587	·010	·021	·011364	·006030	·011	·021
618	·008104	·005096	·011	·021	·009724	·005578	·010	·021	·011345 +	·006020	·011	·021
619	·008091	·005088	·011	·021	·009709	·005569	·010	·021	·011327	·006010	·011	·021
620	·008078	·005080	·011	·021	·009693	·005560	·010	·021	·011309	·006001	·011	·021
621	·008065 −	·005072	·011	·021	·009677	·005551	·010	·021	·011290	·005991	·011	·021
622	·008052	·005064	·011	·021	·009662	·005542	·010	·021	·011272	·005982	·011	·021
623	·008039	·005055 +	·011	·021	·009646	·005533	·010	·021	·011254	·005972	·011	·021
624	·008026	·005047	·011	·021	·009631	·005525 −	·010	·021	·011236	·005962	·011	·021
625	·008013	·005039	·011	·021	·009615 +	·005516	·010	·021	·011218	·005953	·011	·021
626	·008000	·005031	·011	·021	·009600	·005507	·010	·021	·011200	·005944	·011	·021
627	·007987	·005023	·011	·021	·009585 −	·005498	·010	·021	·011182	·005934	·011	·021
628	·007974	·005015 +	·011	·021	·009569	·005490	·010	·021	·011164	·005925 −	·011	·021
629	·007962	·005007	·011	·021	·009554	·005481	·010	·021	·011146	·005915 +	·011	·021
630	·007949	·005000	·011	·021	·009539	·005472	·010	·021	·011129	·005906	·011	·021
631	·007937	·004992	·011	·021	·009524	·005464	·010	·021	·011111	·005897	·011	·021
632	·007924	·004984	·011	·021	·009509	·005455 +	·010	·021	·011094	·005887	·011	·021
633	·007911	·004976	·011	·021	·009494	·005446	·010	·021	·011076	·005878	·011	·021
634	·007899	·004968	·011	·021	·009479	·005438	·010	·021	·011058	·005869	·011	·021
635	·007886	·004960	·011	·021	·009464	·005429	·010	·021	·011041	·005860	·011	·021
636	·007874	·004953	·011	·021	·009449	·005421	·010	·021	·011024	·005851	·011	·021
637	·007862	·004945 −	·011	·021	·009434	·005412	·010	·021	·011006	·005841	·011	·021
638	·007849	·004937	·011	·021	·009419	·005404	·010	·021	·010989	·005832	·011	·021
639	·007837	·004929	·011	·021	·009404	·005396	·010	·021	·010972	·005823	·011	·021
640	·007825 −	·004922	·011	·021	·009390	·005387	·010	·021	·010955 −	·005814	·011	·021
641	·007813	·004914	·011	·021	·009375	·005379	·010	·021	·010938	·005805 +	·011	·021
642	·007800	·004906	·011	·021	·009360	·005370	·010	·021	·010920	·005796	·011	·021
643	·007788	·004899	·011	·021	·009346	·005362	·010	·021	·010903	·005787	·011	·021
644	·007776	·004891	·011	·021	·009331	·005354	·010	·021	·010886	·005778	·011	·021
645	·007764	·004884	·011	·021	·009317	·005346	·010	·021	·010870	·005769	·011	·021
646	·007752	·004876	·011	·021	·009302	·005337	·010	·021	·010853	·005761	·011	·021
647	·007740	·004869	·011	·021	·009288	·005329	·010	·021	·010836	·005752	·011	·021
648	·007728	·004861	·011	·021	·009274	·005321	·010	·021	·010819	·005743	·011	·021
649	·007716	·004854	·011	·021	·009259	·005313	·010	·021	·010802	·005734	·011	·021
650	·007704	·004846	·011	·021	·009245 −	·005305 −	·010	·021	·010786	·005725 +	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	9: $\bar{\eta}^2$	9: $\sigma_{\bar{\eta}^2}$	9: P_1 $\lambda_1=2{\cdot}96$	9: P_2 $\lambda_2=2{\cdot}50$	10: $\bar{\eta}^2$	10: $\sigma_{\bar{\eta}^2}$	10: P_1 $\lambda_1=2{\cdot}92$	10: P_2 $\lambda_2=2{\cdot}47$	11: $\bar{\eta}^2$	11: $\sigma_{\bar{\eta}^2}$	11: P_1 $\lambda_1=2{\cdot}88$	11: P_2 $\lambda_2=2{\cdot}44$
601	·013333	·006611	·011	·021	·015000	·007006	·011	·021	·016667	·007379	·011	·021
602	·013311	·006600	·011	·021	·014975 +	·006995 −	·011	·021	·016639	·007367	·011	·021
603	·013289	·006589	·011	·021	·014950 +	·006983	·011	·021	·016611	·007355 −	·011	·021
604	·013267	·006578	·011	·021	·014925 +	·006972	·011	·021	·016584	·007343	·011	·021
605	·013245 +	·006568	·011	·021	·014901	·006960	·011	·021	·016556	·007331	·011	·021
606	·013223	·006557	·011	·021	·014876	·006949	·011	·021	·016529	·007319	·011	·021
607	·013201	·006546	·011	·021	·014851	·006937	·011	·021	·016502	·007307	·011	·021
608	·013180	·006535 +	·011	·021	·014827	·006926	·011	·021	·016474	·007295 −	·011	·021
609	·013158	·006525 −	·011	·021	·014803	·006915 −	·011	·021	·016447	·007283	·011	·021
610	·013136	·006514	·011	·021	·014778	·006904	·011	·021	·016420	·007271	·011	·021
611	·013115 −	·006504	·011	·021	·014754	·006892	·011	·021	·016393	·007259	·011	·021
612	·013093	·006493	·011	·021	·014730	·006881	·011	·021	·016367	·007247	·011	·021
613	·013072	·006483	·011	·021	·014706	·006870	·011	·021	·016340	·007236	·011	·021
614	·013051	·006472	·011	·021	·014682	·006859	·011	·021	·016313	·007224	·011	·021
615	·013029	·006462	·011	·021	·014658	·006848	·011	·021	·016287	·007212	·011	·021
616	·013008	·006451	·011	·021	·014634	·006837	·011	·021	·016260	·007201	·011	·021
617	·012987	·006441	·011	·021	·014610	·006826	·011	·021	·016234	·007189	·011	·021
618	·012966	·006430	·011	·021	·014587	·006815 −	·011	·021	·016207	·007178	·011	·021
619	·012945 −	·006420	·011	·021	·014563	·006804	·011	·021	·016181	·007166	·011	·021
620	·012924	·006410	·011	·021	·014540	·006793	·011	·021	·016155 +	·007155 −	·011	·021
621	·012903	·006400	·011	·021	·014516	·006782	·011	·021	·016129	·007143	·011	·021
622	·012882	·006389	·011	·021	·014493	·006771	·011	·021	·016103	·007132	·011	·021
623	·012862	·006379	·011	·021	·014469	·006761	·011	·021	·016077	·007120	·011	·021
624	·012841	·006369	·011	·021	·014446	·006750 −	·011	·021	·016051	·007109	·011	·021
625	·012821	·006359	·011	·021	·014423	·006739	·011	·021	·016026	·007098	·011	·021
626	·012800	·006349	·011	·021	·014400	·006728	·011	·021	·016000	·007087	·011	·021
627	·012780	·006339	·011	·021	·014377	·006718	·011	·021	·015974	·007075 +	·011	·021
628	·012759	·006329	·011	·021	·014354	·006707	·011	·021	·015949	·007064	·011	·021
629	·012739	·006319	·011	·021	·014331	·006697	·011	·021	·015924	·007053	·011	·021
630	·012719	·006309	·011	·021	·014308	·006686	·011	·021	·015898	·007042	·011	·021
631	·012698	·006299	·011	·021	·014286	·006675 +	·011	·021	·015873	·007031	·011	·021
632	·012678	·006289	·011	·021	·014263	·006665 +	·011	·021	·015848	·007020	·011	·021
633	·012658	·006279	·011	·021	·014241	·006655 −	·011	·021	·015823	·007009	·011	·021
634	·012638	·006269	·011	·021	·014218	·006644	·011	·021	·015798	·006998	·011	·021
635	·012618	·006259	·011	·021	·014196	·006634	·011	·021	·015773	·006987	·011	·021
636	·012598	·006250 −	·011	·021	·014173	·006623	·011	·021	·015748	·006976	·011	·021
637	·012579	·006240	·011	·021	·014151	·006613	·011	·021	·015723	·006965 +	·011	·021
638	·012559	·006230	·011	·021	·014129	·006603	·011	·021	·015699	·006954	·011	·021
639	·012539	·006220	·011	·021	·014107	·006593	·011	·021	·015674	·006944	·011	·021
640	·012520	·006211	·011	·021	·014085 −	·006582	·011	·021	·015649	·006933	·011	·021
641	·012500	·006201	·011	·021	·014063	·006572	·011	·021	·015625	·006922	·011	·021
642	·012480	·006192	·011	·021	·014041	·006562	·011	·021	·015601	·006911	·011	·021
643	·012461	·006182	·011	·021	·014019	·006552	·011	·021	·015576	·006901	·011	·021
644	·012442	·006172	·011	·021	·013997	·006542	·011	·021	·015552	·006890	·011	·021
645	·012422	·006163	·011	·021	·013975 +	·006532	·011	·021	·015528	·006880	·011	·021
646	·012403	·006153	·011	·021	·013953	·006522	·011	·021	·015504	·006869	·011	·021
647	·012384	·006144	·011	·021	·013932	·006512	·011	·021	·015480	·006858	·011	·021
648	·012365 −	·006135 −	·011	·021	·013910	·006502	·011	·021	·015456	·006848	·011	·021
649	·012346	·006125 +	·011	·021	·013889	·006492	·011	·021	·015432	·006837	·011	·021
650	·012327	·006116	·011	·021	·013867	·006482	·011	·021	·015408	·006827	·011	·021

N = size of sample	12: $\bar{\eta}^2$	12: $\sigma_{\bar{\eta}^2}$	12: P_1 $\lambda_1=2{\cdot}84$	12: P_2 $\lambda_2=2{\cdot}42$	13: $\bar{\eta}^2$	13: $\sigma_{\bar{\eta}^2}$	13: P_1 $\lambda_1=2{\cdot}80$	13: P_2 $\lambda_2=2{\cdot}40$	14: $\bar{\eta}^2$	14: $\sigma_{\bar{\eta}^2}$	14: P_1 $\lambda_1=2{\cdot}79$	14: P_2 $\lambda_2=2{\cdot}39$
601	·018333	·007732	·011	·021	·020000	·008069	·011	·022	·021667	·008392	·011	·021
602	·018303	·007720	·011	·021	·019967	·008056	·011	·022	·021631	·008378	·011	·021
603	·018272	·007707	·011	·021	·019934	·008043	·011	·022	·021595 −	·008364	·011	·021
604	·018242	·007694	·011	·021	·019900	·008030	·011	·022	·021559	·008351	·011	·021
605	·018212	·007682	·011	·021	·019868	·008017	·011	·022	·021523	·008337	·011	·021
606	·018182	·007669	·011	·021	·019835 −	·008004	·011	·022	·021488	·008323	·011	·021
607	·018152	·007657	·011	·021	·019802	·007991	·011	·022	·021452	·008310	·011	·021
608	·018122	·007644	·011	·021	·019769	·007978	·011	·022	·021417	·008296	·011	·021
609	·018092	·007632	·011	·021	·019737	·007965 −	·011	·022	·021382	·008283	·011	·021
610	·018062	·007619	·011	·021	·019704	·007952	·011	·022	·021346	·008269	·011	·021
611	·018033	·007607	·011	·021	·019672	·007939	·011	·022	·021311	·008256	·011	·021
612	·018003	·007595 −	·011	·021	·019640	·007926	·011	·022	·021277	·008243	·011	·021
613	·017974	·007583	·011	·021	·019608	·007913	·011	·022	·021242	·008229	·011	·021
614	·017945 −	·007570	·011	·021	·019576	·007900	·011	·022	·021207	·008216	·011	·021
615	·017915 +	·007558	·011	·021	·019544	·007888	·011	·022	·021173	·008203	·011	·021
616	·017886	·007546	·011	·021	·019512	·007875 −	·011	·022	·021138	·008190	·011	·021
617	·017857	·007534	·011	·021	·019481	·007862	·011	·022	·021104	·008177	·011	·021
618	·017828	·007522	·011	·021	·019449	·007850 −	·011	·022	·021070	·008163	·011	·021
619	·017799	·007510	·011	·021	·019417	·007837	·011	·022	·021036	·008150 +	·011	·021
620	·017771	·007498	·011	·021	·019386	·007825 −	·011	·022	·021002	·008137	·011	·021
621	·017742	·007486	·011	·021	·019355 −	·007812	·011	·022	·020968	·008124	·011	·021
622	·017713	·007474	·011	·021	·019324	·007800	·011	·022	·020934	·008112	·011	·021
623	·017685 −	·007462	·011	·021	·019293	·007787	·011	·022	·020900	·008099	·011	·021
624	·017657	·007450 +	·011	·021	·019262	·007775 −	·011	·022	·020867	·008086	·011	·021
625	·017628	·007438	·011	·021	·019231	·007763	·011	·022	·020833	·008073	·011	·021
626	·017600	·007426	·011	·021	·019200	·007750 +	·011	·022	·020800	·008060	·011	·021
627	·017572	·007415 −	·011	·021	·019169	·007738	·011	·022	·020767	·008048	·011	·021
628	·017544	·007403	·011	·021	·019139	·007726	·011	·022	·020734	·008035 −	·011	·021
629	·017516	·007391	·011	·021	·019108	·007714	·011	·022	·020701	·008022	·011	·021
630	·017488	·007380	·011	·021	·019078	·007702	·011	·022	·020668	·008010	·011	·021
631	·017460	·007368	·011	·021	·019048	·007690	·011	·022	·020635 −	·007997	·011	·021
632	·017433	·007357	·011	·021	·019017	·007677	·011	·022	·020602	·007985 −	·011	·021
633	·017405 +	·007345 +	·011	·021	·018987	·007665 +	·011	·022	·020570	·007972	·011	·021
634	·017378	·007334	·011	·021	·018957	·007654	·011	·022	·020537	·007960	·011	·021
635	·017350 +	·007322	·011	·021	·018927	·007642	·011	·022	·020505 −	·007947	·011	·021
636	·017323	·007311	·011	·021	·018898	·007630	·011	·022	·020472	·007935 −	·011	·021
637	·017296	·007299	·011	·021	·018868	·007618	·011	·022	·020440	·007923	·011	·021
638	·017268	·007288	·011	·021	·018838	·007606	·011	·022	·020408	·007910	·011	·021
639	·017241	·007277	·011	·021	·018809	·007594	·011	·022	·020376	·007898	·011	·021
640	·017214	·007265 +	·011	·021	·018779	·007582	·011	·022	·020344	·007886	·011	·021
641	·017188	·007254	·011	·021	·018750	·007571	·011	·022	·020313	·007874	·011	·021
642	·017161	·007243	·011	·021	·018721	·007559	·011	·022	·020281	·007861	·011	·021
643	·017134	·007232	·011	·021	·018692	·007547	·011	·022	·020249	·007849	·011	·021
644	·017107	·007221	·011	·021	·018663	·007536	·011	·022	·020218	·007837	·011	·021
645	·017081	·007210	·011	·021	·018634	·007524	·011	·022	·020186	·007825 +	·011	·021
646	·017054	·007199	·011	·021	·018605 −	·007513	·011	·022	·020155 +	·007813	·011	·021
647	·017028	·007188	·011	·021	·018576	·007501	·011	·022	·020124	·007801	·011	·021
648	·017002	·007177	·011	·021	·018547	·007490	·011	·022	·020093	·007789	·011	·021
649	·016975 +	·007165 +	·011	·021	·018519	·007478	·011	·022	·020062	·007778	·011	·021
650	·016949	·007155 −	·011	·021	·018490	·007467	·011	·022	·020031	·007766	·011	·021

TABLE IV.—(*continued*).

N = size of sample	15				16				17				18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}78$	P_2 $\lambda_2=2{\cdot}38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}77$	P_2 $\lambda_2=2{\cdot}37$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}76$	P_2 $\lambda_2=2{\cdot}36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}75$	P_2 $\lambda_2=2{\cdot}35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}74$	P_2 $\lambda_2=2{\cdot}34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}73$	P_2 $\lambda_2=2{\cdot}33$
601	·023333	·008701	·011	·021	·025000	·008999	·011	·021	·026667	·009286	·011	·021	·028333	·009564	·011	·021	·030000	·009832	·011	·021	·031667	·010093	·011	·021
602	·023295 –	·008687	·011	·021	·024958	·008984	·011	·021	·026622	·009271	·011	·021	·028286	·009548	·011	·021	·029950 +	·009816	·011	·021	·031614	·010077	·011	·021
603	·023256	·008673	·011	·021	·024917	·008969	·011	·021	·026578	·009256	·011	·021	·028239	·009532	·011	·021	·029900	·009800	·011	·021	·031561	·010060	·011	·021
604	·023217	·008658	·011	·021	·024876	·008955 –	·011	·021	·026534	·009241	·011	·021	·028192	·009517	·011	·021	·029851	·009784	·011	·021	·031509	·010044	·011	·021
605	·023179	·008644	·011	·021	·024834	·008940	·011	·021	·026490	·009226	·011	·021	·028146	·009501	·011	·021	·029801	·009768	·011	·021	·031457	·010028	·011	·021
606	·023140	·008630	·011	·021	·024793	·008926	·011	·021	·026446	·009211	·011	·021	·028099	·009486	·011	·021	·029752	·009753	·011	·021	·031405 –	·010011	·011	·021
607	·023102	·008616	·011	·021	·024752	·008911	·011	·021	·026403	·009196	·011	·021	·028053	·009471	·011	·021	·029703	·009737	·011	·021	·031353	·009995 +	·011	·021
608	·023064	·008602	·011	·021	·024712	·008897	·011	·021	·026359	·009181	·011	·021	·028007	·009455 +	·011	·021	·029654	·009721	·011	·021	·031301	·009979	·011	·021
609	·023026	·008588	·011	·021	·024671	·008882	·011	·021	·026316	·009166	·011	·021	·027961	·009440	·011	·021	·029605 +	·009705 +	·011	·021	·031250 –	·009963	·011	·021
610	·022989	·008574	·011	·021	·024631	·008868	·011	·021	·026273	·009151	·011	·021	·027915 –	·009425 –	·011	·021	·029557	·009690	·011	·021	·031199	·009947	·011	·021
611	·022951	·008560	·011	·021	·024590	·008853	·011	·021	·026230	·009136	·011	·021	·027869	·009409	·011	·021	·029508	·009674	·011	·021	·031148	·009931	·011	·021
612	·022913	·008547	·011	·021	·024550 –	·008839	·011	·021	·026187	·009121	·011	·021	·027823	·009394	·011	·021	·029460	·009658	·011	·021	·031097	·009915 –	·011	·021
613	·022876	·008533	·011	·021	·024510	·008825 –	·011	·021	·026144	·009107	·011	·021	·027778	·009379	·011	·021	·029412	·009643	·011	·021	·031046	·009899	·011	·021
614	·022838	·008519	·011	·021	·024470	·008811	·011	·021	·026101	·009092	·011	·021	·027732	·009364	·011	·021	·029364	·009627	·011	·021	·030995 +	·009883	·011	·021
615	·022801	·008505 +	·011	·021	·024430	·008797	·011	·021	·026059	·009078	·011	·021	·027687	·009349	·011	·021	·029316	·009612	·011	·021	·030945 –	·009867	·011	·021
616	·022764	·008492	·011	·021	·024390	·008783	·011	·021	·026016	·009063	·011	·021	·027642	·009334	·011	·021	·029268	·009597	·011	·021	·030894	·009851	·011	·021
617	·022727	·008478	·011	·021	·024351	·008768	·011	·021	·025974	·009048	·011	·021	·027597	·009319	·011	·021	·029221	·009581	·011	·021	·030844	·009836	·011	·021
618	·022690	·008465 –	·011	·021	·024311	·008754	·011	·021	·025932	·009034	·011	·021	·027553	·009304	·011	·021	·029173	·009566	·011	·021	·030794	·009820	·011	·021
619	·022654	·008451	·011	·021	·024272	·008740	·011	·021	·025890	·009020	·011	·021	·027508	·009290	·011	·021	·029126	·009551	·011	·021	·030744	·009804	·011	·021
620	·022617	·008438	·011	·021	·024233	·008727	·011	·021	·025848	·009005 +	·011	·021	·027464	·009275 –	·011	·021	·029079	·009536	·011	·021	·030695 –	·009789	·011	·021
621	·022581	·008424	·011	·021	·024194	·008713	·011	·021	·025806	·008991	·011	·021	·027419	·009260	·011	·021	·029032	·009521	·011	·021	·030645 +	·009773	·011	·021
622	·022544	·008411	·011	·021	·024155 –	·008699	·011	·021	·025765 –	·008977	·011	·021	·027375 +	·009245 +	·011	·021	·028986	·009505 +	·011	·021	·030596	·009758	·011	·021
623	·022508	·008397	·011	·021	·024116	·008685 +	·011	·021	·025723	·008962	·011	·021	·027331	·009231	·011	·021	·028939	·009490	·011	·021	·030547	·009742	·011	·021
624	·022472	·008384	·011	·021	·024077	·008671	·011	·021	·025682	·008948	·011	·021	·027287	·009216	·011	·021	·028892	·009475 +	·011	·021	·030498	·009727	·011	·021
625	·022436	·008371	·011	·021	·024038	·008658	·011	·021	·025641	·008934	·011	·021	·027244	·009202	·011	·021	·028846	·009461	·011	·021	·030449	·009712	·011	·021
626	·022400	·008358	·011	·021	·024000	·008644	·011	·021	·025600	·008920	·011	·021	·027200	·009187	·011	·021	·028800	·009446	·011	·021	·030400	·009696	·011	·021
627	·022364	·008345 –	·011	·021	·023962	·008630	·011	·021	·025559	·008906	·011	·021	·027157	·009173	·011	·021	·028754	·009431	·011	·021	·030351	·009681	·011	·021
628	·022329	·008331	·011	·021	·023923	·008617	·011	·021	·025518	·008892	·011	·021	·027113	·009158	·011	·021	·028708	·009416	·011	·021	·030303	·009666	·011	·021
629	·022293	·008318	·011	·021	·023885 +	·008603	·011	·021	·025478	·008878	·011	·021	·027070	·009144	·011	·021	·028662	·009401	·011	·021	·030255 –	·009651	·011	·021
630	·022258	·008305 +	·011	·021	·023847	·008590	·011	·021	·025437	·008864	·011	·021	·027027	·009130	·011	·021	·028617	·009387	·011	·021	·030207	·009636	·011	·021
631	·022222	·008292	·011	·021	·023810	·008576	·011	·021	·025397	·008850 +	·011	·021	·026984	·009115 +	·011	·021	·028571	·009372	·011	·021	·030159	·009621	·011	·021
632	·022187	·008279	·011	·021	·023772	·008563	·011	·021	·025357	·008837	·011	·021	·026941	·009101	·011	·021	·028526	·009357	·011	·021	·030111	·009606	·011	·021
633	·022152	·008266	·011	·021	·023734	·008550 –	·011	·021	·025316	·008823	·011	·021	·026899	·009087	·011	·021	·028481	·009343	·011	·021	·030063	·009591	·011	·021
634	·022117	·008253	·011	·021	·023697	·008536	·011	·021	·025276	·008809	·011	·021	·026856	·009073	·011	·021	·028436	·009328	·011	·021	·030016	·009576	·011	·021
635	·022082	·008241	·011	·021	·023659	·008523	·011	·021	·025237	·008795 +	·011	·021	·026814	·009059	·011	·021	·028391	·009314	·011	·021	·029968	·009561	·011	·021
636	·022047	·008228	·011	·021	·023622	·008510	·011	·021	·025197	·008782	·011	·021	·026772	·009045 –	·011	·021	·028346	·009299	·011	·021	·029921	·009546	·011	·021
637	·022013	·008215 –	·011	·021	·023585 –	·008496	·011	·021	·025157	·008768	·011	·021	·026730	·009031	·011	·021	·028302	·009285 –	·011	·021	·029874	·009532	·011	·021
638	·021978	·008202	·011	·021	·023548	·008483	·011	·021	·025118	·008755 –	·011	·021	·026688	·009017	·011	·021	·028257	·009271	·011	·021	·029827	·009517	·011	·021
639	·021944	·008190	·011	·021	·023511	·008470	·011	·021	·025078	·008741	·011	·021	·026646	·009003	·011	·021	·028213	·009256	·011	·021	·029781	·009502	·011	·021
640	·021909	·008177	·011	·021	·023474	·008457	·011	·021	·025039	·008727	·011	·021	·026604	·008989	·011	·021	·028169	·009242	·011	·021	·029734	·009488	·011	·021
641	·021875	·008164	·011	·021	·023438	·008444	·011	·021	·025000	·008714	·011	·021	·026563	·008975 +	·011	·021	·028125	·009228	·011	·021	·029688	·009473	·011	·021
642	·021841	·008152	·011	·021	·023401	·008431	·011	·021	·024961	·008701	·011	·021	·026521	·008961	·011	·021	·028081	·009214	·011	·021	·029641	·009459	·011	·021
643	·021807	·008139	·011	·021	·023364	·008418	·011	·021	·024922	·008687	·011	·021	·026480	·008948	·011	·021	·028037	·009200	·011	·021	·029595 +	·009444	·011	·021
644	·021773	·008127	·011	·021	·023328	·008405 +	·011	·021	·024883	·008674	·011	·021	·026439	·008934	·011	·021	·027994	·009185 +	·011	·021	·029549	·009430	·011	·021
645	·021739	·008114	·011	·021	·023292	·008392	·011	·021	·024845 –	·008661	·011	·021	·026398	·008920	·011	·021	·027950 +	·009171	·011	·021	·029503	·009415 +	·011	·021
646	·021705 +	·008102	·011	·021	·023256	·008380	·011	·021	·024806	·008647	·011	·021	·026357	·008907	·011	·021	·027907	·009157	·011	·021	·029457	·009401	·011	·021
647	·021672	·008089	·011	·021	·023220	·008367	·011	·021	·024768	·008634	·011	·021	·026316	·008893	·011	·021	·027864	·009143	·011	·021	·029412	·009387	·011	·021
648	·021638	·008077	·011	·021	·023184	·008354	·011	·021	·024730	·008621	·011	·021	·026275 +	·008879	·011	·021	·027821	·009130	·011	·021	·029366	·009372	·011	·021
649	·021605 –	·008065 –	·011	·021	·023148	·008341	·011	·021	·024691	·008608	·011	·021	·026235 –	·008866	·011	·021	·027778	·009116	·011	·021	·029321	·009358	·011	·021
650	·021572	·008052	·011	·021	·023112	·008329	·011	·021	·024653	·008595 –	·011	·021	·026194	·008852	·011	·021	·027735 –	·009102	·011	·021	·029276	·009344	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	3				4			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}50$	P_2 $\lambda_2 = 2{\cdot}94$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}20$	P_2 $\lambda_2 = 2{\cdot}80$
651	·003077	·003067	·011	·019	·004615 +	·003754	·013	·020
652	·003072	·003063	·011	·019	·004608	·003748	·013	·020
653	·003067	·003058	·011	·019	·004601	·003742	·013	·020
654	·003063	·003053	·011	·019	·004594	·003737	·013	·020
655	·003058	·003049	·011	·019	·004587	·003731	·013	·020
656	·003053	·003044	·011	·019	·004580	·003725 +	·013	·020
657	·003049	·003039	·011	·019	·004573	·003720	·013	·020
658	·003044	·003035 −	·011	·019	·004566	·003714	·013	·020
659	·003040	·003030	·011	·019	·004559	·003709	·013	·020
660	·003035 −	·003026	·011	·019	·004552	·003703	·013	·020
661	·003030	·003021	·011	·019	·004545 +	·003697	·013	·020
662	·003026	·003017	·011	·019	·004539	·003692	·013	·020
663	·003021	·003012	·011	·019	·004532	·003686	·013	·020
664	·003017	·003008	·011	·019	·004525 −	·003681	·013	·020
665	·003012	·003003	·011	·019	·004518	·003675 +	·013	·020
666	·003008	·002998	·011	·019	·004511	·003670	·013	·020
667	·003003	·002994	·011	·019	·004505 −	·003664	·013	·020
668	·002999	·002990	·011	·019	·004498	·003659	·013	·020
669	·002994	·002985 +	·011	·019	·004491	·003653	·013	·020
670	·002990	·002981	·011	·019	·004484	·003648	·013	·020
671	·002985 +	·002976	·011	·019	·004478	·003642	·013	·020
672	·002981	·002972	·011	·019	·004471	·003637	·013	·020
673	·002976	·002967	·011	·019	·004464	·003632	·013	·020
674	·002972	·002963	·011	·019	·004458	·003626	·013	·020
675	·002967	·002959	·011	·019	·004451	·003621	·013	·020
676	·002963	·002954	·011	·019	·004444	·003615 +	·013	·020
677	·002959	·002950 −	·011	·019	·004438	·003610	·013	·020
678	·002954	·002945 +	·011	·019	·004431	·003605 −	·013	·020
679	·002950 −	·002941	·011	·019	·004425 −	·003600	·013	·020
680	·002946	·002937	·011	·019	·004418	·003594	·013	·020
681	·002941	·002933	·011	·019	·004412	·003589	·013	·020
682	·002937	·002928	·011	·019	·004405 +	·003584	·013	·020
683	·002933	·002924	·011	·019	·004399	·003578	·013	·020
684	·002928	·002920	·011	·019	·004392	·003573	·013	·020
685	·002924	·002915 +	·011	·019	·004386	·003568	·013	·020
686	·002920	·002911	·011	·019	·004380	·003563	·013	·020
687	·002915 +	·002907	·011	·019	·004373	·003558	·013	·020
688	·002911	·002903	·011	·019	·004367	·003553	·013	·020
689	·002907	·002899	·011	·019	·004360	·003547	·013	·020
690	·002903	·002894	·011	·019	·004354	·003542	·013	·020
691	·002899	·002890	·011	·019	·004348	·003537	·013	·020
692	·002894	·002886	·011	·019	·004342	·003532	·013	·020
693	·002890	·002882	·011	·019	·004335 +	·003527	·013	·020
694	·002886	·002878	·011	·019	·004329	·003522	·013	·020
695	·002882	·002874	·011	·019	·004323	·003517	·013	·020
696	·002878	·002869	·011	·019	·004317	·003512	·013	·020
697	·002874	·002865 +	·011	·019	·004310	·003507	·013	·020
698	·002869	·002861	·011	·019	·004304	·003502	·013	·020
699	·002865 +	·002857	·011	·019	·004298	·003497	·013	·020
700	·002861	·002853	·011	·019	·004292	·003492	·013	·020

N = size of sample	5				6			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}14$	P_2 $\lambda_2 = 2{\cdot}68$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}11$	P_2 $\lambda_2 = 2{\cdot}63$
651	·006154	·004331	·012	·021	·007692	·004839	·011	·021
652	·006144	·004325 −	·012	·021	·007680	·004831	·011	·021
653	·006135 −	·004318	·012	·021	·007669	·004824	·011	·021
654	·006126	·004312	·012	·021	·007657	·004817	·011	·021
655	·006116	·004305 −	·012	·021	·007645 +	·004809	·011	·021
656	·006107	·004298	·012	·021	·007634	·004802	·011	·021
657	·006098	·004292	·012	·021	·007622	·004795 −	·011	·021
658	·006088	·004285 +	·012	·021	·007610	·004788	·011	·021
659	·006079	·004279	·012	·021	·007599	·004780	·011	·021
660	·006070	·004272	·012	·021	·007587	·004773	·011	·021
661	·006061	·004266	·012	·021	·007576	·004766	·011	·021
662	·006051	·004260	·012	·021	·007564	·004759	·011	·021
663	·006042	·004253	·012	·021	·007553	·004752	·011	·021
664	·006033	·004247	·012	·021	·007541	·004744	·011	·021
665	·006024	·004240	·012	·021	·007530	·004737	·011	·021
666	·006015 +	·004234	·012	·021	·007519	·004730	·011	·021
667	·006006	·004228	·012	·021	·007508	·004723	·011	·021
668	·005997	·004221	·012	·021	·007496	·004716	·011	·021
669	·005988	·004215 +	·012	·021	·007485 +	·004709	·011	·021
670	·005979	·004209	·012	·021	·007474	·004702	·011	·021
671	·005970	·004203	·012	·021	·007463	·004695 +	·011	·021
672	·005961	·004196	·012	·021	·007452	·004688	·011	·021
673	·005952	·004190	·012	·021	·007440	·004681	·011	·021
674	·005944	·004184	·012	·021	·007429	·004674	·011	·021
675	·005935 −	·004178	·012	·021	·007418	·004667	·011	·021
676	·005926	·004172	·012	·021	·007407	·004661	·011	·021
677	·005917	·004166	·012	·021	·007396	·004654	·011	·021
678	·005908	·004159	·012	·021	·007386	·004647	·011	·021
679	·005900	·004153	·012	·021	·007375 −	·004640	·011	·021
680	·005891	·004147	·012	·021	·007364	·004633	·011	·021
681	·005882	·004141	·012	·021	·007353	·004626	·011	·021
682	·005874	·004135 +	·012	·021	·007342	·004620	·011	·021
683	·005865 +	·004129	·012	·021	·007331	·004613	·011	·021
684	·005857	·004123	·012	·021	·007321	·004606	·011	·021
685	·005848	·004117	·012	·021	·007310	·004600	·011	·021
686	·005839	·004111	·012	·021	·007299	·004593	·011	·021
687	·005831	·004105 +	·012	·021	·007289	·004586	·011	·021
688	·005822	·004099	·012	·021	·007278	·004580	·011	·021
689	·005814	·004093	·012	·021	·007267	·004573	·011	·021
690	·005806	·004087	·012	·021	·007257	·004566	·011	·021
691	·005797	·004081	·012	·021	·007246	·004560	·011	·021
692	·005789	·004075 +	·012	·021	·007236	·004553	·011	·021
693	·005780	·004070	·012	·021	·007225 +	·004547	·011	·021
694	·005772	·004064	·012	·021	·007215 +	·004540	·011	·021
695	·005764	·004058	·012	·021	·007205 −	·004544	·011	·021
696	·005755 +	·004052	·012	·021	·007194	·004527	·011	·021
697	·005747	·004046	·012	·021	·007184	·004521	·011	·021
698	·005739	·004041	·012	·021	·007174	·004514	·011	·021
699	·005731	·004035 −	·012	·021	·007163	·004508	·011	·021
700	·005722	·004029	·012	·021	·007153	·004501	·011	·021

N = size of sample	7				8			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}08$	P_2 $\lambda_2 = 2{\cdot}58$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 3{\cdot}02$	P_2 $\lambda_2 = 2{\cdot}54$
651	·009231	·005297	·010	·021	·010769	·005717	·011	·021
652	·009217	·005289	·010	·021	·010753	·005708	·011	·021
653	·009202	·005280	·010	·021	·010736	·005699	·011	·021
654	·009188	·005272	·010	·021	·010720	·005690	·011	·021
655	·009174	·005264	·010	·021	·010703	·005682	·011	·021
656	·009160	·005256	·010	·021	·010687	·005673	·011	·021
657	·009146	·005248	·010	·021	·010671	·005665 −	·011	·021
658	·009132	·005241	·010	·021	·010654	·005656	·011	·021
659	·009119	·005233	·010	·021	·010638	·005648	·011	·021
660	·009105 −	·005225 −	·010	·021	·010622	·005639	·011	·021
661	·009091	·005217	·010	·021	·010606	·005631	·011	·021
662	·009077	·005209	·010	·021	·010590	·005622	·011	·021
663	·009063	·005201	·010	·021	·010574	·005614	·011	·021
664	·009050 −	·005193	·010	·021	·010558	·005605 +	·011	·021
665	·009036	·005186	·010	·021	·010542	·005597	·011	·021
666	·009023	·005178	·010	·021	·010526	·005588	·011	·021
667	·009009	·005170	·010	·021	·010511	·005580	·011	·021
668	·008996	·005162	·010	·021	·010495 −	·005572	·011	·021
669	·008982	·005155 −	·010	·021	·010479	·005564	·011	·021
670	·008969	·005147	·010	·021	·010463	·005555 +	·011	·021
671	·008955 +	·005139	·010	·021	·010448	·005547	·011	·021
672	·008942	·005132	·010	·021	·010432	·005539	·011	·021
673	·008929	·005124	·010	·021	·010417	·005531	·011	·021
674	·008915 +	·005117	·010	·021	·010401	·005522	·011	·021
675	·008902	·005109	·010	·021	·010386	·005514	·011	·021
676	·008889	·005102	·010	·021	·010370	·005506	·011	·021
677	·008876	·005094	·010	·021	·010355 +	·005498	·011	·021
678	·008863	·005087	·010	·021	·010340	·005490	·011	·021
679	·008850 −	·005079	·010	·021	·010324	·005482	·011	·021
680	·008837	·005072	·010	·021	·010309	·005474	·011	·021
681	·008824	·005064	·010	·021	·010294	·005466	·011	·021
682	·008811	·005057	·010	·021	·010279	·005458	·011	·021
683	·008798	·005050 −	·010	·021	·010264	·005450 +	·011	·021
684	·008785 −	·005042	·010	·021	·010249	·005442	·011	·021
685	·008772	·005035 −	·010	·021	·010234	·005434	·011	·021
686	·008759	·005028	·010	·021	·010219	·005426	·011	·021
687	·008746	·005020	·010	·021	·010204	·005419	·011	·021
688	·008734	·005013	·010	·021	·010189	·005411	·011	·021
689	·008721	·005006	·010	·021	·010174	·005403	·011	·021
690	·008708	·004999	·010	·021	·010160	·005395 +	·011	·021
691	·008696	·004991	·010	·021	·010145 −	·005387	·011	·021
692	·008683	·004984	·010	·021	·010130	·005380	·011	·021
693	·008671	·004977	·010	·021	·010116	·005372	·011	·021
694	·008658	·004970	·010	·021	·010101	·005364	·011	·021
695	·008646	·004963	·010	·021	·010086	·005356	·011	·021
696	·008633	·004956	·010	·021	·010072	·005349	·011	·021
697	·008621	·004949	·010	·021	·010057	·005341	·011	·021
698	·008608	·004941	·010	·021	·010043	·005334	·011	·021
699	·008596	·004934	·010	·021	·010029	·005326	·011	·021
700	·008584	·004927	·010	·021	·010014	·005318	·011	·021

TABLE IV.—(*continued*).

N — size of sample	9				10				11			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}96$	P_2 $\lambda_2=2{\cdot}50$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}92$	P_2 $\lambda_2=2{\cdot}47$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}88$	P_2 $\lambda_2=2{\cdot}44$
651	·012308	·006106	·011	·021	·013846	·006472	·011	·021	·015385 −	·006817	·011	·021
652	·012289	·006097	·011	·021	·013825 −	·006462	·011	·021	·015361	·006806	·011	·021
653	·012270	·006088	·011	·021	·013804	·006452	·011	·021	·015337	·006796	·011	·021
654	·012251	·006079	·011	·021	·013783	·006442	·011	·021	·015314	·006786	·011	·021
655	·012232	·006069	·011	·021	·013761	·006433	·011	·021	·015291	·006775 +	·011	·021
656	·012214	·006060	·011	·021	·013740	·006423	·011	·021	·015267	·006765 +	·011	·021
657	·012195 +	·006051	·011	·021	·013720	·006413	·011	·021	·015244	·006755 −	·011	·021
658	·012177	·006042	·011	·021	·013699	·006403	·011	·021	·015221	·006745 −	·011	·021
659	·012158	·006033	·011	·021	·013678	·006394	·011	·021	·015198	·006734	·011	·021
660	·012140	·006024	·011	·021	·013657	·006384	·011	·021	·015175 −	·006724	·011	·021
661	·012121	·006015 −	·011	·021	·013636	·006375 −	·011	·021	·015152	·006714	·011	·021
662	·012103	·006006	·011	·021	·013616	·006365 +	·011	·021	·015129	·006704	·011	·021
663	·012085 −	·005997	·011	·021	·013595 +	·006356	·011	·021	·015106	·006694	·011	·021
664	·012066	·005988	·011	·021	·013575 −	·006346	·011	·021	·015083	·006684	·011	·021
665	·012048	·005979	·011	·021	·013554	·006337	·011	·021	·015060	·006674	·011	·021
666	·012030	·005970	·011	·021	·013534	·006327	·011	·021	·015038	·006664	·011	·021
667	·012012	·005961	·011	·021	·013514	·006318	·011	·021	·015015 +	·006654	·011	·021
668	·011994	·005952	·011	·021	·013493	·006308	·011	·021	·014993	·006644	·011	·021
669	·011976	·005943	·011	·021	·013473	·006299	·011	·021	·014970	·006635 −	·011	·021
670	·011958	·005934	·011	·021	·013453	·006290	·011	·021	·014948	·006625 −	·011	·021
671	·011940	·005926	·011	·021	·013433	·006280	·011	·021	·014925 +	·006615 −	·011	·021
672	·011923	·005917	·011	·021	·013413	·006271	·011	·021	·014903	·006605 +	·011	·021
673	·011905 −	·005908	·011	·021	·013393	·006262	·011	·021	·014881	·006595 +	·011	·021
674	·011887	·005899	·011	·021	·013373	·006252	·011	·021	·014859	·006586	·011	·021
675	·011869	·005891	·011	·021	·013353	·006243	·011	·021	·014837	·006576	·011	·021
676	·011852	·005882	·011	·021	·013333	·006234	·011	·021	·014815 −	·006566	·011	·021
677	·011834	·005873	·011	·021	·013314	·006225 −	·011	·021	·014793	·006557	·011	·021
678	·011817	·005865 −	·011	·021	·013294	·006216	·011	·021	·014771	·006547	·011	·021
679	·011799	·005856	·011	·021	·013274	·006207	·011	·021	·014749	·006538	·011	·021
680	·011782	·005848	·011	·021	·013255 −	·006198	·011	·021	·014728	·006528	·011	·021
681	·011765 −	·005839	·011	·021	·013235 +	·006189	·011	·021	·014706	·006519	·011	·021
682	·011747	·005831	·011	·021	·013216	·006180	·011	·021	·014684	·006509	·011	·021
683	·011730	·005822	·011	·021	·013196	·006171	·011	·021	·014663	·006500 −	·011	·021
684	·011713	·005814	·011	·021	·013177	·006162	·011	·021	·014641	·006490	·011	·021
685	·011696	·005805 +	·011	·021	·013158	·006153	·011	·021	·014620	·006481	·011	·021
686	·011679	·005797	·011	·021	·013139	·006144	·011	·021	·014599	·006471	·011	·021
687	·011662	·005788	·011	·021	·013120	·006135 −	·011	·021	·014577	·006462	·011	·021
688	·011645 −	·005780	·011	·021	·013100	·006126	·011	·021	·014556	·006453	·011	·021
689	·011628	·005772	·011	·021	·013081	·006117	·011	·021	·014535 −	·006443	·011	·021
690	·011611	·005763	·011	·021	·013062	·006108	·011	·021	·014514	·006434	·011	·021
691	·011594	·005755 +	·011	·021	·013043	·006100	·011	·021	·014493	·006425 −	·011	·021
692	·011577	·005747	·011	·021	·013025 −	·006091	·011	·021	·014472	·006416	·011	·021
693	·011561	·005739	·011	·021	·013006	·006082	·011	·021	·014451	·006407	·011	·021
694	·011544	·005730	·011	·021	·012987	·006074	·011	·021	·014430	·006397	·011	·021
695	·011527	·005722	·011	·021	·012968	·006065 −	·011	·021	·014409	·006388	·011	·021
696	·011511	·005714	·011	·021	·012950 −	·006056	·011	·021	·014388	·006379	·011	·021
697	·011494	·005706	·011	·021	·012931	·006048	·011	·021	·014368	·006370	·011	·021
698	·011478	·005698	·011	·021	·012912	·006039	·011	·021	·014347	·006361	·011	·021
699	·011461	·005690	·011	·021	·012894	·006030	·011	·021	·014327	·006352	·011	·021
700	·011445 −	·005681	·011	·021	·012876	·006022	·011	·021	·014306	·006343	·011	·021

N — size of sample	12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}84$	P_2 $\lambda_2=2{\cdot}42$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}80$	P_2 $\lambda_2=2{\cdot}40$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}79$	P_2 $\lambda_2=2{\cdot}39$
651	·016923	·007144	·011	·021	·018462	·007456	·011	·022	·020000	·007754	·011	·021
652	·016897	·007133	·011	·021	·018433	·007444	·011	·022	·019969	·007742	·011	·021
653	·016871	·007122	·011	·021	·018405 −	·007433	·011	·022	·019939	·007730	·011	·021
654	·016845 +	·007111	·011	·021	·018377	·007422	·011	·022	·019908	·007719	·011	·021
655	·016820	·007100	·011	·021	·018349	·007410	·011	·022	·019878	·007707	·011	·021
656	·016794	·007090	·011	·021	·018321	·007399	·011	·022	·019847	·007695 +	·011	·021
657	·016768	·007079	·011	·021	·018293	·007388	·011	·022	·019817	·007684	·011	·021
658	·016743	·007068	·011	·021	·018265 −	·007377	·011	·022	·019787	·007672	·011	·021
659	·016717	·007058	·011	·021	·018237	·007366	·011	·022	·019757	·007661	·011	·021
660	·016692	·007047	·011	·021	·018209	·007355 −	·011	·022	·019727	·007649	·011	·021
661	·016667	·007037	·011	·021	·018182	·007344	·011	·022	·019697	·007638	·011	·021
662	·016641	·007026	·011	·021	·018154	·007333	·011	·022	·019667	·007626	·011	·021
663	·016616	·007016	·011	·021	·018127	·007322	·011	·022	·019637	·007615 −	·011	·021
664	·016591	·007005 +	·011	·021	·018100	·007311	·011	·022	·019608	·007604	·011	·021
665	·016566	·006995 −	·011	·021	·018072	·007300	·011	·022	·019578	·007592	·011	·021
666	·016541	·006984	·011	·021	·018045 +	·007289	·011	·022	·019549	·007581	·011	·021
667	·016517	·006974	·011	·021	·018018	·007278	·011	·022	·019520	·007570	·011	·021
668	·016492	·006963	·011	·021	·017991	·007268	·011	·022	·019490	·007559	·011	·021
669	·016467	·006953	·011	·021	·017964	·007257	·011	·022	·019461	·007547	·011	·021
670	·016442	·006943	·011	·021	·017937	·007246	·011	·022	·019432	·007536	·011	·021
671	·016418	·006933	·011	·021	·017910	·007235 +	·011	·022	·019403	·007525 +	·011	·021
672	·016393	·006922	·011	·021	·017884	·007225 −	·011	·022	·019374	·007514	·011	·021
673	·016369	·006912	·011	·021	·017857	·007214	·011	·022	·019345 +	·007503	·011	·021
674	·016345 −	·006902	·011	·021	·017831	·007203	·011	·022	·019316	·007492	·011	·021
675	·016320	·006892	·011	·021	·017804	·007193	·011	·022	·019288	·007481	·011	·021
676	·016296	·006882	·011	·021	·017778	·007182	·011	·022	·019259	·007470	·011	·021
677	·016272	·006872	·011	·021	·017751	·007172	·011	·022	·019231	·007459	·011	·021
678	·016248	·006862	·011	·021	·017725 +	·007161	·011	·022	·019202	·007448	·011	·021
679	·016224	·006852	·011	·021	·017699	·007151	·011	·022	·019174	·007437	·011	·021
680	·016200	·006842	·011	·021	·017673	·007140	·011	·022	·019146	·007426	·011	·021
681	·016176	·006832	·011	·021	·017647	·007130	·011	·022	·019118	·007416	·011	·021
682	·016153	·006822	·011	·021	·017621	·007120	·011	·022	·019090	·007405 −	·011	·021
683	·016129	·006812	·011	·021	·017595 +	·007109	·011	·022	·019062	·007394	·011	·021
684	·016105 +	·006802	·011	·021	·017570	·007099	·011	·022	·019034	·007383	·011	·021
685	·016082	·006792	·011	·021	·017544	·007089	·011	·022	·019006	·007373	·011	·021
686	·016058	·006782	·011	·021	·017518	·007079	·011	·022	·018978	·007362	·011	·021
687	·016035 −	·006772	·011	·021	·017493	·007068	·011	·022	·018950 +	·007351	·011	·021
688	·016012	·006763	·011	·021	·017467	·007058	·011	·022	·018923	·007341	·011	·021
689	·015988	·006753	·011	·021	·017442	·007048	·011	·022	·018895 +	·007330	·011	·021
690	·015965 +	·006743	·011	·021	·017417	·007038	·011	·022	·018868	·007320	·011	·021
691	·015942	·006734	·011	·021	·017391	·007028	·011	·022	·018841	·007309	·011	·021
692	·015919	·006724	·011	·021	·017366	·007018	·011	·022	·018813	·007299	·011	·021
693	·015896	·006714	·011	·021	·017341	·007008	·011	·022	·018786	·007288	·011	·021
694	·015873	·006705 −	·011	·021	·017316	·006998	·011	·022	·018759	·007278	·011	·021
695	·015850 +	·006695 +	·011	·021	·017291	·006988	·011	·022	·018732	·007268	·011	·021
696	·015827	·006686	·011	·021	·017266	·006978	·011	·022	·018705 +	·007257	·011	·021
697	·015805 −	·006676	·011	·021	·017241	·006968	·011	·022	·018678	·007247	·011	·021
698	·015782	·006667	·011	·021	·017217	·006958	·011	·022	·018651	·007237	·011	·021
699	·015759	·006657	·011	·021	·017192	·006948	·011	·022	·018625 −	·007226	·011	·021
700	·015737	·006648	·011	·021	·017167	·006938	·011	·022	·018598	·007216	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15				16				17				18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}78$	P_2 $\lambda_2=2{\cdot}38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}77$	P_2 $\lambda_2=2{\cdot}37$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}76$	P_2 $\lambda_2=2{\cdot}36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}75$	P_2 $\lambda_2=2{\cdot}35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}74$	P_2 $\lambda_2=2{\cdot}34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}73$	P_2 $\lambda_2=2{\cdot}33$
651	·021538	·008040	·011	·021	·023077	·008316	·011	·021	·024615 +	·008582	·011	·021	·026154	·008839	·011	·021	·027692	·009088	·011	·021	·029231	·009330	·011	·021
652	·021505 +	·008028	·011	·021	·023041	·008303	·011	·021	·024578	·008569	·011	·021	·026114	·008826	·011	·021	·027650 −	·009074	·011	·021	·029186	·009316	·011	·021
653	·021472	·008016	·011	·021	·023006	·008291	·011	·021	·024540	·008556	·011	·021	·026074	·008812	·011	·021	·027607	·009061	·011	·021	·029141	·009302	·011	·021
654	·021440	·008004	·011	·021	·022971	·008278	·011	·021	·024502	·008543	·011	·021	·026034	·008799	·011	·021	·027565 +	·009047	·011	·021	·029096	·009288	·011	·021
655	·021407	·007992	·011	·021	·022936	·008266	·011	·021	·024465 −	·008530	·011	·021	·025994	·008786	·011	·021	·027523	·009033	·011	·021	·029052	·009274	·011	·021
656	·021374	·007980	·011	·021	·022901	·008253	·011	·021	·024427	·008517	·011	·021	·025954	·008773	·011	·021	·027481	·009020	·011	·021	·029008	·009260	·011	·021
657	·021341	·007968	·011	·021	·022866	·008241	·011	·021	·024390	·008504	·011	·021	·025915 −	·008759	·011	·021	·027439	·009006	·011	·021	·028963	·009246	·011	·021
658	·021309	·007956	·011	·021	·022831	·008228	·011	·021	·024353	·008492	·011	·021	·025875 +	·008746	·011	·021	·027397	·008993	·011	·021	·028919	·009232	·011	·021
659	·021277	·007944	·011	·021	·022796	·008216	·011	·021	·024316	·008479	·011	·021	·025836	·008733	·011	·021	·027356	·008979	·011	·021	·028875 +	·009218	·011	·021
660	·021244	·007932	·011	·021	·022762	·008204	·011	·021	·024279	·008466	·011	·021	·025797	·008720	·011	·021	·027314	·008966	·011	·021	·028832	·009204	·011	·021
661	·021212	·007920	·011	·021	·022727	·008192	·011	·021	·024242	·008454	·011	·021	·025758	·008707	·011	·021	·027273	·008953	·011	·021	·028788	·009191	·011	·021
662	·021180	·007908	·011	·021	·022693	·008179	·011	·021	·024206	·008441	·011	·021	·025719	·008694	·011	·021	·027231	·008939	·011	·021	·028744	·009177	·011	·021
663	·021148	·007896	·011	·021	·022659	·008167	·011	·021	·024169	·008428	·011	·021	·025680	·008681	·011	·021	·027190	·008926	·011	·021	·028701	·009163	·011	·021
664	·021116	·007885 −	·011	·021	·022624	·008155 +	·011	·021	·024133	·008416	·011	·021	·025641	·008668	·011	·021	·027149	·008913	·011	·021	·028658	·009150 −	·011	·021
665	·021084	·007873	·011	·021	·022590	·008143	·011	·021	·024096	·008403	·011	·021	·025602	·008655 +	·011	·021	·027108	·008899	·011	·021	·028614	·009136	·011	·021
666	·021053	·007861	·011	·021	·022556	·008131	·011	·021	·024060	·008391	·011	·021	·025564	·008643	·011	·021	·027068	·008886	·011	·021	·028571	·009123	·011	·021
667	·021021	·007849	·011	·021	·022523	·008119	·011	·021	·024024	·008379	·011	·021	·025526	·008630	·011	·021	·027027	·008873	·011	·021	·028529	·009109	·011	·021
668	·020990	·007838	·011	·021	·022489	·008107	·011	·021	·023988	·008366	·011	·021	·025487	·008617	·011	·021	·026987	·008860	·011	·021	·028486	·009096	·011	·021
669	·020958	·007826	·011	·021	·022455 +	·008095 −	·011	·021	·023952	·008354	·011	·021	·025449	·008604	·011	·021	·026946	·008847	·011	·021	·028443	·009082	·011	·021
670	·020927	·007815 −	·011	·021	·022422	·008083	·011	·021	·023916	·008342	·011	·021	·025411	·008592	·011	·021	·026906	·008834	·011	·021	·028401	·009069	·011	·021
671	·020896	·007803	·011	·021	·022388	·008071	·011	·021	·023881	·008329	·011	·021	·025373	·008579	·011	·021	·026866	·008821	·011	·021	·028358	·009056	·011	·021
672	·020864	·007792	·011	·021	·022355 −	·008059	·011	·021	·023845 +	·008317	·011	·021	·025335 +	·008566	·011	·021	·026826	·008808	·011	·021	·028316	·009042	·011	·021
673	·020833	·007780	·011	·021	·022321	·008047	·011	·021	·023810	·008305 −	·011	·021	·025298	·008554	·011	·021	·026786	·008795 +	·011	·021	·028274	·009029	·011	·021
674	·020802	·007769	·011	·021	·022288	·008035 +	·011	·021	·023774	·008293	·011	·021	·025260	·008541	·011	·021	·026746	·008782	·011	·021	·028232	·009016	·011	·021
675	·020772	·007757	·011	·021	·022255 +	·008024	·011	·021	·023739	·008280	·011	·021	·025223	·008529	·011	·021	·026706	·008769	·011	·021	·028190	·009003	·011	·021
676	·020741	·007746	·011	·021	·022222	·008012	·011	·021	·023704	·008268	·011	·021	·025185 +	·008516	·011	·021	·026667	·008757	·011	·021	·028148	·008990	·011	·021
677	·020710	·007735 −	·011	·021	·022189	·008000	·011	·021	·023669	·008256	·011	·021	·025148	·008504	·011	·021	·026627	·008744	·011	·021	·028107	·008977	·011	·021
678	·020679	·007723	·011	·021	·022157	·007989	·011	·021	·023634	·008244	·011	·021	·025111	·008492	·011	·021	·026588	·008731	·011	·021	·028065 −	·008964	·011	·021
679	·020649	·007712	·011	·021	·022124	·007977	·011	·021	·023599	·008232	·011	·021	·025074	·008479	·011	·021	·026549	·008718	·011	·021	·028024	·008951	·011	·021
680	·020619	·007701	·011	·021	·022091	·007965 +	·011	·021	·023564	·008220	·011	·021	·025037	·008467	·011	·021	·026510	·008706	·011	·021	·027982	·008938	·011	·021
681	·020588	·007690	·011	·021	·022059	·007954	·011	·021	·023529	·008208	·011	·021	·025000	·008455 −	·011	·021	·026471	·008693	·011	·021	·027941	·008925 −	·011	·021
682	·020558	·007679	·011	·021	·022026	·007942	·011	·021	·023495 −	·008197	·011	·021	·024963	·008442	·011	·021	·026432	·008681	·011	·021	·027900	·008912	·011	·021
683	·020528	·007668	·011	·021	·021994	·007931	·011	·021	·023460	·008185 −	·011	·021	·024927	·008430	·011	·021	·026393	·008668	·011	·021	·027859	·008899	·011	·021
684	·020498	·007656	·011	·021	·021962	·007919	·011	·021	·023426	·008173	·011	·021	·024890	·008418	·011	·021	·026354	·008656	·011	·021	·027818	·008886	·011	·021
685	·020468	·007645 +	·011	·021	·021930	·007908	·011	·021	·023392	·008161	·011	·021	·024854	·008406	·011	·021	·026316	·008643	·011	·021	·027778	·008873	·011	·021
686	·020438	·007634	·011	·021	·021898	·007896	·011	·021	·023358	·008149	·011	·021	·024818	·008394	·011	·021	·026277	·008631	·011	·021	·027737	·008861	·011	·021
687	·020408	·007623	·011	·021	·021866	·007885 +	·011	·021	·023324	·008138	·011	·021	·024781	·008382	·011	·021	·026239	·008618	·011	·021	·027697	·008848	·011	·021
688	·020378	·007612	·011	·021	·021834	·007874	·011	·021	·023290	·008126	·011	·021	·024745 +	·008370	·011	·021	·026201	·008606	·011	·021	·027656	·008835 +	·011	·021
689	·020349	·007601	·011	·021	·021802	·007862	·011	·021	·023256	·008114	·011	·021	·024709	·008358	·011	·021	·026163	·008594	·011	·021	·027616	·008823	·011	·021
690	·020319	·007591	·011	·021	·021771	·007851	·011	·021	·023222	·008103	·011	·021	·024673	·008346	·011	·021	·026125 −	·008581	·011	·021	·027576	·008810	·011	·021
691	·020290	·007580	·011	·021	·021739	·007840	·011	·021	·023188	·008091	·011	·021	·024638	·008334	·011	·021	·026087	·008569	·011	·021	·027536	·008797	·011	·021
692	·020260	·007569	·011	·021	·021708	·007829	·011	·021	·023155 −	·008079	·011	·021	·024602	·008322	·011	·021	·026049	·008557	·011	·021	·027496	·008785 −	·011	·021
693	·020231	·007558	·011	·021	·021676	·007818	·011	·021	·023121	·008068	·011	·021	·024566	·008310	·011	·021	·026012	·008545 −	·011	·021	·027457	·008772	·011	·021
694	·020202	·007547	·011	·021	·021645 +	·007806	·011	·021	·023088	·008056	·011	·021	·024531	·008298	·011	·021	·025974	·008533	·011	·021	·027417	·008760	·011	·021
695	·020173	·007536	·011	·021	·021614	·007795 +	·011	·021	·023055 −	·008045 +	·011	·021	·024496	·008286	·011	·021	·025937	·008520	·011	·021	·027378	·008747	·011	·021
696	·020144	·007526	·011	·021	·021583	·007784	·011	·021	·023022	·008034	·011	·021	·024460	·008275 −	·011	·021	·025899	·008508	·011	·021	·027338	·008735 +	·011	·021
697	·020115 −	·007515 +	·011	·021	·021552	·007773	·011	·021	·022989	·008022	·011	·021	·024425 +	·008263	·011	·021	·025862	·008496	·011	·021	·027299	·008723	·011	·021
698	·020086	·007504	·011	·021	·021521	·007762	·011	·021	·022956	·008011	·011	·021	·024390	·008251	·011	·021	·025825 −	·008484	·011	·021	·027260	·008710	·011	·021
699	·020057	·007494	·011	·021	·021490	·007751	·011	·021	·022923	·008000	·011	·021	·024355 +	·008240	·011	·021	·025788	·008472	·011	·021	·027221	·008698	·011	·021
700	·020029	·007483	·011	·021	·021459	·007740	·011	·021	·022890	·007988	·011	·021	·024320	·008228	·011	·021	·025751	·008460	·011	·021	·027182	·008686	·011	·021

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 λ_1 = 3·50	3: P_2 λ_2 = 2·94	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 λ_1 = 3·20	4: P_2 λ_2 = 2·80
701	·002857	·002849	·011	·019	·004286	·003487	·013	·020
702	·002853	·002845 –	·011	·019	·004280	·003482	·013	·020
703	·002849	·002841	·011	·019	·004274	·003477	·013	·020
704	·002845 –	·002837	·011	·019	·004267	·003472	·013	·020
705	·002841	·002833	·011	·019	·004261	·003467	·013	·020
706	·002837	·002829	·011	·019	·004255 +	·003462	·013	·020
707	·002833	·002825 –	·011	·019	·004249	·003457	·013	·020
708	·002829	·002821	·011	·019	·004243	·003452	·013	·020
709	·002825 –	·002817	·011	·019	·004237	·003448	·013	·020
710	·002821	·002813	·011	·019	·004231	·003443	·013	·020
711	·002817	·002809	·011	·019	·004225 +	·003438	·013	·020
712	·002813	·002805 +	·011	·019	·004219	·003433	·013	·020
713	·002809	·002801	·011	·019	·004213	·003428	·013	·020
714	·002805 +	·002797	·011	·019	·004208	·003423	·013	·020
715	·002801	·002793	·011	·019	·004202	·003419	·013	·020
716	·002797	·002789	·011	·019	·004196	·003414	·013	·020
717	·002793	·002786	·011	·019	·004190	·003409	·013	·020
718	·002789	·002782	·011	·019	·004184	·003404	·013	·020
719	·002786	·002778	·011	·019	·004178	·003400	·013	·020
720	·002782	·002774	·011	·019	·004172	·003395 –	·013	·020
721	·002778	·002770	·011	·019	·004167	·003390	·013	·020
722	·002774	·002766	·011	·019	·004161	·003386	·013	·020
723	·002770	·002762	·011	·019	·004155 +	·003381	·013	·020
724	·002766	·002759	·011	·019	·004149	·003376	·013	·020
725	·002762	·002755 –	·011	·019	·004144	·003372	·013	·020
726	·002759	·002751	·011	·019	·004138	·003367	·013	·020
727	·002755 –	·002747	·011	·019	·004132	·003362	·013	·020
728	·002751	·002743	·011	·019	·004127	·003358	·013	·020
729	·002747	·002740	·011	·019	·004121	·003353	·013	·020
730	·002743	·002736	·011	·019	·004115 +	·003349	·013	·020
731	·002740	·002732	·011	·019	·004110	·003344	·013	·020
732	·002736	·002729	·011	·019	·004104	·003339	·013	·020
733	·002732	·002725 –	·011	·019	·004098	·003335 –	·013	·020
734	·002729	·002721	·011	·019	·004093	·003330	·013	·020
735	·002725 –	·002717	·011	·019	·004087	·003326	·013	·020
736	·002721	·002714	·011	·019	·004082	·003321	·013	·020
737	·002717	·002710	·011	·019	·004076	·003317	·013	·020
738	·002714	·002706	·011	·019	·004071	·003312	·013	·020
739	·002710	·002703	·011	·019	·004065 +	·003308	·013	·020
740	·002706	·002699	·011	·019	·004060	·003303	·013	·020
741	·002703	·002695 +	·011	·019	·004054	·003299	·013	·020
742	·002699	·002692	·011	·019	·004049	·003295 –	·013	·020
743	·002695 +	·002688	·011	·019	·004043	·003290	·013	·020
744	·002692	·002685 –	·011	·019	·004038	·003286	·013	·020
745	·002688	·002681	·011	·019	·004032	·003281	·013	·020
746	·002685 –	·002677	·011	·019	·004027	·003277	·013	·020
747	·002681	·002674	·011	·019	·004021	·003273	·013	·020
748	·002677	·002670	·011	·019	·004016	·003268	·013	·020
749	·002674	·002667	·011	·019	·004011	·003264	·013	·020
750	·002670	·002663	·011	·019	·004005 +	·003259	·013	·020

N = size of sample	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 λ_1 = 3·14	5: P_2 λ_2 = 2·68	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 λ_1 = 3·11	6: P_2 λ_2 = 2·63
701	·005714	·004023	·012	·021	·007143	·004495 –	·011	·021
702	·005706	·004018	·012	·021	·007133	·004489	·011	·021
703	·005698	·004012	·012	·021	·007123	·004482	·011	·021
704	·005690	·004006	·012	·021	·007112	·004476	·011	·021
705	·005682	·004001	·012	·021	·007102	·004470	·011	·021
706	·005674	·003995 –	·012	·021	·007092	·004463	·011	·021
707	·005666	·003989	·012	·021	·007082	·004457	·011	·021
708	·005658	·003984	·012	·021	·007072	·004451	·011	·021
709	·005650 –	·003978	·012	·021	·007062	·004444	·011	·021
710	·005642	·003972	·012	·021	·007052	·004438	·011	·021
711	·005634	·003967	·012	·021	·007042	·004432	·011	·021
712	·005626	·003961	·012	·021	·007032	·004426	·011	·021
713	·005618	·003956	·012	·021	·007022	·004420	·011	·021
714	·005610	·003950 +	·012	·021	·007013	·004413	·011	·021
715	·005602	·003945 –	·012	·021	·007003	·004407	·011	·021
716	·005594	·003939	·012	·021	·006993	·004401	·011	·021
717	·005587	·003934	·012	·021	·006983	·004395 +	·011	·021
718	·005579	·003928	·012	·021	·006974	·004389	·011	·021
719	·005571	·003923	·012	·021	·006964	·004383	·011	·021
720	·005563	·003917	·012	·021	·006954	·004377	·011	·021
721	·005556	·003912	·012	·021	·006944	·004371	·011	·021
722	·005548	·003907	·012	·021	·006935 –	·004365 –	·011	·021
723	·005540	·003901	·012	·021	·006925 +	·004359	·011	·021
724	·005533	·003896	·012	·021	·006916	·004353	·011	·021
725	·005525 –	·003890	·012	·021	·006906	·004347	·011	·021
726	·005517	·003885 +	·012	·021	·006897	·004341	·011	·021
727	·005510	·003880	·012	·021	·006887	·004335 –	·011	·021
728	·005502	·003875 –	·012	·021	·006878	·004329	·011	·021
729	·005495 –	·003869	·012	·021	·006868	·004323	·011	·021
730	·005487	·003864	·012	·021	·006859	·004317	·011	·021
731	·005479	·003859	·012	·021	·006849	·004311	·011	·021
732	·005472	·003853	·012	·021	·006840	·004305 +	·011	·021
733	·005464	·003848	·012	·021	·006831	·004299	·011	·021
734	·005457	·003843	·012	·021	·006821	·004294	·011	·021
735	·005450 –	·003838	·012	·021	·006812	·004288	·011	·021
736	·005442	·003833	·012	·021	·006803	·004282	·011	·021
737	·005435 –	·003827	·012	·021	·006793	·004276	·011	·021
738	·005427	·003822	·012	·021	·006784	·004270	·011	·021
739	·005420	·003817	·012	·021	·006775 +	·004265 –	·011	·021
740	·005413	·003812	·012	·021	·006766	·004259	·011	·021
741	·005405 +	·003807	·012	·021	·006757	·004253	·011	·021
742	·005398	·003802	·012	·021	·006748	·004247	·011	·021
743	·005391	·003796	·012	·021	·006739	·004242	·011	·021
744	·005384	·003791	·012	·021	·006729	·004236	·011	·021
745	·005376	·003786	·012	·021	·006720	·004230	·011	·021
746	·005369	·003781	·012	·021	·006711	·004225 –	·011	·021
747	·005362	·003776	·012	·021	·006702	·004219	·011	·021
748	·005355 –	·003771	·012	·021	·006693	·004213	·011	·021
749	·005348	·003766	·012	·021	·006684	·004208	·011	·021
750	·005340	·003761	·012	·021	·006676	·004202	·011	·021

N = size of sample	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 λ_1 = 3·08	7: P_2 λ_2 = 2·58	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 λ_1 = 3·02	8: P_2 λ_2 = 2·54
701	·008571	·004920	·010	·021	·010000	·005311	·011	·021
702	·008559	·004913	·010	·021	·009986	·005303	·011	·021
703	·008547	·004906	·010	·021	·009972	·005296	·011	·021
704	·008535 –	·004900	·010	·021	·009957	·005288	·011	·021
705	·008523	·004893	·010	·021	·009943	·005281	·011	·021
706	·008511	·004886	·010	·021	·009929	·005273	·011	·021
707	·008499	·004879	·010	·021	·009915 +	·005266	·011	·021
708	·008487	·004872	·010	·021	·009901	·005259	·011	·021
709	·008475 –	·004865 +	·010	·021	·009887	·005251	·011	·021
710	·008463	·004858	·010	·021	·009873	·005244	·011	·021
711	·008451	·004852	·010	·021	·009859	·005237	·011	·021
712	·008439	·004845 –	·010	·021	·009845 +	·005229	·011	·021
713	·008427	·004838	·010	·021	·009831	·005222	·011	·021
714	·008415 +	·004831	·010	·021	·009818	·005215 –	·011	·021
715	·008403	·004825 –	·010	·021	·009804	·005207	·011	·021
716	·008392	·004818	·010	·021	·009790	·005200	·011	·021
717	·008380	·004811	·010	·021	·009777	·005193	·011	·021
718	·008368	·004804	·010	·021	·009763	·005186	·011	·021
719	·008357	·004798	·010	·021	·009749	·005179	·011	·021
720	·008345 –	·004791	·010	·021	·009736	·005171	·011	·021
721	·008333	·004785 –	·010	·021	·009722	·005164	·011	·021
722	·008322	·004778	·010	·021	·009709	·005157	·011	·021
723	·008310	·004771	·010	·021	·009695 +	·005150 +	·011	·021
724	·008299	·004765 –	·010	·021	·009682	·005143	·011	·021
725	·008287	·004758	·010	·021	·009669	·005136	·011	·021
726	·008276	·004752	·010	·021	·009655 +	·005129	·011	·021
727	·008264	·004745 +	·010	·021	·009642	·005122	·011	·021
728	·008253	·004739	·010	·021	·009629	·005115 –	·011	·021
729	·008242	·004732	·010	·021	·009615 +	·005108	·011	·021
730	·008230	·004726	·010	·021	·009602	·005101	·011	·021
731	·008219	·004719	·010	·021	·009589	·005094	·011	·021
732	·008208	·004713	·010	·021	·009576	·005087	·011	·021
733	·008197	·004707	·010	·021	·009563	·005080	·011	·021
734	·008186	·004700	·010	·021	·009550 –	·005073	·011	·021
735	·008174	·004694	·010	·021	·009537	·005066	·011	·021
736	·008163	·004687	·010	·021	·009524	·005060	·011	·021
737	·008152	·004681	·010	·021	·009511	·005053	·011	·021
738	·008141	·004675 –	·010	·021	·009498	·005046	·011	·021
739	·008130	·004668	·010	·021	·009485 +	·005039	·011	·021
740	·008119	·004662	·010	·021	·009472	·005032	·011	·021
741	·008108	·004656	·010	·021	·009459	·005026	·011	·021
742	·008097	·004650 –	·010	·021	·009447	·005019	·011	·021
743	·008086	·004643	·010	·021	·009434	·005012	·011	·021
744	·008075 +	·004637	·010	·021	·009421	·005005 +	·011	·021
745	·008065 –	·004631	·010	·021	·009409	·004999	·011	·021
746	·008054	·004625 –	·010	·021	·009396	·004992	·011	·021
747	·008043	·004619	·010	·021	·009383	·004985 +	·011	·021
748	·008032	·004613	·010	·021	·009371	·004979	·011	·021
749	·008021	·004606	·010	·021	·009358	·004972	·011	·021
750	·008011	·004600	·010	·021	·009346	·004966	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	n=9: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1=2·96	P_2 λ_2=2·50	n=10: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1=2·92	P_2 λ_2=2·47	n=11: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1=2·88	P_2 λ_2=2·44
701	·011429	·005673	·011	·021	·012857	·006013	·011	·021	·014286	·006334	·011	·021
702	·011412	·005665 +	·011	·021	·012839	·006005 −	·011	·021	·014265 +	·006325 −	·011	·021
703	·011396	·005657	·011	·021	·012821	·005996	·011	·021	·014245 +	·006316	·011	·021
704	·011380	·005649	·011	·021	·012802	·005988	·011	·021	·014225 −	·006307	·011	·021
705	·011364	·005641	·011	·021	·012784	·005979	·011	·021	·014205 −	·006298	·011	·021
706	·011348	·005633	·011	·021	·012766	·005971	·011	·021	·014184	·006289	·011	·021
707	·011331	·005626	·011	·021	·012748	·005963	·011	·021	·014164	·006281	·011	·021
708	·011315 +	·005618	·011	·021	·012730	·005954	·011	·021	·014144	·006272	·011	·021
709	·011299	·005610	·011	·021	·012712	·005946	·011	·021	·014124	·006263	·011	·021
710	·011283	·005602	·011	·021	·012694	·005938	·011	·021	·014104	·006254	·011	·021
711	·011268	·005594	·011	·021	·012676	·005929	·011	·021	·014085 −	·006245 +	·011	·021
712	·011252	·005586	·011	·021	·012658	·005921	·011	·021	·014065 −	·006237	·011	·021
713	·011236	·005578	·011	·021	·012640	·005913	·011	·021	·014045 −	·006228	·011	·021
714	·011220	·005571	·011	·021	·012623	·005904	·011	·021	·014025 +	·006219	·011	·021
715	·011204	·005563	·011	·021	·012605 +	·005896	·011	·021	·014006	·006211	·011	·021
716	·011189	·005555 +	·011	·021	·012587	·005888	·011	·021	·013986	·006202	·011	·021
717	·011173	·005548	·011	·021	·012570	·005880	·011	·021	·013966	·006194	·011	·021
718	·011158	·005540	·011	·021	·012552	·005872	·011	·021	·013947	·006185 +	·011	·021
719	·011142	·005532	·011	·021	·012535 −	·005864	·011	·021	·013928	·006176	·011	·021
720	·011127	·005525 −	·011	·021	·012517	·005856	·011	·021	·013908	·006168	·011	·021
721	·011111	·005517	·011	·021	·012500	·005847	·011	·021	·013889	·006159	·011	·021
722	·011096	·005509	·011	·021	·012483	·005839	·011	·021	·013870	·006151	·011	·021
723	·011080	·005502	·011	·021	·012465 +	·005831	·011	·021	·013850 +	·006143	·011	·021
724	·011065 +	·005494	·011	·021	·012448	·005823	·011	·021	·013831	·006134	·011	·021
725	·011050 −	·005487	·011	·021	·012431	·005815 +	·011	·021	·013812	·006126	·011	·021
726	·011034	·005479	·011	·021	·012414	·005807	·011	·021	·013793	·006117	·011	·021
727	·011019	·005472	·011	·021	·012397	·005800	·011	·021	·013774	·006109	·011	·021
728	·011004	·005464	·011	·021	·012380	·005792	·011	·021	·013755 +	·006101	·011	·021
729	·010989	·005457	·011	·021	·012363	·005784	·011	·021	·013736	·006092	·011	·021
730	·010974	·005449	·011	·021	·012346	·005776	·011	·021	·013717	·006084	·011	·021
731	·010959	·005442	·011	·021	·012329	·005768	·011	·021	·013699	·006076	·011	·021
732	·010944	·005435 −	·011	·021	·012312	·005760	·011	·021	·013680	·006068	·011	·021
733	·010929	·005427	·011	·021	·012295 +	·005752	·011	·021	·013661	·006059	·011	·021
734	·010914	·005420	·011	·021	·012278	·005745 −	·011	·021	·013643	·006051	·011	·021
735	·010899	·005412	·011	·021	·012262	·005737	·011	·021	·013624	·006043	·011	·021
736	·010884	·005405 +	·011	·021	·012245 −	·005729	·011	·021	·013605 +	·006035 −	·011	·021
737	·010870	·005398	·011	·021	·012228	·005721	·011	·021	·013587	·006027	·011	·021
738	·010855 −	·005391	·011	·021	·012212	·005714	·011	·021	·013569	·006019	·011	·021
739	·010840	·005383	·011	·021	·012195 +	·005706	·011	·021	·013550 +	·006010	·011	·021
740	·010825 +	·005376	·011	·021	·012179	·005698	·011	·021	·013532	·006002	·011	·021
741	·010811	·005369	·011	·021	·012162	·005691	·011	·021	·013514	·005994	·011	·021
742	·010796	·005362	·011	·021	·012146	·005683	·011	·021	·013495 +	·005986	·011	·021
743	·010782	·005354	·011	·021	·012129	·005675 +	·011	·021	·013477	·005978	·011	·021
744	·010767	·005347	·011	·021	·012113	·005668	·011	·021	·013459	·005970	·011	·021
745	·010753	·005340	·011	·021	·012097	·005660	·011	·021	·013441	·005962	·011	·021
746	·010738	·005333	·011	·021	·012081	·005653	·011	·021	·013423	·005954	·011	·021
747	·010724	·005326	·011	·021	·012064	·005645 +	·011	·021	·013405 −	·005947	·011	·021
748	·010710	·005319	·011	·021	·012048	·005638	·011	·021	·013387	·005939	·011	·021
749	·010695 +	·005312	·011	·021	·012032	·005630	·011	·021	·013369	·005931	·011	·021
750	·010681	·005305 −	·011	·021	·012016	·005623	·011	·021	·013351	·005923	·011	·021

N = size of sample	n=12: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1=2·84	P_2 λ_2=2·42	n=13: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1=2·80	P_2 λ_2=2·40	n=14: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1=2·79	P_2 λ_2=2·39
701	·015714	·006638	·011	·021	·017143	·006928	·011	·022	·018571	·007206	·011	·021
702	·015692	·006629	·011	·021	·017118	·006919	·011	·022	·018545 −	·007196	·011	·021
703	·015670	·006620	·011	·021	·017094	·006909	·011	·022	·018519	·007186	·011	·021
704	·015647	·006610	·011	·021	·017070	·006899	·011	·022	·018492	·007176	·011	·021
705	·015625 −	·006601	·011	·021	·017045 +	·006889	·011	·022	·018466	·007166	·011	·021
706	·015603	·006592	·011	·021	·017021	·006880	·011	·022	·018440	·007156	·011	·021
707	·015581	·006582	·011	·021	·016997	·006870	·011	·022	·018414	·007145 +	·011	·021
708	·015559	·006573	·011	·021	·016973	·006860	·011	·022	·018388	·007135 +	·011	·021
709	·015537	·006564	·011	·021	·016949	·006851	·011	·022	·018362	·007126	·011	·021
710	·015515 −	·006555 −	·011	·021	·016925 +	·006841	·011	·022	·018336	·007116	·011	·021
711	·015493	·006546	·011	·021	·016901	·006832	·011	·022	·018310	·007106	·011	·021
712	·015471	·006537	·011	·021	·016878	·006822	·011	·022	·018284	·007096	·011	·021
713	·015449	·006527	·011	·021	·016854	·006813	·011	·022	·018258	·007086	·011	·021
714	·015428	·006518	·011	·021	·016830	·006803	·011	·022	·018233	·007076	·011	·021
715	·015406	·006509	·011	·021	·016807	·006794	·011	·022	·018207	·007066	·011	·021
716	·015385 −	·006500 +	·011	·021	·016783	·006784	·011	·022	·018182	·007057	·011	·021
717	·015363	·006491	·011	·021	·016760	·006775 +	·011	·022	·018156	·007047	·011	·021
718	·015342	·006482	·011	·021	·016736	·006766	·011	·022	·018131	·007037	·011	·021
719	·015320	·006473	·011	·021	·016713	·006756	·011	·022	·018106	·007027	·011	·021
720	·015299	·006464	·011	·021	·016690	·006747	·011	·022	·018081	·007018	·011	·021
721	·015278	·006456	·011	·021	·016667	·006738	·011	·022	·018056	·007008	·011	·021
722	·015257	·006447	·011	·021	·016644	·006729	·011	·022	·018031	·006998	·011	·021
723	·015235 +	·006438	·011	·021	·016620	·006719	·011	·022	·018006	·006989	·011	·021
724	·015214	·006429	·011	·021	·016598	·006710	·011	·022	·017981	·006979	·011	·021
725	·015193	·006420	·011	·021	·016575 −	·006701	·011	·022	·017956	·006970	·011	·021
726	·015172	·006411	·011	·021	·016552	·006692	·011	·022	·017931	·006960	·011	·021
727	·015152	·006403	·011	·022	·016529	·006683	·011	·022	·017906	·006951	·011	·021
728	·015131	·006394	·011	·022	·016506	·006674	·011	·022	·017882	·006941	·011	·021
729	·015110	·006385 +	·011	·022	·016484	·006665 −	·011	·022	·017857	·006932	·011	·021
730	·015089	·006377	·011	·022	·016461	·006655 +	·011	·022	·017833	·006922	·011	·021
731	·015068	·006368	·011	·022	·016438	·006646	·011	·022	·017808	·006913	·011	·021
732	·015048	·006359	·011	·022	·016416	·006637	·011	·022	·017784	·006904	·011	·021
733	·015027	·006351	·011	·022	·016393	·006628	·011	·022	·017760	·006894	·011	·021
734	·015007	·006342	·011	·022	·016371	·006620	·011	·022	·017735 +	·006885 +	·011	·021
735	·014986	·006334	·011	·022	·016349	·006611	·011	·022	·017711	·006876	·011	·021
736	·014966	·006325 −	·011	·022	·016327	·006602	·011	·022	·017687	·006866	·011	·021
737	·014946	·006316	·011	·022	·016304	·006593	·011	·022	·017663	·006857	·011	·021
738	·014925 +	·006308	·011	·022	·016282	·006584	·011	·022	·017639	·006848	·011	·021
739	·014905 +	·006300	·011	·022	·016260	·006575 +	·011	·022	·017615 +	·006839	·011	·021
740	·014885 −	·006291	·011	·022	·016238	·006566	·011	·022	·017591	·006830	·011	·021
741	·014865 −	·006283	·011	·022	·016216	·006557	·011	·022	·017568	·006821	·011	·021
742	·014845 −	·006274	·011	·022	·016194	·006549	·011	·022	·017544	·006811	·011	·021
743	·014825 −	·006266	·011	·022	·016173	·006540	·011	·022	·017520	·006802	·011	·021
744	·014805 −	·006257	·011	·022	·016151	·006531	·011	·022	·017497	·006793	·011	·021
745	·014785 −	·006249	·011	·022	·016129	·006523	·011	·022	·017473	·006784	·011	·021
746	·014765 +	·006241	·011	·022	·016107	·006514	·011	·022	·017450 −	·006775 +	·011	·021
747	·014745 +	·006233	·011	·022	·016086	·006505 +	·011	·022	·017426	·006766	·011	·021
748	·014726	·006224	·011	·022	·016064	·006497	·011	·022	·017403	·006757	·011	·021
749	·014706	·006216	·011	·022	·016043	·006488	·011	·022	·017380	·006748	·011	·021
750	·014686	·006208	·011	·022	·016021	·006479	·011	·022	·017356	·006739	·011	·021

TABLE IV.—(*continued*).

N = size of sample	15				16				17				18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}78$	P_2 $\lambda_2 = 2{\cdot}38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}77$	P_2 $\lambda_2 = 2{\cdot}37$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}76$	P_2 $\lambda_2 = 2{\cdot}36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}75$	P_2 $\lambda_2 = 2{\cdot}35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}74$	P_2 $\lambda_2 = 2{\cdot}34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}73$	P_2 $\lambda_2 = 2{\cdot}33$
701	·020000	·007473	·011	·021	·021429	·007729	·011	·021	·022857	·007977	·011	·021	·024286	·008216	·011	·021	·025714	·008448	·011	·021	·027143	·008674	·011	·021
702	·019971	·007462	·011	·021	·021398	·007718	·011	·021	·022825 –	·007966	·011	·021	·024251	·008205 –	·011	·021	·025678	·008437	·011	·021	·027104	·008661	·011	·021
703	·019943	·007452	·011	·021	·021368	·007708	·011	·021	·022792	·007955 –	·011	·021	·024217	·008193	·011	·021	·025641	·008425 –	·011	·021	·027066	·008649	·011	·021
704	·019915 –	·007441	·011	·021	·021337	·007697	·011	·021	·022760	·007943	·011	·021	·024182	·008182	·011	·021	·025605 –	·008413	·011	·021	·027027	·008637	·011	·021
705	·019886	·007431	·011	·021	·021307	·007686	·011	·021	·022727	·007932	·011	·021	·024148	·008170	·011	·021	·025568	·008401	·011	·021	·026989	·008625 +	·011	·021
706	·019858	·007420	·011	·021	·021277	·007675 +	·011	·021	·022695 +	·007921	·011	·021	·024113	·008159	·011	·021	·025532	·008389	·011	·021	·026950 +	·008613	·011	·021
707	·019830	·007410	·011	·021	·021246	·007664	·011	·021	·022663	·007910	·011	·021	·024079	·008148	·011	·021	·025496	·008378	·011	·021	·026912	·008601	·011	·021
708	·019802	·007400	·011	·021	·021216	·007654	·011	·021	·022631	·007899	·011	·021	·024045 +	·008136	·011	·021	·025460	·008366	·011	·021	·026874	·008589	·011	·021
709	·019774	·007389	·011	·021	·021186	·007643	·011	·021	·022599	·007888	·011	·021	·024011	·008125 –	·011	·021	·025424	·008354	·011	·021	·026836	·008577	·011	·021
710	·019746	·007379	·011	·021	·021157	·007632	·011	·021	·022567	·007877	·011	·021	·023977	·008114	·011	·021	·025388	·008343	·011	·021	·026798	·008565 +	·011	·021
711	·019718	·007369	·011	·021	·021127	·007622	·011	·021	·022535 +	·007866	·011	·021	·023944	·008102	·011	·021	·025352	·008331	·011	·021	·026761	·008553	·011	·021
712	·019691	·007358	·011	·021	·021097	·007611	·011	·021	·022504	·007855 +	·011	·021	·023910	·008091	·011	·021	·025316	·008320	·011	·021	·026723	·008541	·011	·021
713	·019663	·007348	·011	·021	·021067	·007601	·011	·021	·022472	·007844	·011	·021	·023876	·008080	·011	·021	·025281	·008308	·011	·021	·026685 +	·008530	·011	·021
714	·019635 +	·007338	·011	·021	·021038	·007590	·011	·021	·022440	·007833	·011	·021	·023843	·008069	·011	·021	·025245 +	·008297	·011	·021	·026648	·008518	·011	·021
715	·019608	·007328	·011	·021	·021008	·007580	·011	·021	·022409	·007823	·011	·021	·023810	·008058	·011	·021	·025210	·008285 +	·011	·021	·026611	·008506	·011	·021
716	·019580	·007318	·011	·021	·020979	·007569	·011	·021	·022378	·007812	·011	·021	·023776	·008046	·011	·021	·025175 –	·008274	·011	·021	·026573	·008494	·011	·021
717	·019553	·007308	·011	·021	·020950 –	·007559	·011	·021	·022346	·007801	·011	·021	·023743	·008035 +	·011	·021	·025140	·008262	·011	·021	·026536	·008483	·011	·021
718	·019526	·007297	·011	·021	·020921	·007548	·011	·021	·022315 +	·007790	·011	·021	·023710	·008024	·011	·021	·025105 –	·008251	·011	·021	·026499	·008471	·011	·021
719	·019499	·007287	·011	·021	·020891	·007538	·011	·021	·022284	·007780	·011	·021	·023677	·008013	·011	·021	·025070	·008240	·011	·021	·026462	·008459	·011	·021
720	·019471	·007277	·011	·021	·020862	·007527	·011	·021	·022253	·007769	·011	·021	·023644	·008002	·011	·021	·025035 –	·008228	·011	·021	·026426	·008448	·011	·021
721	·019444	·007267	·011	·021	·020833	·007517	·011	·021	·022222	·007758	·011	·021	·023611	·007991	·011	·021	·025000	·008217	·011	·021	·026389	·008436	·011	·021
722	·019417	·007257	·011	·021	·020804	·007507	·011	·021	·022191	·007748	·011	·021	·023578	·007980	·011	·021	·024965 +	·008206	·011	·021	·026352	·008425 –	·011	·021
723	·019391	·007248	·011	·021	·020776	·007497	·011	·021	·022161	·007737	·011	·021	·023546	·007969	·011	·021	·024931	·008195 –	·011	·021	·026316	·008413	·011	·021
724	·019364	·007238	·011	·021	·020747	·007486	·011	·021	·022130	·007726	·011	·021	·023513	·007959	·011	·021	·024896	·008183	·011	·021	·026279	·008402	·011	·021
725	·019337	·007228	·011	·021	·020718	·007476	·011	·021	·022099	·007716	·011	·021	·023481	·007948	·011	·021	·024862	·008172	·011	·021	·026243	·008390	·011	·021
726	·019310	·007218	·011	·021	·020690	·007466	·011	·021	·022069	·007705 +	·011	·021	·023448	·007937	·011	·021	·024828	·008161	·011	·021	·026207	·008379	·011	·021
727	·019284	·007208	·011	·021	·020661	·007456	·011	·021	·022039	·007695 –	·011	·021	·023416	·007926	·011	·021	·024793	·008150 +	·011	·021	·026171	·008368	·011	·021
728	·019257	·007198	·011	·021	·020633	·007446	·011	·021	·022008	·007684	·011	·021	·023384	·007915 +	·011	·021	·024759	·008139	·011	·021	·026135 –	·008356	·011	·021
729	·019231	·007188	·011	·021	·020604	·007436	·011	·021	·021978	·007674	·011	·021	·023352	·007905 –	·011	·021	·024725 +	·008128	·011	·021	·026099	·008345 –	·011	·021
730	·019204	·007179	·011	·021	·020576	·007425 +	·011	·021	·021948	·007664	·011	·021	·023320	·007894	·011	·021	·024691	·008117	·011	·021	·026063	·008334	·011	·021
731	·019178	·007169	·011	·021	·020548	·007415 +	·011	·021	·021918	·007653	·011	·021	·023288	·007883	·011	·021	·024658	·008106	·011	·021	·026027	·008322	·011	·021
732	·019152	·007159	·011	·021	·020520	·007405 +	·011	·021	·021888	·007643	·011	·021	·023256	·007873	·011	·021	·024624	·008095 +	·011	·021	·025992	·008311	·011	·021
733	·019126	·007150 –	·011	·021	·020492	·007395 +	·011	·021	·021858	·007633	·011	·021	·023224	·007862	·011	·021	·024590	·008084	·011	·021	·025956	·008300	·011	·021
734	·019100	·007140	·011	·021	·020464	·007385 +	·011	·021	·021828	·007622	·011	·021	·023192	·007851	·011	·021	·024557	·008073	·011	·021	·025921	·008289	·011	·021
735	·019074	·007130	·011	·021	·020436	·007375 +	·011	·021	·021798	·007612	·011	·021	·023161	·007841	·011	·021	·024523	·008063	·011	·021	·025886	·008278	·011	·021
736	·019048	·007121	·011	·021	·020408	·007366	·011	·021	·021769	·007602	·011	·021	·023129	·007830	·011	·021	·024490	·008052	·011	·021	·025850 +	·008267	·011	·021
737	·019022	·007111	·011	·021	·020380	·007356	·011	·021	·021739	·007592	·011	·021	·023098	·007820	·011	·021	·024457	·008041	·011	·021	·025815 +	·008256	·011	·021
738	·018996	·007102	·011	·021	·020353	·007346	·011	·021	·021710	·007581	·011	·021	·023066	·007809	·011	·021	·024423	·008030	·011	·021	·025780	·008244	·011	·021
739	·018970	·007092	·011	·021	·020325 +	·007336	·011	·021	·021680	·007571	·011	·021	·023035 +	·007799	·011	·021	·024390	·008019	·011	·021	·025745 +	·008233	·011	·021
740	·018945 –	·007083	·011	·021	·020298	·007326	·011	·021	·021651	·007561	·011	·021	·023004	·007789	·011	·021	·024357	·008009	·011	·021	·025710	·008223	·011	·021
741	·018919	·007073	·011	·021	·020270	·007316	·011	·021	·021622	·007551	·011	·021	·022973	·007778	·011	·021	·024324	·007998	·011	·021	·025676	·008212	·011	·021
742	·018893	·007064	·011	·021	·020243	·007307	·011	·021	·021592	·007541	·011	·021	·022942	·007768	·011	·021	·024291	·007987	·011	·021	·025641	·008201	·011	·021
743	·018868	·007054	·011	·021	·020216	·007297	·011	·021	·021563	·007531	·011	·021	·022911	·007757	·011	·021	·024259	·007977	·011	·021	·025606	·008190	·011	·021
744	·018843	·007045 –	·011	·021	·020188	·007287	·011	·021	·021534	·007521	·011	·021	·022880	·007747	·011	·021	·024226	·007966	·011	·021	·025572	·008179	·011	·021
745	·018817	·007036	·011	·021	·020161	·007277	·011	·021	·021505 +	·007511	·011	·021	·028849	·007737	·011	·021	·024194	·007956	·011	·021	·025538	·008168	·011	·021
746	·018792	·007026	·011	·021	·020134	·007268	·011	·021	·021477	·007501	·011	·021	·022819	·007727	·011	·021	·024161	·007945 +	·011	·021	·025503	·008157	·011	·021
747	·018767	·007017	·011	·021	·020107	·007258	·011	·021	·021448	·007491	·011	·021	·022788	·007716	·011	·021	·024129	·007935 –	·011	·021	·025469	·008146	·011	·021
748	·018742	·007008	·011	·021	·020080	·007249	·011	·021	·021419	·007481	·011	·021	·022758	·007706	·011	·021	·024096	·007924	·011	·021	·025435 +	·008136	·011	·021
749	·018717	·006998	·011	·021	·020053	·007239	·011	·021	·021390	·007471	·011	·021	·022727	·007696	·011	·021	·024064	·007914	·011	·021	·025401	·008125 –	·011	·021
750	·018692	·006989	·011	·021	·020027	·007229	·011	·021	·021362	·007461	·011	·021	·022697	·007686	·011	·021	·024032	·007903	·011	·021	·025367	·008114	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	n = 3: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 3·50	P_2 λ_2 = 2·94	n = 4: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 3·20	P_2 λ_2 = 2·80
751	·002667	·002660	·011	·019	·004000	·003255 +	·013	·020
752	·002663	·002656	·011	·019	·003995 −	·003251	·013	·020
753	·002660	·002653	·011	·019	·003989	·003246	·013	·020
754	·002656	·002649	·011	·019	·003984	·003242	·013	·020
755	·002653	·002645 +	·011	·019	·003979	·003238	·013	·020
756	·002649	·002642	·011	·019	·003974	·003234	·013	·020
757	·002646	·002639	·011	·019	·003968	·003229	·013	·020
758	·002642	·002635 +	·011	·019	·003963	·003225 +	·013	·020
759	·002639	·002632	·011	·019	·003958	·003221	·013	·020
760	·002635 +	·002628	·011	·019	·003953	·003217	·013	·020
761	·002632	·002625 −	·011	·019	·003947	·003212	·013	·020
762	·002628	·002621	·011	·019	·003942	·003208	·013	·020
763	·002625 −	·002618	·011	·019	·003937	·003204	·013	·020
764	·002621	·002614	·011	·019	·003932	·003200	·013	·020
765	·002618	·002611	·011	·019	·003927	·003196	·013	·020
766	·002614	·002608	·011	·019	·003922	·003191	·013	·020
767	·002611	·002604	·011	·019	·003916	·003187	·013	·020
768	·002608	·002601	·011	·019	·003911	·003183	·013	·020
769	·002604	·002597	·011	·019	·003906	·003179	·013	·020
770	·002601	·002594	·011	·019	·003901	·003175 −	·013	·020
771	·002597	·002591	·011	·019	·003896	·003171	·013	·020
772	·002594	·002587	·011	·019	·003891	·003167	·013	·020
773	·002591	·002584	·011	·019	·003886	·003163	·013	·020
774	·002587	·002581	·011	·019	·003881	·003159	·013	·020
775	·002584	·002577	·011	·019	·003876	·003155 −	·013	·020
776	·002581	·002574	·011	·019	·003871	·003150 +	·013	·020
777	·002577	·002571	·011	·019	·003866	·003146	·013	·020
778	·002574	·002567	·011	·019	·003861	·003142	·013	·020
779	·002571	·002564	·011	·019	·003856	·003138	·013	·020
780	·002567	·002561	·011	·019	·003851	·003134	·013	·020
781	·002564	·002558	·011	·019	·003846	·003130	·013	·020
782	·002561	·002554	·011	·019	·003841	·003126	·013	·020
783	·002558	·002551	·011	·019	·003836	·003122	·013	·020
784	·002554	·002548	·011	·019	·003831	·003118	·013	·020
785	·002551	·002545 −	·011	·019	·003827	·003114	·013	·020
786	·002548	·002541	·011	·019	·003822	·003110	·013	·020
787	·002545 −	·002538	·011	·019	·003817	·003106	·013	·020
788	·002541	·002535 −	·011	·019	·003812	·003103	·013	·020
789	·002538	·002532	·011	·019	·003807	·003099	·013	·020
790	·002535 −	·002528	·011	·019	·003802	·003095 −	·013	·020
791	·002532	·002525 +	·011	·019	·003797	·003091	·013	·020
792	·002528	·002522	·011	·019	·003793	·003087	·013	·020
793	·002525 +	·002519	·011	·019	·003788	·003083	·013	·020
794	·002522	·002516	·011	·019	·003783	·003079	·013	·020
795	·002519	·002513	·011	·019	·003778	·003075 +	·013	·020
796	·002516	·002509	·011	·019	·003774	·003071	·013	·020
797	·002513	·002506	·011	·019	·003769	·003068	·013	·020
798	·002509	·002503	·011	·019	·003764	·003064	·013	·020
799	·002506	·002500 −	·011	·019	·003759	·003060	·013	·020
800	·002503	·002497	·011	·019	·003755 −	·003056	·013	·020

N = size of sample	n = 5: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 3·14	P_2 λ_2 = 2·68	n = 6: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 3·11	P_2 λ_2 = 2·63
751	·005333	·003756	·012	·021	·006667	·004197	·011	·021
752	·005326	·003751	·012	·021	·006658	·004191	·011	·021
753	·005319	·003746	·012	·021	·006649	·004186	·011	·021
754	·005312	·003741	·012	·021	·006640	·004180	·011	·021
755	·005305 +	·003736	·012	·021	·006631	·004175 −	·011	·021
756	·005298	·003731	·012	·021	·006623	·004169	·011	·021
757	·005291	·003726	·012	·021	·006614	·004164	·011	·021
758	·005284	·003722	·012	·021	·006605 +	·004158	·011	·021
759	·005277	·003717	·012	·021	·006596	·004153	·011	·021
760	·005270	·003712	·012	·021	·006588	·004147	·011	·021
761	·005263	·003707	·012	·021	·006579	·004142	·011	·021
762	·005256	·003702	·012	·021	·006570	·004136	·011	·021
763	·005249	·003697	·012	·021	·006562	·004131	·011	·021
764	·005242	·003692	·012	·021	·006553	·004126	·011	·021
765	·005236	·003688	·012	·021	·006545 −	·004120	·011	·021
766	·005229	·003683	·012	·021	·006536	·004115 −	·011	·021
767	·005222	·003678	·012	·021	·006527	·004109	·011	·021
768	·005215 +	·003673	·012	·021	·006519	·004104	·011	·021
769	·005208	·003668	·012	·021	·006510	·004099	·011	·021
770	·005202	·003664	·012	·021	·006502	·004093	·011	·021
771	·005195 −	·003659	·012	·021	·006494	·004088	·011	·021
772	·005188	·003654	·012	·021	·006485 +	·004083	·011	·021
773	·005181	·003650 −	·012	·021	·006477	·004078	·011	·021
774	·005175 −	·003645 −	·012	·021	·006468	·004072	·011	·021
775	·005168	·003640	·012	·021	·006460	·004067	·011	·021
776	·005161	·003635 +	·012	·021	·006452	·004062	·011	·021
777	·005155 −	·003631	·012	·021	·006443	·004057	·011	·021
778	·005148	·003626	·012	·021	·006435 +	·004052	·011	·021
779	·005141	·003622	·012	·021	·006427	·004046	·011	·021
780	·005135 −	·003617	·012	·021	·006418	·004041	·011	·021
781	·005128	·003612	·012	·021	·006410	·004036	·011	·021
782	·005122	·003608	·012	·021	·006402	·004031	·011	·021
783	·005115 +	·003603	·012	·021	·006394	·004026	·011	·021
784	·005109	·003598	·012	·021	·006386	·004021	·011	·021
785	·005102	·003594	·012	·021	·006378	·004016	·011	·021
786	·005096	·003589	·012	·021	·006369	·004010	·011	·021
787	·005089	·003585 −	·012	·021	·006361	·004005 +	·011	·021
788	·005083	·003580	·012	·021	·006353	·004000	·011	·021
789	·005076	·003576	·012	·021	·006345 +	·003995 +	·011	·021
790	·005070	·003571	·012	·021	·006337	·003990	·011	·021
791	·005063	·003567	·012	·021	·006329	·003985 +	·011	·021
792	·005057	·003562	·012	·021	·006321	·003980	·011	·021
793	·005051	·003558	·012	·021	·006313	·003975 +	·011	·021
794	·005044	·003553	·012	·021	·006305 +	·003970	·011	·021
795	·005038	·003549	·012	·021	·006297	·003965 +	·011	·021
796	·005031	·003544	·012	·021	·006289	·003960	·011	·021
797	·005025 +	·003540	·012	·021	·006281	·003955 +	·011	·021
798	·005019	·003535 +	·012	·021	·006274	·003950 +	·011	·021
799	·005013	·003531	·012	·021	·006266	·003945 +	·011	·021
800	·005006	·003527	·012	·021	·006258	·003940	·011	·021

N = size of sample	n = 7: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 3·08	P_2 λ_2 = 2·58	n = 8: $\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 3·02	P_2 λ_2 = 2·54
751	·008000	·004594	·010	·021	·009333	·004959	·011	·021
752	·007989	·004588	·010	·021	·009321	·004952	·011	·021
753	·007979	·004582	·010	·021	·009309	·004946	·011	·021
754	·007968	·004576	·010	·021	·009296	·004939	·011	·021
755	·007958	·004570	·010	·021	·009284	·004933	·011	·021
756	·007947	·004564	·010	·021	·009272	·004926	·011	·021
757	·007937	·004558	·010	·021	·009259	·004920	·011	·021
758	·007926	·004552	·010	·021	·009247	·004913	·011	·021
759	·007916	·004546	·010	·021	·009235 −	·004907	·011	·021
760	·007905 +	·004540	·010	·021	·009223	·004900	·011	·021
761	·007895 −	·004534	·010	·021	·009211	·004894	·011	·021
762	·007884	·004528	·010	·021	·009198	·004888	·011	·021
763	·007874	·004522	·010	·021	·009186	·004881	·011	·021
764	·007864	·004516	·010	·021	·009174	·004875 −	·011	·021
765	·007853	·004510	·010	·021	·009162	·004869	·011	·021
766	·007843	·004505 −	·010	·021	·009150 +	·004862	·011	·021
767	·007833	·004499	·010	·021	·009138	·004856	·011	·021
768	·007823	·004493	·010	·021	·009126	·004850 −	·011	·021
769	·007813	·004487	·010	·021	·009115 −	·004843	·011	·021
770	·007802	·004481	·010	·021	·009103	·004837	·011	·021
771	·007792	·004475 +	·010	·021	·009091	·004831	·011	·021
772	·007782	·004470	·010	·021	·009079	·004825 −	·011	·021
773	·007772	·004464	·010	·021	·009067	·004818	·011	·021
774	·007762	·004458	·010	·021	·009056	·004812	·011	·021
775	·007752	·004452	·010	·021	·009044	·004806	·011	·021
776	·007742	·004447	·010	·021	·009032	·004800	·011	·021
777	·007732	·004441	·010	·021	·009021	·004794	·011	·021
778	·007722	·004435 +	·010	·021	·009009	·004788	·011	·021
779	·007712	·004430	·010	·021	·008997	·004782	·011	·021
780	·007702	·004424	·010	·021	·008986	·004775 +	·011	·021
781	·007692	·004418	·010	·021	·008974	·004769	·011	·021
782	·007682	·004413	·010	·021	·008963	·004763	·011	·021
783	·007673	·004407	·010	·021	·008951	·004757	·011	·021
784	·007663	·004402	·010	·021	·008940	·004751	·011	·021
785	·007653	·004396	·010	·021	·008929	·004745 +	·011	·021
786	·007643	·004390	·010	·021	·008917	·004739	·011	·021
787	·007634	·004385	·010	·021	·008906	·004733	·011	·021
788	·007624	·004379	·010	·021	·008895 −	·004727	·011	·021
789	·007614	·004374	·010	·021	·008883	·004721	·011	·021
790	·007605 −	·004368	·010	·021	·008872	·004715 +	·011	·021
791	·007595 −	·004363	·010	·021	·008861	·004709	·011	·021
792	·007585 +	·004357	·010	·021	·008850 −	·004703	·011	·021
793	·007576	·004352	·010	·021	·008838	·004697	·011	·021
794	·007566	·004346	·010	·021	·008827	·004692	·011	·021
795	·007557	·004341	·010	·021	·008816	·004686	·011	·021
796	·007547	·004335 +	·010	·021	·008805 +	·004680	·011	·021
797	·007538	·004330	·010	·021	·008794	·004674	·011	·021
798	·007528	·004325 −	·010	·021	·008783	·004668	·011	·021
799	·007519	·004319	·010	·021	·008772	·004662	·011	·021
800	·007509	·004314	·010	·021	·008761	·004657	·011	·021

TABLE IV.—(*continued*).

N — size of sample	9: $\bar{\eta}^2$	9: $\sigma_{\bar{\eta}^2}$	9: P_1 $\lambda_1 = 2{\cdot}96$	9: P_2 $\lambda_2 = 2{\cdot}50$	10: $\bar{\eta}^2$	10: $\sigma_{\bar{\eta}^2}$	10: P_1 $\lambda_1 = 2{\cdot}92$	10: P_2 $\lambda_2 = 2{\cdot}47$	11: $\bar{\eta}^2$	11: $\sigma_{\bar{\eta}^2}$	11: P_1 $\lambda_1 = 2{\cdot}88$	11: P_2 $\lambda_2 = 2{\cdot}44$
751	·010667	·005298	·011	·021	·012000	·005615+	·011	·021	·013333	·005915+	·011	·021
752	·010652	·005291	·011	·021	·011984	·005608	·011	·021	·013316	·005907	·011	·021
753	·010638	·005284	·011	·021	·011968	·005601	·011	·021	·013298	·005899	·011	·021
754	·010624	·005277	·011	·021	·011952	·005593	·011	·021	·013280	·005892	·011	·021
755	·010610	·005270	·011	·021	·011936	·005586	·011	·021	·013263	·005884	·011	·021
756	·010596	·005263	·011	·021	·011921	·005578	·011	·021	·013245+	·005876	·011	·021
757	·010582	·005256	·011	·021	·011905−	·005571	·011	·021	·013228	·005869	·011	·021
758	·010568	·005249	·011	·021	·011889	·005564	·011	·021	·013210	·005861	·011	·021
759	·010554	·005242	·011	·021	·011873	·005556	·011	·021	·013193	·005853	·011	·021
760	·010540	·005235+	·011	·021	·011858	·005549	·011	·021	·013175+	·005846	·011	·021
761	·010526	·005229	·011	·021	·011842	·005542	·011	·021	·013158	·005838	·011	·021
762	·010512	·005222	·011	·021	·011827	·005535−	·011	·021	·013141	·005830	·011	·021
763	·010499	·005215−	·011	·021	·011811	·005528	·011	·021	·013123	·005823	·011	·021
764	·010485−	·005208	·011	·021	·011796	·005520	·011	·021	·013106	·005815+	·011	·021
765	·010471	·005201	·011	·021	·011780	·005513	·011	·021	·013089	·005808	·011	·021
766	·010458	·005195−	·011	·021	·011765−	·005506	·011	·021	·013072	·005800	·011	·021
767	·010444	·005188	·011	·021	·011749	·005499	·011	·021	·013055−	·005793	·011	·021
768	·010430	·005181	·011	·021	·011734	·005492	·011	·021	·013038	·005785+	·011	·021
769	·010417	·005174	·011	·021	·011719	·005485−	·011	·021	·013021	·005778	·011	·021
770	·010403	·005168	·011	·021	·011704	·005478	·011	·021	·013004	·005770	·011	·021
771	·010390	·005161	·011	·021	·011688	·005471	·011	·021	·012987	·005763	·011	·021
772	·010376	·005154	·011	·021	·011673	·005463	·011	·021	·012970	·005755+	·011	·021
773	·010363	·005148	·011	·021	·011658	·005456	·011	·021	·012953	·005748	·011	·021
774	·010349	·005141	·011	·021	·011643	·005449	·011	·021	·012937	·005740	·011	·021
775	·010336	·005135−	·011	·021	·011628	·005442	·011	·021	·012920	·005733	·011	·021
776	·010323	·005128	·011	·021	·011613	·005435+	·011	·021	·012903	·005726	·011	·021
777	·010309	·005121	·011	·021	·011598	·005429	·011	·021	·012887	·005718	·011	·021
778	·010296	·005115−	·011	·021	·011583	·005422	·011	·021	·012870	·005711	·011	·021
779	·010283	·005108	·011	·021	·011568	·005415−	·011	·021	·012853	·005704	·011	·021
780	·010270	·005102	·011	·021	·011553	·005408	·011	·021	·012837	·005697	·011	·021
781	·010256	·005095+	·011	·021	·011538	·005401	·011	·021	·012821	·005689	·011	·021
782	·010243	·005089	·011	·021	·011524	·005394	·011	·021	·012804	·005682	·011	·021
783	·010230	·005082	·011	·021	·011509	·005387	·011	·021	·012788	·005675−	·011	·021
784	·010217	·005076	·011	·021	·011494	·005380	·011	·021	·012771	·005668	·011	·021
785	·010204	·005069	·011	·021	·011480	·005374	·011	·021	·012755+	·005661	·011	·021
786	·010191	·005063	·011	·021	·011465−	·005367	·011	·021	·012739	·005653	·011	·021
787	·010178	·005057	·011	·021	·011450+	·005360	·011	·021	·012723	·005646	·011	·021
788	·010165+	·005050+	·011	·021	·011436	·005353	·011	·021	·012706	·005639	·011	·021
789	·010152	·005044	·011	·021	·011421	·005346	·011	·021	·012690	·005632	·011	·021
790	·010139	·005038	·011	·021	·011407	·005340	·011	·021	·012674	·005625−	·011	·021
791	·010127	·005031	·011	·021	·011392	·005333	·011	·021	·012658	·005618	·011	·021
792	·010114	·005025−	·011	·021	·011378	·005326	·011	·021	·012642	·005611	·011	·021
793	·010101	·005019	·011	·021	·011364	·005320	·011	·021	·012626	·005604	·011	·021
794	·010088	·005012	·011	·021	·011349	·005313	·011	·021	·012610	·005597	·011	·021
795	·010076	·005006	·011	·021	·011335+	·005306	·011	·021	·012594	·005590	·011	·021
796	·010063	·005000−	·011	·021	·011321	·005300	·011	·021	·012579	·005583	·011	·021
797	·010050+	·004994	·011	·021	·011307	·005293	·011	·021	·012563	·005576	·011	·021
798	·010038	·004987	·011	·021	·011292	·005286	·011	·021	·012547	·005569	·011	·021
799	·010025+	·004981	·011	·021	·011278	·005280	·011	·021	·012531	·005562	·011	·021
800	·010013	·004975−	·011	·021	·011264	·005273	·011	·021	·012516	·005555+	·011	·021

N — size of sample	12: $\bar{\eta}^2$	12: $\sigma_{\bar{\eta}^2}$	12: P_1 $\lambda_1 = 2{\cdot}84$	12: P_2 $\lambda_2 = 2{\cdot}42$	13: $\bar{\eta}^2$	13: $\sigma_{\bar{\eta}^2}$	13: P_1 $\lambda_1 = 2{\cdot}80$	13: P_2 $\lambda_2 = 2{\cdot}40$	14: $\bar{\eta}^2$	14: $\sigma_{\bar{\eta}^2}$	14: P_1 $\lambda_1 = 2{\cdot}79$	14: P_2 $\lambda_2 = 2{\cdot}39$
751	·014667	·006200	·011	·022	·016000	·006471	·011	·022	·017333	·006731	·011	·021
752	·014647	·006191	·011	·022	·015979	·006462	·011	·022	·017310	·006722	·011	·021
753	·014628	·006183	·011	·022	·015957	·006454	·011	·022	·017287	·006713	·011	·021
754	·014608	·006175+	·011	·022	·015936	·006445+	·011	·022	·017264	·006704	·011	·021
755	·014589	·006167	·011	·022	·015915+	·006437	·011	·022	·017241	·006695+	·011	·021
756	·014570	·006159	·011	·022	·015894	·006428	·011	·022	·017219	·006686	·011	·021
757	·014550+	·006151	·011	·022	·015873	·006420	·011	·022	·017196	·006678	·011	·021
758	·014531	·006143	·011	·022	·015852	·006412	·011	·022	·017173	·006669	·011	·021
759	·014512	·006135−	·011	·022	·015831	·006403	·011	·022	·017150+	·006660	·011	·021
760	·014493	·006127	·011	·022	·015810	·006395−	·011	·022	·017128	·006652	·011	·021
761	·014474	·006119	·011	·022	·015789	·006387	·011	·022	·017105+	·006643	·011	·021
762	·014455−	·006111	·011	·022	·015769	·006378	·011	·022	·017083	·006634	·011	·021
763	·014436	·006103	·011	·022	·015748	·006370	·011	·022	·017060	·006626	·011	·021
764	·014417	·006095−	·011	·022	·015727	·006362	·011	·022	·017038	·006617	·011	·021
765	·014398	·006087	·011	·022	·015707	·006353	·011	·022	·017016	·006608	·011	·021
766	·014379	·006079	·011	·022	·015686	·006345+	·011	·022	·016993	·006600	·011	·021
767	·014360	·006071	·011	·022	·015666	·006337	·011	·022	·016971	·006591	·011	·021
768	·014342	·006063	·011	·022	·015645+	·006329	·011	·022	·016949	·006583	·011	·021
769	·014323	·006056	·011	·022	·015625	·006321	·011	·022	·016927	·006574	·011	·021
770	·014304	·006048	·011	·022	·015605−	·006312	·011	·022	·016905+	·006566	·011	·021
771	·014286	·006040	·011	·022	·015584	·006304	·011	·022	·016883	·006557	·011	·021
772	·014267	·006032	·011	·022	·015564	·006296	·011	·022	·016861	·006549	·011	·021
773	·014249	·006024	·011	·022	·015544	·006288	·011	·022	·016839	·006541	·011	·021
774	·014230	·006017	·011	·022	·015524	·006280	·011	·022	·016818	·006532	·011	·021
775	·014212	·006009	·011	·022	·015504	·006272	·011	·022	·016796	·006524	·011	·021
776	·014194	·006001	·011	·022	·015484	·006264	·011	·022	·016774	·006516	·011	·021
777	·014175+	·005994	·011	·022	·015464	·006256	·011	·022	·016753	·006507	·011	·021
778	·014157	·005986	·011	·022	·015444	·006248	·011	·022	·016731	·006499	·011	·021
779	·014139	·005978	·011	·022	·015424	·006240	·011	·022	·016710	·006491	·011	·021
780	·014121	·005971	·011	·022	·015404	·006232	·011	·022	·016688	·006482	·011	·021
781	·014103	·005963	·011	·022	·015385−	·006224	·011	·022	·016667	·006474	·011	·021
782	·014085−	·005956	·011	·022	·015365−	·006216	·011	·022	·016645+	·006466	·011	·021
783	·014066	·005948	·011	·022	·015345+	·006208	·011	·022	·016624	·006458	·011	·021
784	·014049	·005941	·011	·022	·015326	·006201	·011	·022	·016603	·006450−	·011	·021
785	·014031	·005933	·011	·022	·015306	·006193	·011	·022	·016582	·006441	·011	·021
786	·014013	·005925+	·011	·022	·015287	·006185−	·011	·022	·016561	·006433	·011	·021
787	·013995−	·005918	·011	·022	·015267	·006177	·011	·022	·016539	·006425+	·011	·021
788	·013977	·005911	·011	·022	·015248	·006169	·011	·022	·016518	·006417	·011	·021
789	·013959	·005903	·011	·022	·015228	·006162	·011	·022	·016497	·006409	·011	·021
790	·013942	·005896	·011	·022	·015209	·006154	·011	·022	·016477	·006401	·011	·021
791	·013924	·005888	·011	·022	·015190	·006146	·011	·022	·016456	·006393	·011	·021
792	·013906	·005881	·011	·022	·015171	·006138	·011	·022	·016435−	·006385+	·011	·021
793	·013889	·005874	·011	·022	·015152	·006131	·011	·022	·016414	·006377	·011	·021
794	·013871	·005866	·011	·022	·015132	·006123	·011	·022	·016393	·006369	·011	·021
795	·013854	·005859	·011	·022	·015113	·006115+	·011	·022	·016373	·006361	·011	·021
796	·013836	·005852	·011	·022	·015094	·006108	·011	·022	·016352	·006353	·011	·021
797	·013819	·005844	·011	·022	·015075+	·006100	·011	·022	·016332	·006345+	·011	·021
798	·013802	·005837	·011	·022	·015056	·006093	·011	·022	·016311	·006337	·011	·021
799	·013784	·005830	·011	·022	·015038	·006085+	·011	·022	·016291	·006330	·011	·021
800	·013767	·005823	·011	·022	·015019	·006078	·011	·022	·016270	·006322	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	15				16				17			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·78	P_2 λ_2 = 2·38	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·77	P_2 λ_2 = 2·37	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·76	P_2 λ_2 = 2·36
751	·018667	·006980	·011	·021	·020000	·007220	·011	·021	·021333	·007452	·011	·021
752	·018642	·006971	·011	·021	·019973	·007210	·011	·021	·021305 −	·007442	·011	·021
753	·018617	·006962	·011	·021	·019947	·007201	·011	·021	·021277	·007432	·011	·021
754	·018592	·006952	·011	·021	·019920	·007192	·011	·021	·021248	·007422	·011	·021
755	·018568	·006943	·011	·021	·019894	·007182	·011	·021	·021220	·007413	·011	·021
756	·018543	·006934	·011	·021	·019868	·007173	·011	·021	·021192	·007403	·011	·021
757	·018519	·006925 +	·011	·021	·019841	·007163	·011	·021	·021164	·007393	·011	·021
758	·018494	·006916	·011	·021	·019815 +	·007154	·011	·021	·021136	·007384	·011	·021
759	·018470	·006907	·011	·021	·019789	·007145 −	·011	·021	·021108	·007374	·011	·021
760	·018445 +	·006898	·011	·021	·019763	·007135 +	·011	·021	·021080	·007364	·011	·021
761	·018421	·006889	·011	·021	·019737	·007126	·011	·021	·021053	·007355 −	·011	·021
762	·018397	·006880	·011	·021	·019711	·007117	·011	·021	·021025 −	·007345 +	·011	·021
763	·018373	·006871	·011	·021	·019685 +	·007108	·011	·021	·020997	·007336	·011	·021
764	·018349	·006862	·011	·021	·019659	·007098	·011	·021	·020970	·007326	·011	·021
765	·018325 −	·006853	·011	·021	·019634	·007089	·011	·021	·020942	·007317	·011	·021
766	·018301	·006844	·011	·021	·019608	·007080	·011	·021	·020915 +	·007307	·011	·021
767	·018277	·006836	·011	·021	·019582	·007071	·011	·021	·020888	·007298	·011	·021
768	·018253	·006827	·011	·021	·019557	·007062	·011	·021	·020860	·007288	·011	·021
769	·018229	·006818	·011	·021	·019531	·007053	·011	·021	·020833	·007279	·011	·021
770	·018205 +	·006809	·011	·021	·019506	·007044	·011	·021	·020806	·007270	·011	·021
771	·018182	·006800	·011	·021	·019481	·007035 −	·011	·021	·020779	·007260	·011	·021
772	·018158	·006792	·011	·021	·019455 +	·007026	·011	·021	·020752	·007251	·011	·021
773	·018135 −	·006783	·011	·021	·019430	·007017	·011	·021	·020725 +	·007242	·011	·021
774	·018111	·006774	·011	·021	·019405 −	·007008	·011	·021	·020699	·007233	·011	·021
775	·018088	·006766	·011	·021	·019380	·006999	·011	·021	·020672	·007223	·011	·021
776	·018065 −	·006757	·011	·021	·019355 −	·006990	·011	·021	·020645 +	·007214	·011	·021
777	·018041	·006748	·011	·021	·019330	·006981	·011	·021	·020619	·007205 −	·011	·021
778	·018018	·006740	·011	·021	·019305 +	·006972	·011	·021	·020592	·007196	·011	·021
779	·017995 −	·006731	·011	·021	·019280	·006963	·011	·021	·020566	·007187	·011	·021
780	·017972	·006723	·011	·021	·019255 +	·006954	·011	·021	·020539	·007178	·011	·021
781	·017949	·006714	·011	·021	·019231	·006945 +	·011	·021	·020513	·007168	·011	·021
782	·017926	·006706	·011	·021	·019206	·006937	·011	·021	·020487	·007159	·011	·021
783	·017903	·006697	·011	·021	·019182	·006928	·011	·021	·020460	·007150 +	·011	·021
784	·017880	·006689	·011	·021	·019157	·006919	·011	·021	·020434	·007141	·011	·021
785	·017857	·006680	·011	·021	·019133	·006910	·011	·021	·020408	·007132	·011	·021
786	·017834	·006672	·011	·021	·019108	·006902	·011	·021	·020382	·007123	·011	·021
787	·017812	·006663	·011	·021	·019084	·006893	·011	·021	·020356	·007114	·011	·021
788	·017789	·006655 +	·011	·021	·019060	·006884	·011	·021	·020330	·007105 +	·011	·021
789	·017766	·006647	·011	·021	·019036	·006876	·011	·021	·020305 −	·007096	·011	·021
790	·017744	·006638	·011	·021	·019011	·006867	·011	·021	·020279	·007088	·011	·021
791	·017722	·006630	·011	·021	·018987	·006858	·011	·021	·020253	·007079	·011	·021
792	·017699	·006622	·011	·021	·018963	·006850 −	·011	·021	·020228	·007070	·011	·021
793	·017677	·006614	·011	·021	·018939	·006841	·011	·021	·020202	·007061	·011	·021
794	·017654	·006605 +	·011	·021	·018916	·006833	·011	·021	·020177	·007052	·011	·021
795	·017632	·006597	·011	·021	·018892	·006824	·011	·021	·020151	·007043	·011	·021
796	·017610	·006589	·011	·021	·018868	·006816	·011	·021	·020126	·007035 −	·011	·021
797	·017588	·006581	·011	·021	·018844	·006807	·011	·021	·020101	·007026	·011	·021
798	·017566	·006572	·011	·021	·018821	·006799	·011	·021	·020075 +	·007017	·011	·021
799	·017544	·006564	·011	·021	·018797	·006790	·011	·021	·020050 +	·007009	·011	·021
800	·017522	·006556	·011	·021	·018773	·006782	·011	·021	·020025 +	·007000	·011	·021

N = size of sample	18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·75	P_2 λ_2 = 2·35	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·74	P_2 λ_2 = 2·34	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 λ_1 = 2·73	P_2 λ_2 = 2·33
751	·022667	·007676	·011	·021	·024000	·007893	·011	·021	·025333	·008104	·011	·021
752	·022636	·007666	·011	·021	·023968	·007883	·011	·021	·025300	·008093	·011	·021
753	·022606	·007656	·011	·021	·023936	·007872	·011	·021	·025266	·008082	·011	·021
754	·022576	·007646	·011	·021	·023904	·007862	·011	·021	·025232	·008072	·011	·021
755	·022546	·007636	·011	·021	·023873	·007852	·011	·021	·025199	·008061	·011	·021
756	·022517	·007626	·011	·021	·023841	·007841	·011	·021	·025166	·008051	·011	·021
757	·022487	·007616	·011	·021	·023810	·007831	·011	·021	·025132	·008040	·011	·021
758	·022457	·007606	·011	·021	·023778	·007821	·011	·021	·025099	·008030	·011	·021
759	·022427	·007596	·011	·021	·023747	·007811	·011	·021	·025066	·008019	·011	·021
760	·022398	·007586	·011	·021	·023715 +	·007801	·011	·021	·025033	·008009	·011	·021
761	·022368	·007576	·011	·021	·023684	·007790	·011	·021	·025000	·007999	·011	·021
762	·022339	·007566	·011	·021	·023653	·007780	·011	·021	·024967	·007988	·011	·021
763	·022310	·007556	·011	·021	·023622	·007770	·011	·021	·024934	·007978	·011	·021
764	·022280	·007547	·011	·021	·023591	·007760	·011	·021	·024902	·007968	·011	·021
765	·022251	·007537	·011	·021	·023560	·007750 +	·011	·021	·024869	·007957	·011	·021
766	·022222	·007527	·011	·021	·023529	·007740	·011	·021	·024837	·007947	·011	·021
767	·022193	·007517	·011	·021	·023499	·007730	·011	·021	·024804	·007937	·011	·021
768	·022164	·007508	·011	·021	·023468	·007720	·011	·021	·024772	·007927	·011	·021
769	·022135 +	·007498	·011	·021	·023437	·007710	·011	·021	·024740	·007916	·011	·021
770	·022107	·007489	·011	·021	·023407	·007700	·011	·021	·024707	·007906	·011	·021
771	·022078	·007479	·011	·021	·023377	·007691	·011	·021	·024675 +	·007896	·011	·021
772	·022049	·007469	·011	·021	·023346	·007681	·011	·021	·024643	·007886	·011	·021
773	·022021	·007460	·011	·021	·023316	·007671	·011	·021	·024611	·007876	·011	·021
774	·021992	·007450 +	·011	·021	·023286	·007661	·011	·021	·024580	·007866	·011	·021
775	·021964	·007441	·011	·021	·023256	·007651	·011	·021	·024548	·007856	·011	·021
776	·021935 +	·007431	·011	·021	·023226	·007642	·011	·021	·024516	·007846	·011	·021
777	·021907	·007422	·011	·021	·023196	·007632	·011	·021	·024485 −	·007836	·011	·021
778	·021879	·007412	·011	·021	·023166	·007622	·011	·021	·024453	·007826	·011	·021
779	·021851	·007403	·011	·021	·023136	·007613	·011	·021	·024422	·007816	·011	·021
780	·021823	·007394	·011	·021	·023107	·007603	·011	·021	·024390	·007806	·011	·021
781	·021795 −	·007384	·011	·021	·023077	·007593	·011	·021	·024359	·007796	·011	·021
782	·021767	·007375 −	·011	·021	·023047	·007584	·011	·021	·024328	·007786	·011	·021
783	·021739	·007366	·011	·021	·023018	·007574	·011	·021	·024297	·007777	·011	·021
784	·021711	·007356	·011	·021	·022989	·007565 −	·011	·021	·024266	·007767	·011	·021
785	·021684	·007347	·011	·021	·022959	·007555 +	·011	·021	·024235 −	·007757	·011	·021
786	·021656	·007338	·011	·021	·022930	·007546	·011	·021	·024204	·007747	·011	·021
787	·021628	·007329	·011	·021	·022901	·007536	·011	·021	·024173	·007738	·011	·021
788	·021601	·007319	·011	·021	·022872	·007527	·011	·021	·024142	·007728	·011	·021
789	·021574	·007310	·011	·021	·022843	·007517	·011	·021	·024112	·007718	·011	·021
790	·021546	·007301	·011	·021	·022814	·007508	·011	·021	·024081	·007709	·011	·021
791	·021519	·007292	·011	·021	·022785 −	·007498	·011	·021	·024051	·007699	·011	·021
792	·021492	·007283	·011	·021	·022756	·007489	·011	·021	·024020	·007689	·011	·021
793	·021465 −	·007274	·011	·021	·022727	·007480	·011	·021	·023990	·007680	·011	·021
794	·021438	·007265 −	·011	·021	·022699	·007470	·011	·021	·023960	·007670	·011	·021
795	·021411	·007256	·011	·021	·022670	·007461	·011	·021	·023929	·007661	·011	·021
796	·021384	·007247	·011	·021	·022642	·007452	·011	·021	·023899	·007651	·011	·021
797	·021357	·007238	·011	·021	·022613	·007443	·011	·021	·023869	·007642	·011	·021
798	·021330	·007229	·011	·021	·022585 −	·007433	·011	·021	·023839	·007632	·011	·021
799	·021303	·007220	·011	·021	·022556	·007424	·011	·021	·023810	·007623	·011	·021
800	·021277	·007211	·011	·021	·022528	·007415 +	·011	·021	·023780	·007613	·011	·021

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 $\lambda_1 = 3{\cdot}50$	3: P_2 $\lambda_2 = 2{\cdot}94$	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 $\lambda_1 = 3{\cdot}20$	4: P_2 $\lambda_2 = 2{\cdot}80$	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 $\lambda_1 = 3{\cdot}14$	5: P_2 $\lambda_2 = 2{\cdot}68$
801	·002500	·002494	·011	·019	·003750	·003052	·013	·020	·005000	·003522	·012	·021
802	·002497	·002491	·011	·019	·003745 +	·003049	·013	·020	·004994	·003518	·012	·021
803	·002494	·002488	·011	·019	·003741	·003045 −	·013	·020	·004988	·003514	·012	·021
804	·002491	·002484	·011	·019	·003736	·003041	·013	·020	·004981	·003509	·012	·021
805	·002488	·002481	·011	·019	·003731	·003037	·013	·020	·004975 +	·003505 −	·012	·021
806	·002484	·002478	·011	·019	·003727	·003033	·013	·020	·004969	·003500	·012	·021
807	·002481	·002475 +	·011	·019	·003722	·003030	·013	·020	·004963	·003496	·012	·021
808	·002478	·002472	·011	·019	·003717	·003026	·013	·020	·004957	·003492	·012	·021
809	·002475 +	·002469	·011	·019	·003713	·003022	·013	·020	·004950 +	·003488	·012	·021
810	·002472	·002466	·011	·019	·003708	·003018	·013	·020	·004944	·003483	·012	·021
811	·002469	·002463	·011	·019	·003704	·003015 −	·013	·020	·004938	·003479	·012	·021
812	·002466	·002460	·011	·019	·003699	·003011	·013	·020	·004932	·003475 −	·012	·021
813	·002463	·002457	·011	·019	·003695 −	·003007	·013	·020	·004926	·003470	·012	·021
814	·002460	·002454	·011	·019	·003690	·003004	·013	·020	·004920	·003466	·012	·021
815	·002457	·002451	·011	·019	·003686	·003000	·013	·020	·004914	·003462	·012	·021
816	·002454	·002448	·011	·019	·003681	·002996	·013	·020	·004908	·003458	·012	·021
817	·002451	·002445 −	·011	·019	·003676	·002993	·013	·020	·004902	·003453	·012	·021
818	·002448	·002442	·011	·019	·003672	·002989	·013	·020	·004896	·003449	·012	·021
819	·002445 −	·002439	·011	·019	·003667	·002985 +	·013	·020	·004890	·003445 +	·012	·021
820	·002442	·002436	·011	·019	·003663	·002982	·013	·020	·004884	·003441	·012	·021
821	·002439	·002433	·011	·019	·003659	·002978	·013	·020	·004878	·003437	·012	·021
822	·002436	·002430	·011	·019	·003654	·002974	·013	·020	·004872	·003433	·012	·021
823	·002433	·002427	·011	·019	·003650 −	·002971	·013	·020	·004866	·003428	·012	·021
824	·002430	·002424	·011	·019	·003645 +	·002967	·013	·020	·004860	·003424	·012	·021
825	·002427	·002421	·011	·019	·003641	·002964	·013	·020	·004854	·003420	·012	·021
826	·002424	·002418	·011	·019	·003636	·002960	·013	·020	·004848	·003416	·012	·021
827	·002421	·002415 +	·011	·019	·003632	·002957	·013	·020	·004843	·003412	·012	·021
828	·002418	·002413	·011	·019	·003628	·002953	·013	·020	·004837	·003408	·012	·021
829	·002415 +	·002410	·011	·019	·003623	·002949	·013	·020	·004831	·003404	·012	·021
830	·002413	·002407	·011	·019	·003619	·002946	·013	·020	·004825 +	·003400	·012	·021
831	·002410	·002404	·011	·019	·003614	·002942	·013	·020	·004819	·003395 +	·012	·021
832	·002407	·002401	·011	·019	·003610	·002939	·013	·020	·004813	·003391	·012	·021
833	·002404	·002398	·011	·019	·003606	·002935 +	·013	·020	·004808	·003387	·012	·021
834	·002401	·002395 +	·011	·019	·003601	·002932	·013	·020	·004802	·003383	·012	·021
835	·002398	·002392	·011	·019	·003597	·002928	·013	·020	·004796	·003379	·012	·021
836	·002395 +	·002389	·011	·019	·003593	·002925 −	·013	·020	·004790	·003375 +	·012	·021
837	·002392	·002387	·011	·019	·003589	·002921	·013	·020	·004785 −	·003371	·012	·021
838	·002389	·002384	·011	·019	·003584	·002918	·013	·020	·004779	·003367	·012	·021
839	·002387	·002381	·011	·019	·003580	·002914	·013	·020	·004773	·003363	·012	·021
840	·002384	·002378	·011	·019	·003576	·002911	·013	·020	·004768	·003359	·012	·021
841	·002381	·002375 +	·011	·019	·003571	·002907	·013	·020	·004762	·003355 +	·012	·021
842	·002378	·002372	·011	·019	·003567	·002904	·013	·020	·004756	·003351	·012	·021
843	·002375 +	·002370	·011	·019	·003563	·002901	·013	·020	·004751	·003347	·012	·021
844	·002372	·002367	·011	·019	·003559	·002897	·013	·020	·004745 −	·003343	·012	·021
845	·002370	·002364	·011	·019	·003555 −	·002894	·013	·020	·004739	·003339	·012	·021
846	·002367	·002361	·011	·019	·003550 +	·002890	·013	·020	·004734	·003335 +	·012	·021
847	·002364	·002358	·011	·019	·003546	·002887	·013	·020	·004728	·003331	·012	·021
848	·002361	·002356	·011	·019	·003542	·002883	·013	·020	·004723	·003328	·012	·021
849	·002358	·002353	·011	·019	·003538	·002880	·013	·020	·004717	·003324	·012	·021
850	·002356	·002350 +	·011	·019	·003534	·002877	·013	·020	·004711	·003320	·012	·021

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 $\lambda_1 = 3{\cdot}11$	6: P_2 $\lambda_2 = 2{\cdot}63$	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 $\lambda_1 = 3{\cdot}08$	7: P_2 $\lambda_2 = 2{\cdot}58$	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 $\lambda_1 = 3{\cdot}02$	8: P_2 $\lambda_2 = 2{\cdot}54$
801	·006250	·003936	·011	·021	·007500	·004308	·010	·021	·008750	·004651	·011	·021
802	·006242	·003931	·011	·021	·007491	·004303	·010	·021	·008739	·004645 −	·011	·021
803	·006234	·003926	·011	·021	·007481	·004298	·010	·021	·008728	·004639	·011	·021
804	·006227	·003921	·011	·021	·007472	·004292	·010	·021	·008717	·004633	·011	·021
805	·006219	·003916	·011	·021	·007463	·004287	·010	·021	·008706	·004628	·011	·021
806	·006211	·003911	·011	·021	·007453	·004282	·010	·021	·008696	·004622	·011	·021
807	·006203	·003906	·011	·021	·007444	·004277	·010	·021	·008685 −	·004616	·011	·021
808	·006196	·003902	·011	·021	·007435 −	·004271	·010	·021	·008674	·004611	·011	·021
809	·006188	·003897	·011	·021	·007426	·004266	·010	·021	·008663	·004605 −	·011	·021
810	·006180	·003892	·011	·021	·007417	·004261	·010	·021	·008653	·004599	·011	·021
811	·006173	·003887	·011	·021	·007407	·004256	·010	·021	·008642	·004594	·011	·021
812	·006165 +	·003882	·011	·021	·007398	·004250 +	·010	·021	·008631	·004588	·011	·021
813	·006158	·003878	·011	·021	·007389	·004245 +	·010	·021	·008621	·004582	·011	·021
814	·006150 +	·003873	·011	·021	·007380	·004240	·010	·021	·008610	·004577	·011	·021
815	·006143	·003868	·011	·021	·007371	·004235 −	·010	·021	·008600	·004571	·011	·021
816	·006135 −	·003863	·011	·021	·007362	·004230	·010	·021	·008589	·004566	·011	·021
817	·006127	·003859	·011	·021	·007353	·004224	·010	·021	·008578	·004560	·011	·021
818	·006120	·003854	·011	·021	·007344	·004219	·010	·021	·008568	·004555 −	·011	·021
819	·006112	·003849	·011	·021	·007335 −	·004214	·010	·021	·008557	·004549	·011	·021
820	·006105 +	·003845 −	·011	·021	·007326	·004209	·010	·021	·008547	·004543	·011	·021
821	·006098	·003840	·011	·021	·007317	·004204	·010	·021	·008537	·004538	·011	·021
822	·006090	·003835 +	·011	·021	·007308	·004199	·010	·021	·008526	·004532	·011	·021
823	·006083	·003831	·011	·021	·007299	·004194	·010	·021	·008516	·004527	·011	·021
824	·006075 +	·003826	·011	·021	·007290	·004189	·010	·021	·008505 +	·004521	·011	·021
825	·006068	·003821	·011	·021	·007282	·004184	·010	·021	·008495 +	·004516	·011	·021
826	·006061	·003817	·011	·021	·007273	·004179	·010	·021	·008485 −	·004511	·011	·021
827	·006053	·003812	·011	·021	·007264	·004174	·010	·021	·008475 −	·004505 +	·011	·021
828	·006046	·003808	·011	·021	·007255 +	·004168	·010	·021	·008464	·004500 −	·011	·021
829	·006039	·003803	·011	·021	·007246	·004163	·010	·021	·008454	·004494	·011	·021
830	·006031	·003798	·011	·021	·007238	·004158	·010	·021	·008444	·004489	·011	·021
831	·006024	·003794	·011	·021	·007229	·004154	·010	·021	·008434	·004484	·011	·021
832	·006017	·003789	·011	·021	·007220	·004149	·010	·021	·008424	·004478	·011	·021
833	·006010	·003785 −	·011	·021	·007212	·004144	·010	·021	·008413	·004473	·011	·021
834	·006002	·003780	·011	·021	·007203	·004139	·010	·021	·008403	·004468	·011	·021
835	·005995 +	·003776	·011	·021	·007194	·004134	·010	·021	·008393	·004462	·011	·021
836	·005988	·003771	·011	·021	·007186	·004129	·010	·021	·008383	·004457	·011	·021
837	·005981	·003767	·011	·021	·007177	·004124	·010	·021	·008373	·004452	·011	·021
838	·005974	·003762	·011	·021	·007168	·004119	·010	·021	·008363	·004446	·011	·021
839	·005967	·003758	·011	·021	·007160	·004114	·010	·021	·008353	·004441	·011	·021
840	·005959	·003753	·011	·021	·007151	·004109	·010	·021	·008343	·004436	·011	·021
841	·005952	·003749	·011	·021	·007143	·004104	·010	·021	·008333	·004430	·011	·021
842	·005945 +	·003744	·011	·021	·007134	·004099	·010	·021	·008323	·004425 +	·011	·021
843	·005938	·003740	·011	·021	·007126	·004095 −	·010	·021	·008314	·004420	·011	·021
844	·005931	·003736	·011	·021	·007117	·004090	·010	·021	·008304	·004415 −	·011	·021
845	·005924	·003731	·011	·021	·007109	·004085 −	·010	·021	·008294	·004410	·011	·021
846	·005917	·003727	·011	·021	·007101	·004080	·010	·021	·008284	·004404	·011	·021
847	·005910	·003722	·011	·021	·007092	·004075 +	·010	·021	·008274	·004399	·011	·021
848	·005903	·003718	·011	·021	·007084	·004071	·010	·021	·008264	·004394	·011	·021
849	·005896	·003714	·011	·021	·007075 +	·004066	·010	·021	·008255 −	·004389	·011	·021
850	·005889	·003709	·011	·021	·007067	·004061	·010	·021	·008245 −	·004384	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	9				10				11				12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}96$	P_2 $\lambda_2=2{\cdot}50$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}92$	P_2 $\lambda_2=2{\cdot}47$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}88$	P_2 $\lambda_2=2{\cdot}44$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}84$	P_2 $\lambda_2=2{\cdot}42$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}80$	P_2 $\lambda_2=2{\cdot}40$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=2{\cdot}79$	P_2 $\lambda_2=2{\cdot}39$
801	·010000	·004969	·011	·021	·011250	·005267	·011	·021	·012500	·005548	·011	·021	·013750	·005815 +	·011	·022	·015000	·006070	·011	·022	·016250	·006314	·011	·021
802	·009988	·004963	·011	·021	·011236	·005260	·011	·021	·012484	·005541	·011	·021	·013733	·005808	·011	·022	·014981	·006063	·011	·022	·016230	·006306	·011	·021
803	·009975 +	·004956	·011	·021	·011222	·005254	·011	·021	·012469	·005534	·011	·021	·013716	·005801	·011	·022	·014963	·006055 +	·011	·022	·016209	·006298	·011	·021
804	·009963	·004950 +	·011	·021	·011208	·005247	·011	·021	·012453	·005528	·011	·021	·013699	·005794	·011	·022	·014944	·006048	·011	·022	·016189	·006291	·011	·021
805	·009950 +	·004944	·011	·021	·011194	·005241	·011	·021	·012438	·005521	·011	·021	·013682	·005787	·011	·022	·014925 +	·006040	·011	·022	·016169	·006283	·011	·021
806	·009938	·004938	·011	·021	·011180	·005234	·011	·021	·012422	·005514	·011	·021	·013665 −	·005779	·011	·022	·014907	·006033	·011	·022	·016149	·006275 +	·011	·021
807	·009926	·004932	·011	·021	·011166	·005228	·011	·021	·012407	·005507	·011	·021	·013648	·005772	·011	·022	·014888	·006025 +	·011	·022	·016129	·006267	·011	·021
808	·009913	·004926	·011	·021	·011152	·005221	·011	·021	·012392	·005500 +	·011	·021	·013631	·005765 +	·011	·022	·014870	·006018	·011	·022	·016109	·006260	·011	·021
809	·009901	·004920	·011	·021	·011139	·005215 +	·011	·021	·012376	·005494	·011	·021	·013614	·005758	·011	·022	·014851	·006010	·011	·022	·016089	·006252	·011	·021
810	·009889	·004914	·011	·021	·011125 −	·005209	·011	·021	·012361	·005487	·011	·021	·013597	·005751	·011	·022	·014833	·006003	·011	·022	·016069	·006244	·011	·021
811	·009877	·004908	·011	·021	·011111	·005202	·011	·021	·012346	·005480	·011	·021	·013580	·005744	·011	·022	·014815 −	·005996	·011	·022	·016049	·006237	·011	·021
812	·009864	·004902	·011	·021	·011097	·005196	·011	·021	·012330	·005474	·011	·021	·013564	·005737	·011	·022	·014797	·005988	·011	·022	·016030	·006229	·011	·021
813	·009852	·004896	·011	·021	·011084	·005190	·011	·021	·012315 +	·005467	·011	·021	·013547	·005730	·011	·022	·014778	·005981	·011	·022	·016010	·006221	·011	·021
814	·009840	·004890	·011	·021	·011070	·005183	·011	·021	·012300	·005460	·011	·021	·013530	·005723	·011	·022	·014760	·005974	·011	·022	·015990	·006214	·011	·021
815	·009828	·004884	·011	·021	·011057	·005177	·011	·021	·012285 +	·005453	·011	·021	·013514	·005716	·011	·022	·014742	·005967	·011	·022	·015971	·006206	·011	·021
816	·009816	·004878	·011	·021	·011043	·005171	·011	·021	·012270	·005447	·011	·021	·013497	·005709	·011	·022	·014724	·005959	·011	·022	·015951	·006199	·011	·021
817	·009804	·004872	·011	·021	·011029	·005164	·011	·021	·012255 −	·005440	·011	·021	·013480	·005702	·011	·022	·014706	·005952	·011	·022	·015931	·006191	·011	·021
818	·009792	·004866	·011	·021	·011016	·005158	·011	·021	·012240	·005434	·011	·021	·013464	·005695 +	·011	·022	·014688	·005945 −	·011	·022	·015912	·006184	·011	·021
819	·009780	·004860	·011	·021	·011002	·005152	·011	·021	·012225 −	·005427	·011	·021	·013447	·005688	·011	·022	·014670	·005938	·011	·022	·015892	·006176	·011	·021
820	·009768	·004854	·011	·021	·010989	·005145 +	·011	·021	·012210	·005420	·011	·021	·013431	·005681	·011	·022	·014652	·005930	·011	·022	·015873	·006169	·011	·021
821	·009756	·004848	·011	·021	·010976	·005139	·011	·021	·012195 +	·005414	·011	·021	·013415 −	·005675 −	·011	·022	·014634	·005923	·011	·022	·015854	·006161	·011	·021
822	·009744	·004842	·011	·021	·010962	·005133	·011	·021	·012180	·005407	·011	·021	·013398	·005668	·011	·022	·014616	·005916	·011	·022	·015834	·006154	·011	·021
823	·009732	·004837	·011	·021	·010949	·005127	·011	·021	·012165 +	·005401	·011	·021	·013382	·005661	·011	·022	·014599	·005909	·011	·022	·015815 +	·006146	·011	·021
824	·009721	·004831	·011	·021	·010936	·005121	·011	·021	·012151	·005394	·011	·021	·013366	·005654	·011	·022	·014581	·005902	·011	·022	·015796	·006139	·011	·021
825	·009709	·004825 −	·011	·021	·010922	·005114	·011	·021	·012136	·005388	·011	·021	·013350 −	·005647	·011	·022	·014563	·005895 −	·011	·022	·015777	·006132	·011	·021
826	·009697	·004819	·011	·021	·010909	·005108	·011	·021	·012121	·005381	·011	·021	·013333	·005640	·011	·022	·014545 +	·005888	·011	·022	·015758	·006124	·011	·021
827	·009685 +	·004813	·011	·021	·010896	·005102	·011	·021	·012107	·005375 −	·011	·021	·013317	·005634	·011	·022	·014528	·005881	·011	·022	·015738	·006117	·011	·021
828	·009674	·004807	·011	·021	·010883	·005096	·011	·021	·012092	·005368	·011	·021	·013301	·005627	·011	·022	·014510	·005874	·011	·022	·015719	·006110	·011	·021
829	·009662	·004802	·011	·021	·010870	·005090	·011	·021	·012077	·005362	·011	·021	·013285 +	·005620	·011	·022	·014493	·005867	·011	·022	·015700	·006102	·011	·021
830	·009650 +	·004796	·011	·021	·010856	·005084	·011	·021	·012063	·005356	·011	·021	·013269	·005613	·011	·022	·014475 +	·005860	·011	·022	·015682	·006095 +	·011	·021
831	·009639	·004790	·011	·021	·010843	·005078	·011	·021	·012048	·005349	·011	·021	·013253	·005607	·011	·022	·014458	·005853	·011	·022	·015663	·006088	·011	·021
832	·009627	·004784	·011	·021	·010830	·005072	·011	·021	·012034	·005343	·011	·021	·013237	·005600	·011	·022	·014440	·005846	·011	·022	·015644	·006081	·011	·021
833	·009615 +	·004779	·011	·021	·010817	·005066	·011	·021	·012019	·005336	·011	·021	·013221	·005593	·011	·022	·014423	·005839	·011	·022	·015625	·006073	·011	·021
834	·009604	·004773	·011	·021	·010804	·005060	·011	·021	·012005 −	·005330	·011	·021	·013205 +	·005587	·011	·022	·014406	·005832	·011	·022	·015606	·006066	·011	·021
835	·009592	·004767	·011	·021	·010791	·005054	·011	·021	·011990	·005324	·011	·021	·013189	·005580	·011	·022	·014388	·005825 −	·011	·022	·015588	·006059	·011	·021$_5$
836	·009581	·004762	·011	·021	·010778	·005048	·011	·021	·011976	·005317	·011	·021	·013174	·005573	·011	·022	·014371	·005818	·011	·022	·015569	·006052	·011	·022
837	·009569	·004756	·011	·021	·010766	·005042	·011	·021	·011962	·005311	·011	·021	·013158	·005567	·011	·022	·014354	·005811	·011	·022	·015550 +	·006044	·011	·022
838	·009558	·004750 +	·011	·021	·010753	·005036	·011	·021	·011947	·005305 −	·011	·021	·013142	·005560	·011	·022	·014337	·005804	·011	·022	·015532	·006037	·011	·022
839	·009547	·004745 −	·011	·021	·010740	·005030	·011	·021	·011933	·005298	·011	·021	·013126	·005554	·011	·022	·014320	·005797	·011	·022	·015513	·006030	·011	·022
840	·009535 +	·004739	·011	·021	·010727	·005024	·011	·021	·011919	·005292	·011	·021	·013111	·005547	·011	·022	·014303	·005790	·011	·022	·015495 −	·006023	·011	·022
841	·009524	·004734	·011	·021	·010714	·005018	·011	·021	·011905 −	·005286	·011	·021	·013095 +	·005541	·011	·022	·014286	·005783	·011	·022	·015476	·006016	·011	·022
842	·009512	·004728	·011	·021	·010702	·005012	·011	·021	·011891	·005280	·011	·021	·013080	·005534	·011	·022	·014269	·005777	·011	·022	·015458	·006009	·011	·022
843	·009501	·004722	·011	·021	·010689	·005006	·011	·021	·011876	·005273	·011	·021	·013064	·005527	·011	·022	·014252	·005770	·011	·022	·015439	·006002	·011	·022
844	·009490	·004717	·011	·021	·010676	·005000	·011	·021	·011862	·005267	·011	·021	·013049	·005521	·011	·022	·014235 −	·005763	·011	·022	·015421	·005995 −	·011	·022
845	·009479	·004711	·011	·021	·010664	·004994	·011	·021	·011848	·005261	·011	·021	·013033	·005515 −	·011	·022	·014218	·005756	·011	·022	·015403	·005988	·011	·022
846	·009467	·004706	·011	·021	·010651	·004988	·011	·021	·011834	·005255 −	·011	·021	·013018	·005508	·011	·022	·014201	·005749	·011	·022	·015385 −	·005981	·011	·022
847	·009456	·004700	·011	·021	·010638	·004982	·011	·021	·011820	·005249	·011	·021	·013002	·005502	·011	·022	·014184	·005743	·011	·022	·015366	·005974	·011	·022
848	·009445 +	·004695 −	·011	·021	·010626	·004976	·011	·021	·011806	·005243	·011	·021	·012987	·005495 +	·011	·022	·014168	·005736	·011	·022	·015348	·005967	·011	·022
849	·009434	·004689	·011	·021	·010613	·004971	·011	·021	·011792	·005236	·011	·021	·012972	·005489	·011	·022	·014151	·005729	·011	·022	·015330	·005960	·011	·022
850	·009423	·004684	·011	·021	·010601	·004965 −	·011	·021	·011779	·005230	·011	·021	·012956	·005482	·011	·022	·014134	·005723	·011	·022	·015312	·005953	·011	·022

TABLE IV.—(*continued*).

N = size of sample	15				16				17			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}78$	P_2 $\lambda_2 = 2{\cdot}38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}77$	P_2 $\lambda_2 = 2{\cdot}37$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}76$	P_2 $\lambda_2 = 2{\cdot}36$
801	·017500	·006548	·011	·021	·018750	·006774	·011	·021	·020000	·006991	·011	·021
802	·017478	·006540	·011	·021	·018727	·006765 +	·011	·021	·019975 +	·006983	·011	·021
803	·017456	·006532	·011	·021	·018703	·006757	·011	·021	·019950 +	·006974	·011	·021
804	·017435 −	·006524	·011	·021	·018680	·006749	·011	·021	·019925 +	·006965 +	·011	·021
805	·017413	·006516	·011	·021	·018657	·006740	·011	·021	·019900	·006957	·011	·021
806	·017391	·006508	·011	·021	·018634	·006732	·011	·021	·019876	·006948	·011	·021
807	·017370	·006500 −	·011	·021	·018610	·006724	·011	·021	·019851	·006940	·011	·021
808	·017348	·006492	·011	·021	·018587	·006715 +	·011	·021	·019827	·006931	·011	·021
809	·017327	·006484	·011	·021	·018564	·006707	·011	·021	·019802	·006923	·011	·021
810	·017305 +	·006476	·011	·021	·018541	·006699	·011	·021	·019778	·006914	·011	·021
811	·017284	·006468	·011	·021	·018519	·006691	·011	·021	·019753	·006906	·011	·021
812	·017263	·006460	·011	·021	·018496	·006683	·011	·021	·019729	·006898	·011	·021
813	·017241	·006452	·011	·021	·018473	·006675 −	·011	·021	·019704	·006889	·011	·021
814	·017220	·006444	·011	·021	·018450 +	·006666	·011	·021	·019680	·006881	·011	·021
815	·017199	·006437	·011	·021	·018428	·006658	·011	·021	·019656	·006872	·011	·021
816	·017178	·006429	·011	·021	·018405 −	·006650 +	·011	·021	·019632	·006864	·011	·021
817	·017157	·006421	·011	·021	·018382	·006642	·011	·021	·019608	·006856	·011	·021
818	·017136	·006413	·011	·021	·018360	·006634	·011	·021	·019584	·006847	·011	·021
819	·017115 −	·006405 +	·011	·021	·018337	·006626	·011	·021	·019560	·006839	·011	·021
820	·017094	·006398	·011	·021	·018315 +	·006618	·011	·021	·019536	·006831	·011	·021
821	·017073	·006390	·011	·021	·018293	·006610	·011	·021	·019512	·006823	·011	·021
822	·017052	·006382	·011	·021	·018270	·006602	·011	·021	·019488	·006814	·011	·021
823	·017032	·006375 −	·011	·021	·018248	·006594	·011	·021	·019465 −	·006806	·011	·021
824	·017011	·006367	·011	·021	·018226	·006586	·011	·021	·019441	·006798	·011	·021
825	·016990	·006359	·011	·021	·018204	·006578	·011	·021	·019417	·006790	·011	·021
826	·016970	·006352	·011	·021	·018182	·006570	·011	·021	·019394	·006782	·011	·021
827	·016949	·006344	·011	·021	·018160	·006563	·011	·021	·019370	·006774	·011	·021
828	·016929	·006336	·011	·021	·018138	·006555 −	·011	·021	·019347	·006766	·011	·021
829	·016908	·006329	·011	·021	·018116	·006547	·011	·021	·019324	·006757	·011	·021
830	·016888	·006321	·011	·021	·018094	·006539	·011	·021	·019300	·006749	·011	·021
831	·016867	·006314	·011	·021	·018072	·006531	·011	·021	·019277	·006741	·011	·021
832	·016847	·006306	·011	·021	·018051	·006524	·011	·021	·019254	·006733	·011	·021
833	·016827	·006299	·011	·021	·018029	·006516	·011	·021	·019231	·006725 +	·011	·021
834	·016807	·006291	·011	·021	·018007	·006508	·011	·021	·019208	·006717	·011	·021
835	·016787	·006284	·011	·021	·017986	·006500 +	·011	·021	·019185 −	·006709	·011	·021
836	·016766	·006276	·011	·021	·017964	·006493	·011	·021	·019162	·006701	·011	·021
837	·016746	·006269	·011	·021	·017943	·006485 −	·011	·021	·019139	·006694	·011	·021
838	·016726	·006261	·011	·021	·017921	·006477	·011	·021	·019116	·006686	·011	·021
839	·016706	·006254	·011	·021	·017900	·006470	·011	·021	·019093	·006678	·011	·021
840	·016687	·006247	·011	·021	·017878	·006462	·011	·021	·019070	·006670	·011	·021
841	·016667	·006239	·011	·021	·017857	·006454	·011	·021	·019048	·006662	·011	·021
842	·016647	·006232	·011	·021	·017836	·006447	·011	·021	·019025 −	·006654	·011	·021
843	·016627	·006225 −	·011	·021	·017815 −	·006439	·011	·021	·019002	·006646	·011	·021
844	·016607	·006217	·011	·021	·017794	·006432	·011	·021	·018980	·006639	·011	·021
845	·016588	·006210	·011	·021	·017773	·006424	·011	·021	·018957	·006631	·011	·021
846	·016568	·006203	·011	·021	·017751	·006417	·011	·021	·018935 −	·006623	·011	·021
847	·016548	·006195 +	·011	·021	·017730	·006409	·011	·021	·018913	·006615 +	·011	·021
848	·016529	·006188	·011	·021	·017710	·006402	·011	·021	·018890	·006608	·011	·021
849	·016509	·006181	·011	·021	·017689	·006394	·011	·021	·018868	·006600	·011	·021
850	·016490	·006174	·011	·021	·017668	·006387	·011	·021	·018846	·006592	·011	·021

N = size of sample	18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}75$	P_2 $\lambda_2 = 2{\cdot}35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}74$	P_2 $\lambda_2 = 2{\cdot}34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2{\cdot}73$	P_2 $\lambda_2 = 2{\cdot}33$
801	·021250	·007202	·011	·021	·022500	·007406	·011	·021	·023750	·007604	·011	·021
802	·021223	·007193	·011	·021	·022472	·007397	·011	·021	·023720	·007595 −	·011	·021
803	·021197	·007184	·011	·021	·022444	·007388	·011	·021	·023691	·007585 +	·011	·021
804	·021171	·007175 +	·011	·021	·022416	·007379	·011	·021	·023661	·007576	·011	·021
805	·021144	·007166	·011	·021	·022388	·007370	·011	·021	·023632	·007567	·011	·021
806	·021118	·007158	·011	·021	·022360	·007360	·011	·021	·023602	·007557	·011	·021
807	·021092	·007149	·011	·021	·022333	·007351	·011	·021	·023573	·007548	·011	·021
808	·021066	·007140	·011	·021	·022305 −	·007342	·011	·021	·023544	·007539	·011	·021
809	·021040	·007131	·011	·021	·022277	·007333	·011	·021	·023515 −	·007530	·011	·021
810	·021014	·007123	·011	·021	·022250 −	·007325 −	·011	·021	·023486	·007520	·011	·021
811	·020988	·007114	·011	·021	·022222	·007316	·011	·021	·023457	·007511	·011	·021
812	·020962	·007105 +	·011	·021	·022195 −	·007307	·011	·021	·023428	·007502	·011	·021
813	·020936	·007097	·011	·021	·022167	·007298	·011	·021	·023399	·007493	·011	·021
814	·020910	·007088	·011	·021	·022140	·007289	·011	·021	·023370	·007484	·011	·021
815	·020885 −	·007079	·011	·021	·022113	·007280	·011	·021	·023342	·007475 −	·011	·021
816	·020859	·007071	·011	·021	·022086	·007271	·011	·021	·023313	·007466	·011	·021
817	·020833	·007062	·011	·021	·022059	·007262	·011	·021	·023284	·007457	·011	·021
818	·020808	·007054	·011	·021	·022032	·007254	·011	·021	·023256	·007448	·011	·021
819	·020782	·007045 +	·011	·021	·022005 −	·007245 −	·011	·021	·023227	·007439	·011	·021
820	·020757	·007037	·011	·021	·021978	·007236	·011	·021	·023199	·007430	·011	·021
821	·020732	·007028	·011	·021	·021951	·007228	·011	·021	·023171	·007421	·011	·021
822	·020706	·007020	·011	·021	·021924	·007219	·011	·021	·023143	·007412	·011	·021
823	·020681	·007011	·011	·021	·021898	·007210	·011	·021	·023114	·007403	·011	·021
824	·020656	·007003	·011	·021	·021871	·007201	·011	·021	·023086	·007394	·011	·021
825	·020631	·006995 −	·011	·021	·021845 −	·007193	·011	·021	·023058	·007385 +	·011	·021
826	·020606	·006986	·011	·021	·021818	·007184	·011	·021	·023030	·007377	·011	·021
827	·020581	·006978	·011	·021	·021792	·007176	·011	·021	·023002	·007368	·011	·021
828	·020556	·006969	·011	·021	·021765 +	·007167	·011	·021	·022975 −	·007359	·011	·021
829	·020531	·006961	·011	·021	·021739	·007159	·011	·021	·022947	·007350 +	·011	·021
830	·020507	·006953	·011	·021	·021713	·007150 +	·011	·021	·022919	·007341	·011	·021
831	·020482	·006945 −	·011	·021	·021687	·007142	·011	·021	·022892	·007333	·011	·021
832	·020457	·006936	·011	·021	·021661	·007133	·011	·021	·022864	·007324	·011	·021
833	·020433	·006928	·011	·021	·021635 −	·007125 −	·011	·021	·022837	·007315 +	·011	·021
834	·020408	·006920	·011	·021	·021609	·007116	·011	·021	·022809	·007307	·011	·021
835	·020384	·006912	·011	·021	·021583	·007108	·011	·021	·022782	·007298	·011	·021
836	·020359	·006903	·011	·021	·021557	·007099	·011	·021	·022754	·007289	·011	·021
837	·020335 −	·006895 +	·011	·021	·021531	·007091	·011	·021	·022727	·007281	·011	·021
838	·020311	·006887	·011	·021	·021505 +	·007083	·011	·021	·022700	·007272	·011	·021
839	·020286	·006879	·011	·021	·021480	·007074	·011	·021	·022673	·007264	·011	·021
840	·020262	·006871	·011	·021	·021454	·007066	·011	·021	·022646	·007255 +	·011	·021
841	·020238	·006863	·011	·021	·021429	·007058	·011	·021	·022619	·007246	·011	·021
842	·020214	·006855 −	·011	·021	·021403	·007049	·011	·021	·022592	·007238	·011	·021
843	·020190	·006847	·011	·021	·021378	·007041	·011	·021	·022565 +	·007230	·011	·021
844	·020166	·006839	·011	·021	·021352	·007033	·011	·021	·022539	·007221	·011	·021
845	·020142	·006831	·011	·021	·021327	·007024	·011	·021	·022512	·007213	·011	·021
846	·020118	·006823	·011	·021	·021302	·007016	·011	·021	·022485 +	·007204	·011	·021
847	·020095 −	·006815 −	·011	·021	·021277	·007008	·011	·021	·022459	·007196	·011	·021
848	·020071	·006807	·011	·021	·021251	·007000	·011	·021	·022432	·007187	·011	·021
849	·020047	·006799	·011	·021	·021226	·006992	·011	·021	·022406	·007179	·011	·021
850	·020024	·006791	·011	·021	·021201	·006984	·011	·021	·022379	·007171	·011	·021

TABLE IV.—(*continued*).

N = size of sample	3				4				5			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·50	P_2 $\lambda_2 =$ 2·94	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·20	P_2 $\lambda_2 =$ 2·80	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·14	P_2 $\lambda_2 =$ 2·68
851	·002353	·002347	·011	·019	·003529	·002873	·013	·020	·004706	·003316	·012	·021
852	·002350 +	·002345 −	·011	·019	·003525 +	·002870	·013	·020	·004700	·003312	·012	·021
853	·002347	·002342	·011	·019	·003521	·002867	·013	·020	·004695 −	·003308	·012	·021
854	·002345 −	·002339	·011	·019	·003517	·002863	·013	·020	·004689	·003304	·012	·021
855	·002342	·002336	·011	·019	·003513	·002860	·013	·020	·004684	·003300	·012	·021
856	·002339	·002334	·011	·019	·003509	·002857	·013	·020	·004678	·003297	·012	·021
857	·002336	·002331	·011	·019	·003505 −	·002853	·013	·020	·004673	·003293	·012	·021
858	·002334	·002328	·011	·019	·003501	·002850 −	·013	·020	·004667	·003289	·012	·021
859	·002331	·002326	·011	·019	·003497	·002847	·013	·020	·004662	·003285 +	·012	·021
860	·002328	·002323	·011	·019	·003492	·002843	·013	·020	·004657	·003281	·012	·021
861	·002326	·002320	·011	·019	·003488	·002840	·013	·020	·004651	·003277	·012	·021
862	·002323	·002317	·011	·019	·003484	·002837	·013	·020	·004646	·003274	·012	·021
863	·002320	·002315 −	·011	·019	·003480	·002833	·013	·020	·004640	·003270	·012	·021
864	·002317	·002312	·011	·019	·003476	·002830	·013	·020	·004635 −	·003266	·012	·021
865	·002315 −	·002309	·011	·019	·003472	·002827	·013	·020	·004630	·003262	·012	·021
866	·002312	·002307	·011	·019	·003468	·002824	·013	·020	·004624	·003259	·012	·021
867	·002309	·002304	·011	·019	·003464	·002820	·013	·020	·004619	·003255 −	·012	·021
868	·002307	·002301	·011	·019	·003460	·002817	·013	·020	·004614	·003251	·012	·021
869	·002304	·002299	·011	·019	·003456	·002814	·013	·020	·004608	·003247	·012	·021
870	·002301	·002296	·011	·019	·003452	·002811	·013	·020	·004603	·003244	·012	·021
871	·002299	·002294	·011	·019	·003448	·002807	·013	·020	·004598	·003240	·012	·021
872	·002296	·002291	·011	·019	·003444	·002804	·013	·020	·004592	·003236	·012	·021
873	·002294	·002288	·011	·019	·003440	·002801	·013	·020	·004587	·003232	·012	·021
874	·002291	·002286	·011	·019	·003436	·002798	·013	·020	·004582	·003229	·012	·021
875	·002288	·002283	·011	·019	·003432	·002795 −	·013	·020	·004577	·003225 +	·012	·021
876	·002286	·002280	·011	·019	·003429	·002791	·013	·020	·004571	·003221	·012	·021
877	·002283	·002278	·011	·019	·003425 −	·002788	·013	·020	·004566	·003218	·012	·021
878	·002281	·002275 +	·011	·019	·003421	·002785 +	·013	·020	·004561	·003214	·012	·021
879	·002278	·002273	·011	·019	·003417	·002782	·013	·020	·004556	·003210	·012	·021
880	·002275 +	·002270	·011	·019	·003413	·002779	·013	·020	·004551	·003207	·012	·021
881	·002273	·002268	·011	·019	·003409	·002776	·013	·020	·004545 +	·003203	·012	·021
882	·002270	·002265 +	·011	·019	·003405 +	·002772	·013	·020	·004540	·003200	·012	·021
883	·002268	·002262	·011	·019	·003401	·002769	·013	·020	·004535 +	·003196	·012	·021
884	·002265 +	·002260	·011	·019	·003398	·002766	·013	·020	·004530	·003192	·012	·021
885	·002262	·002257	·011	·019	·003394	·002763	·013	·020	·004525 −	·003189	·012	·021
886	·002260	·002255 −	·011	·019	·003390	·002760	·013	·020	·004520	·003185 +	·012	·021
887	·002257	·002252	·011	·019	·003386	·002757	·013	·020	·004515 −	·003182	·012	·021
888	·002255 −	·002250 −	·011	·019	·003382	·002754	·013	·020	·004510	·003178	·012	·021
889	·002252	·002247	·011	·019	·003378	·002751	·013	·020	·004505 −	·003174	·012	·021
890	·002250 −	·002245 −	·011	·019	·003375 −	·002748	·013	·020	·004499	·003171	·012	·021
891	·002247	·002242	·011	·019	·003371	·002745 −	·013	·020	·004494	·003167	·012	·021
892	·002245 −	·002240	·011	·019	·003367	·002741	·013	·020	·004489	·003164	·012	·021
893	·002242	·002237	·011	·019	·003363	·002738	·013	·020	·004484	·003160	·012	·021
894	·002240	·002235 −	·011	·019	·003359	·002735 +	·013	·020	·004479	·003157	·012	·021
895	·002237	·002232	·011	·019	·003356	·002732	·013	·020	·004474	·003153	·012	·021
896	·002235 −	·002230	·011	·019	·003352	·002729	·013	·020	·004469	·003150 −	·012	·021
897	·002232	·002227	·011	·019	·003348	·002726	·013	·020	·004464	·003146	·012	·021
898	·002230	·002225 −	·011	·019	·003344	·002723	·013	·020	·004459	·003143	·012	·021
899	·002227	·002222	·011	·019	·003341	·002720	·013	·020	·004454	·003139	·012	·021
900	·002225 −	·002220	·011	·019	·003337	·002717	·013	·020	·004449	·003136	·012	·021

N = size of sample	6				7				8			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·11	P_2 $\lambda_2 =$ 2·63	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·08	P_2 $\lambda_2 =$ 2·58	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 =$ 3·02	P_2 $\lambda_2 =$ 2·54
851	·005882	·003705 +	·011	·021	·007059	·004056	·010	·021	·008235 +	·004379	·011	·021
852	·005875 +	·003701	·011	·021	·007051	·004051	·010	·021	·008226	·004374	·011	·021
853	·005869	·003696	·011	·021	·007042	·004047	·010	·021	·008216	·004368	·011	·021
854	·005862	·003692	·011	·021	·007034	·004042	·010	·021	·008206	·004363	·011	·021
855	·005855 −	·003688	·011	·021	·007026	·004037	·010	·021	·008197	·004358	·011	·021
856	·005848	·003683	·011	·021	·007018	·004033	·010	·021	·008187	·004353	·011	·021
857	·005841	·003679	·011	·021	·007009	·004028	·010	·021	·008178	·004348	·011	·021
858	·005834	·003675 −	·011	·021	·007001	·004023	·010	·021	·008168	·004343	·011	·021
859	·005828	·003671	·011	·021	·006993	·004019	·010	·021	·008159	·004338	·011	·021
860	·005821	·003666	·011	·021	·006985 −	·004014	·010	·021	·008149	·004333	·011	·021
861	·005814	·003662	·011	·021	·006977	·004009	·010	·021	·008140	·004328	·011	·021
862	·005807	·003658	·011	·021	·006969	·004005 −	·010	·021	·008130	·004323	·011	·021
863	·005800	·003654	·011	·021	·006961	·004000	·010	·021	·008121	·004318	·011	·021
864	·005794	·003649	·011	·021	·006952	·003995 +	·010	·021	·008111	·004313	·011	·021
865	·005787	·003645 +	·011	·021	·006944	·003991	·010	·021	·008102	·004308	·011	·021
866	·005780	·003641	·011	·021	·006936	·003986	·010	·021	·008092	·004303	·011	·021
867	·005774	·003637	·011	·021	·006928	·003982	·010	·021	·008083	·004298	·011	·021
868	·005767	·003633	·011	·021	·006920	·003977	·010	·021	·008074	·004293	·011	·021
869	·005760	·003628	·011	·021	·006912	·003973	·010	·021	·008065 −	·004288	·011	·021
870	·005754	·003624	·011	·021	·006904	·003968	·010	·021	·008055 +	·004283	·011	·021
871	·005747	·003620	·011	·021	·006897	·003963	·010	·021	·008046	·004279	·011	·021
872	·005741	·003616	·011	·021	·006889	·003959	·010	·021	·008037	·004274	·011	·021
873	·005734	·003612	·011	·021	·006881	·003954	·010	·021	·008028	·004269	·011	·021
874	·005727	·003608	·011	·021	·006873	·003950 −	·010	·021	·008018	·004264	·011	·021
875	·005721	·003604	·011	·021	·006865 −	·003945 +	·010	·021	·008009	·004259	·011	·021
876	·005714	·003600	·011	·021	·006857	·003941	·010	·021	·008000	·004254	·011	·021
877	·005708	·003595 +	·011	·021	·006849	·003936	·010	·021	·007991	·004249	·011	·021
878	·005701	·003591	·011	·021	·006842	·003932	·010	·021	·007982	·004245 −	·011	·021
879	·005695 −	·003587	·011	·021	·006834	·003927	·010	·021	·007973	·004240	·011	·021
880	·005688	·003583	·011	·021	·006826	·003923	·010	·021	·007964	·004235 −	·011	·021
881	·005682	·003579	·011	·021	·006818	·003919	·010	·021	·007955 −	·004230	·011	·021
882	·005675 +	·003575 +	·011	·021	·006810	·003914	·010	·021	·007946	·004225 +	·011	·021
883	·005669	·003571	·011	·021	·006803	·003910	·010	·021	·007937	·004221	·011	·021
884	·005663	·003567	·011	·021	·006795 +	·003905 +	·010	·021	·007928	·004216	·011	·021
885	·005656	·003563	·011	·021	·006787	·003901	·010	·021	·007919	·004211	·011	·021
886	·005650 −	·003559	·011	·021	·006780	·003897	·010	·021	·007910	·004206	·011	·021
887	·005643	·003555 +	·011	·021	·006772	·003892	·010	·021	·007901	·004202	·011	·021
888	·005637	·003551	·011	·021	·006764	·003888	·010	·021	·007892	·004197	·011	·021
889	·005631	·003547	·011	·021	·006757	·003883	·010	·021	·007883	·004192	·011	·021
890	·005624	·003543	·011	·021	·006749	·003879	·010	·021	·007874	·004188	·011	·021
891	·005618	·003539	·011	·021	·006742	·003875 −	·010	·021	·007865 +	·004183	·011	·021
892	·005612	·003535 +	·011	·021	·006734	·003870	·010	·021	·007856	·004178	·011	·021
893	·005605 +	·003531	·011	·021	·006726	·003866	·010	·021	·007848	·004174	·011	·021
894	·005599	·003527	·011	·021	·006719	·003862	·010	·021	·007839	·004169	·011	·021
895	·005593	·003523	·011	·021	·006711	·003857	·010	·021	·007830	·004164	·011	·021
896	·005587	·003519	·011	·021	·006704	·003853	·010	·021	·007821	·004160	·011	·021
897	·005580	·003516	·011	·021	·006696	·003849	·010	·021	·007813	·004155 −	·011	·021
898	·005574	·003512	·011	·021	·006689	·003845 −	·010	·021	·007804	·004150 +	·011	·021
899	·005568	·003508	·011	·021	·006682	·003840	·010	·021	·007795 +	·004146	·011	·021
900	·005562	·003504	·011	·021	·006674	·003836	·010	·021	·007786	·004141	·011	·021

TABLE IV.—(*continued*).

N = size of sample	9 $\bar{\eta}^2$	9 $\sigma_{\bar{\eta}^2}$	9 P_1 $\lambda_1 = 2{\cdot}96$	9 P_2 $\lambda_2 = 2{\cdot}50$	10 $\bar{\eta}^2$	10 $\sigma_{\bar{\eta}^2}$	10 P_1 $\lambda_1 = 2{\cdot}92$	10 P_2 $\lambda_2 = 2{\cdot}47$	11 $\bar{\eta}^2$	11 $\sigma_{\bar{\eta}^2}$	11 P_1 $\lambda_1 = 2{\cdot}88$	11 P_2 $\lambda_2 = 2{\cdot}44$
851	·009412	·004678	·011	·021	·010588	·004959	·011	·021	·011765 −	·005224	·011	·021
852	·009401	·004673	·011	·021	·010576	·004953	·011	·021	·011751	·005218	·011	·021
853	·009390	·004667	·011	·021	·010563	·004947	·011	·021	·011737	·005212	·011	·021
854	·009379	·004662	·011	·021	·010551	·004942	·011	·021	·011723	·005206	·011	·021
855	·009368	·004656	·011	·021	·010539	·004936	·011	·021	·011710	·005200	·011	·021
856	·009357	·004651	·011	·021	·010526	·004930	·011	·021	·011696	·005194	·011	·021
857	·009346	·004646	·011	·021	·010514	·004924	·011	·021	·011682	·005188	·011	·021
858	·009335 −	·004640	·011	·021	·010502	·004919	·011	·021	·011669	·005182	·011	·021
859	·009324	·004635 −	·011	·021	·010490	·004913	·011	·021	·011655 +	·005176	·011	·021
860	·009313	·004629	·011	·021	·010477	·004907	·011	·021	·011641	·005170	·011	·021
861	·009302	·004624	·011	·021	·010465 +	·004902	·011	·021	·011628	·005164	·011	·021
862	·009292	·004619	·011	·021	·010453	·004896	·011	·021	·011614	·005158	·011	·021
863	·009281	·004613	·011	·021	·010441	·004890	·011	·021	·011601	·005152	·011	·021
864	·009270	·004608	·011	·021	·010429	·004885 −	·011	·021	·011587	·005146	·011	·021
865	·009259	·004603	·011	·021	·010417	·004879	·011	·021	·011574	·005140	·011	·021
866	·009249	·004598	·011	·021	·010405 −	·004874	·011	·021	·011561	·005134	·011	·021
867	·009238	·004592	·011	·021	·010393	·004868	·011	·021	·011547	·005128	·011	·021
868	·009227	·004587	·011	·021	·010381	·004862	·011	·021	·011534	·005122	·011	·021
869	·009217	·004582	·011	·021	·010369	·004857	·011	·021	·011521	·005117	·011	·021
870	·009206	·004576	·011	·021	·010357	·004851	·011	·021	·011507	·005111	·011	·021
871	·009195 +	·004571	·011	·021	·010345 −	·004846	·011	·021	·011494	·005105 −	·011	·021
872	·009185 −	·004566	·011	·021	·010333	·004840	·011	·021	·011481	·005099	·011	·021
873	·009174	·004561	·011	·021	·010321	·004835 −	·011	·021	·011468	·005093	·011	·021
874	·009164	·004556	·011	·021	·010309	·004829	·011	·021	·011455 −	·005087	·011	·021
875	·009153	·004550 +	·011	·021	·010297	·004824	·011	·021	·011442	·005082	·011	·021
876	·009143	·004545 +	·011	·021	·010286	·004818	·011	·021	·011429	·005076	·011	·021
877	·009132	·004540	·011	·021	·010274	·004813	·011	·021	·011416	·005070	·011	·021
878	·009122	·004535 −	·011	·021	·010262	·004807	·011	·021	·011403	·005064	·011	·021
879	·009112	·004530	·011	·021	·010251	·004802	·011	·021	·011390	·005059	·011	·021
880	·009101	·004525 −	·011	·021	·010239	·004796	·011	·021	·011377	·005053	·011	·021
881	·009091	·004520	·011	·021	·010227	·004791	·011	·021	·011364	·005047	·011	·021
882	·009081	·004515 −	·011	·021	·010216	·004786	·011	·021	·011351	·005042	·011	·021
883	·009070	·004509	·011	·021	·010204	·004780	·011	·021	·011338	·005036	·011	·021
884	·009060	·004504	·011	·021	·010193	·004775 −	·011	·021	·011325 +	·005030	·011	·021
885	·009050 −	·004499	·011	·021	·010181	·004769	·011	·021	·011312	·005025 −	·011	·021
886	·009040	·004494	·011	·021	·010169	·004764	·011	·021	·011299	·005019	·011	·021
887	·009029	·004489	·011	·021	·010158	·004759	·011	·021	·011287	·005013	·011	·021
888	·009019	·004484	·011	·021	·010147	·004753	·011	·021	·011274	·005008	·011	·021
889	·009009	·004479	·011	·021	·010135 +	·004748	·011	·021	·011261	·005002	·011	·021
890	·008999	·004474	·011	·021	·010124	·004743	·011	·021	·011249	·004997	·011	·021
891	·008989	·004469	·011	·021	·010112	·004738	·011	·021	·011236	·004991	·011	·021
892	·008979	·004464	·011	·021	·010101	·004732	·011	·021	·011223	·004985 +	·011	·021
893	·008969	·004459	·011	·021	·010090	·004727	·011	·021	·011211	·004980	·011	·021
894	·008959	·004454	·011	·021	·010078	·004722	·011	·021	·011198	·004974	·011	·021
895	·008949	·004449	·011	·021	·010067	·004716	·011	·021	·011186	·004969	·011	·021
896	·008939	·004444	·011	·021	·010056	·004711	·011	·021	·011173	·004963	·011	·021
897	·008929	·004439	·011	·021	·010045 −	·004706	·011	·021	·011161	·004958	·011	·021
898	·008919	·004434	·011	·021	·010033	·004701	·011	·021	·011148	·004952	·011	·021
899	·008909	·004430	·011	·021	·010022	·004696	·011	·021	·011136	·004947	·011	·021
900	·008899	·004425 −	·011	·021	·010011	·004690	·011	·021	·011123	·004941	·011	·021

N = size of sample	12 $\bar{\eta}^2$	12 $\sigma_{\bar{\eta}^2}$	12 P_1 $\lambda_1 = 2{\cdot}84$	12 P_2 $\lambda_2 = 2{\cdot}42$	13 $\bar{\eta}^2$	13 $\sigma_{\bar{\eta}^2}$	13 P_1 $\lambda_1 = 2{\cdot}80$	13 P_2 $\lambda_2 = 2{\cdot}40$	14 $\bar{\eta}^2$	14 $\sigma_{\bar{\eta}^2}$	14 P_1 $\lambda_1 = 2{\cdot}79$	14 P_2 $\lambda_2 = 2{\cdot}39$
851	·012941	·005476	·011	·022	·014118	·005716	·011	·022	·015294	·005946	·011	·022
852	·012926	·005469	·011	·022	·014101	·005709	·011	·022	·015276	·005939	·011	·022
853	·012911	·005463	·011	·022	·014085 −	·005703	·011	·022	·015258	·005932	·011	·022
854	·012896	·005457	·011	·022	·014068	·005696	·011	·022	·015240	·005925 +	·011	·022
855	·012881	·005450 +	·011	·022	·014052	·005689	·011$_5$	·022	·015222	·005918	·011	·022
856	·012865 +	·005444	·011	·022	·014035 +	·005683	·012	·022	·015205 −	·005911	·011	·022
857	·012850 +	·005438	·011	·022	·014019	·005676	·012	·022	·015187	·005904	·011	·022
858	·012835 +	·005431	·011	·022	·014002	·005670	·012	·022	·015169	·005898	·011	·022
859	·012821	·005425 +	·011	·022	·013986	·005663	·012	·022	·015152	·005891	·011	·022
860	·012806	·005419	·011	·022	·013970	·005657	·012	·022	·015134	·005884	·011	·022
861	·012791	·005413	·011	·022	·013953	·005650 +	·012	·022	·015116	·005877	·011	·022
862	·012776	·005406	·011	·022	·013937	·005644	·012	·022	·015099	·005871	·011	·022
863	·012761	·005400	·011	·022	·013921	·005637	·012	·022	·015081	·005864	·011	·022
864	·012746	·005394	·011	·022	·013905 −	·005631	·012	·022	·015064	·005857	·011	·022
865	·012731	·005388	·011	·022	·013889	·005624	·012	·022	·015046	·005850 +	·011	·022
866	·012717	·005382	·011	·022	·013873	·005618	·012	·022	·015029	·005844	·011	·022
867	·012702	·005375 +	·011	·022	·013857	·005611	·012	·022	·015012	·005837	·011	·022
868	·012687	·005369	·011	·022	·013841	·005605 −	·012	·022	·014994	·005830	·011	·022
869	·012673	·005363	·011	·022	·013825 −	·005598	·012	·022	·014977	·005824	·011	·022
870	·012658	·005357	·011	·022	·013809	·005592	·012	·022	·014960	·005817	·011	·022
871	·012644	·005351	·011	·022	·013793	·005586	·012	·022	·014943	·005810	·011	·022
872	·012629	·005345 −	·011	·022	·013777	·005579	·012	·022	·014925 +	·005804	·011	·022
873	·012615 −	·005339	·011	·022	·013761	·005573	·012	·022	·014908	·005797	·011	·022
874	·012600	·005333	·011	·022	·013746	·005567	·012	·022	·014891	·005791	·011	·022
875	·012586	·005327	·011	·022	·013730	·005560	·012	·022	·014874	·005784	·011	·022
876	·012571	·005321	·011	·022	·013714	·005554	·012	·022	·014857	·005777	·011	·022
877	·012557	·005315 −	·011	·022	·013699	·005548	·012	·022	·014840	·005771	·011	·022
878	·012543	·005309	·011	·022	·013683	·005541	·012	·022	·014823	·005764	·011	·022
879	·012528	·005303	·011	·022	·013667	·005535 +	·012	·022	·014806	·005758	·011	·022
880	·012514	·005297	·011	·022	·013652	·005529	·012	·022	·014790	·005751	·011	·022
881	·012500	·005291	·011	·022	·013636	·005523	·012	·022	·014773	·005745 −	·011	·022
882	·012486	·005285 −	·011	·022	·013621	·005516	·012	·022	·014756	·005738	·011	·022
883	·012472	·005279	·011	·022	·013605 +	·005510	·012	·022	·014739	·005732	·011	·022
884	·012458	·005273	·011	·022	·013590	·005504	·012	·022	·014723	·005726	·011	·022
885	·012443	·005267	·011	·022	·013575 −	·005498	·012	·022	·014706	·005719	·011	·022
886	·012429	·005261	·011	·022	·013559	·005492	·012	·022	·014689	·005713	·011	·022
887	·012415 +	·005255 +	·011	·022	·013544	·005486	·012	·022	·014673	·005706	·011	·022
888	·012401	·005249	·011	·022	·013529	·005479	·012	·022	·014656	·005700	·011	·022
889	·012387	·005243	·011	·022	·013514	·005473	·012	·022	·014640	·005694	·011	·022
890	·012373	·005237	·011	·022	·013498	·005467	·012	·022	·014623	·005687	·011	·022
891	·012360	·005232	·011	·022	·013483	·005461	·012	·022	·014607	·005681	·011	·022
892	·012346	·005226	·011	·022	·013468	·005455 +	·012	·022	·014590	·005675 −	·011	·022
893	·012332	·005220	·011	·022	·013453	·005449	·012	·022	·014574	·005668	·011	·022
894	·012318	·005214	·011	·022	·013438	·005443	·012	·022	·014558	·005662	·011	·022
895	·012304	·005208	·011	·022	·013423	·005437	·012	·022	·014541	·005656	·011	·022
896	·012291	·005203	·011	·022	·013408	·005431	·012	·022	·014525 +	·005649	·011	·022
897	·012277	·005197	·011	·022	·013393	·005425 −	·012	·022	·014509	·005643	·011	·022
898	·012263	·005191	·011	·022	·013378	·005419	·012	·022	·014493	·005637	·011	·022
899	·012249	·005185 +	·011	·022	·013363	·005413	·012	·022	·014477	·005631	·011	·022
900	·012236	·005180	·011	·022	·013348	·005407	·012	·022	·014461	·005624	·011	·022

TABLE IV.—(*continued*).

$N=$ size of sample	15: $\bar{\eta}^2$	15: $\sigma_{\bar{\eta}^2}$	15: P_1 $\lambda_1=2{\cdot}78$	15: P_2 $\lambda_2=2{\cdot}38$	16: $\bar{\eta}^2$	16: $\sigma_{\bar{\eta}^2}$	16: P_1 $\lambda_1=2{\cdot}77$	16: P_2 $\lambda_2=2{\cdot}37$	17: $\bar{\eta}^2$	17: $\sigma_{\bar{\eta}^2}$	17: P_1 $\lambda_1=2{\cdot}76$	17: P_2 $\lambda_2=2{\cdot}36$
851	·016471	·006167	·011	·021	·017647	·006379	·011	·021	·018824	·006584	·011	·021
852	·016451	·006159	·011	·021	·017626	·006372	·011	·021	·018801	·006577	·011	·021
853	·016432	·006152	·011	·021	·017606	·006364	·011	·021	·018779	·006569	·011	·021
854	·016413	·006145 +	·011	·021	·017585 –	·006357	·011	·021	·018757	·006562	·011	·021
855	·016393	·006138	·011	·021	·017564	·006350 –	·011	·021	·018735 +	·006554	·011	·021
856	·016374	·006131	·011	·021	·017544	·006342	·011	·021	·018713	·006546	·011	·021
857	·016355 +	·006124	·011	·021	·017523	·006335 –	·011	·021	·018692	·006539	·011	·021
858	·016336	·006117	·011	·021	·017503	·006328	·011	·021	·018670	·006531	·011	·021
859	·016317	·006110	·011	·021	·017483	·006320	·011	·021	·018648	·006524	·011	·021
860	·016298	·006103	·011	·021	·017462	·006313	·011	·021	·018626	·006516	·011	·021
861	·016279	·006096	·011	·021	·017442	·006306	·011	·021	·018605 –	·006509	·011	·021
862	·016260	·006089	·011	·021	·017422	·006299	·011	·021	·018583	·006501	·011	·021
863	·016241	·006082	·011	·021	·017401	·006291	·011	·021	·018561	·006494	·011	·021
864	·016222	·006075 –	·011	·021	·017381	·006284	·011	·021	·018540	·006486	·011	·021
865	·016204	·006068	·011	·021	·017361	·006277	·011	·021	·018519	·006479	·011	·021
866	·016185 –	·006061	·011	·021	·017341	·006270	·011	·021	·018497	·006471	·011	·021
867	·016166	·006054	·011	·021	·017321	·006262	·011	·021	·018476	·006464	·011	·021
868	·016148	·006047	·011	·021	·017301	·006255 +	·011	·021	·018454	·006457	·011	·021
869	·016129	·006040	·011	·021	·017281	·006248	·011	·021	·018433	·006449	·011	·021
870	·016110	·006033	·011	·021	·017261	·006241	·011	·021	·018412	·006442	·011	·021
871	·016092	·006026	·011	·021	·017241	·006234	·011	·021	·018391	·006435 –	·011	·021
872	·016073	·006019	·011	·021	·017222	·006227	·011	·021	·018370	·006427	·011	·021
873	·016055 +	·006012	·011	·021	·017202	·006220	·011	·021	·018349	·006420	·011	·021
874	·016037	·006006	·011	·021	·017182	·006213	·011	·021	·018328	·006413	·011	·021
875	·016018	·005999	·011	·021	·017162	·006206	·011	·021	·018307	·006406	·011	·021
876	·016000	·005992	·011	·021	·017143	·006199	·011	·021	·018286	·006398	·011	·021
877	·015982	·005985 +	·011	·021	·017123	·006192	·011	·021	·018265 –	·006391	·011	·021
878	·015964	·005978	·011	·021	·017104	·006185 –	·011	·021	·018244	·006384	·011	·021
879	·015945 +	·005972	·011	·021	·017084	·006178	·011	·021	·018223	·006377	·011	·021
880	·015927	·005965 –	·011	·021	·017065 –	·006171	·011	·021	·018203	·006369	·011	·021
881	·015909	·005958	·011	·021	·017045 +	·006164	·011	·021	·018182	·006362	·011	·021
882	·015891	·005952	·011	·021	·017026	·006157	·011	·021	·018161	·006355 +	·011	·021
883	·015873	·005945 –	·011	·021	·017007	·006150 +	·011	·021	·018141	·006348	·011	·021
884	·015855 +	·005938	·011	·021	·016988	·006143	·011	·021	·018120	·006341	·011	·021
885	·015837	·005932	·011	·021	·016968	·006136	·011	·021	·018100	·006334	·011	·021
886	·015819	·005925 –	·011	·021	·016949	·006129	·011	·021	·018079	·006327	·011	·021
887	·015801	·005918	·011	·021	·016930	·006123	·011	·021	·018059	·006320	·011	·021
888	·015784	·005912	·011	·021	·016911	·006116	·011	·021	·018038	·006313	·011	·021
889	·015766	·005905 +	·011	·021	·016892	·006109	·011	·021	·018018	·006306	·011	·021
890	·015748	·005899	·011	·021	·016873	·006102	·011	·021	·017998	·006299	·011	·021
891	·015730	·005892	·011	·021	·016854	·006095 +	·011	·021	·017978	·006292	·011	·021
892	·015713	·005885 +	·011	·021	·016835 +	·006088	·011	·021	·017957	·006285 –	·011	·021
893	·015695 +	·005879	·011	·021	·016816	·006082	·011	·021	·017937	·006278	·011	·021
894	·015677	·005872	·011	·021	·016797	·006075 –	·011	·021	·017917	·006271	·011	·021
895	·015660	·005866	·011	·021	·016779	·006068	·011	·021	·017897	·006264	·011	·021
896	·015642	·005859	·011	·021	·016760	·006062	·011	·021	·017877	·006257	·011	·021
897	·015625	·005853	·011	·021	·016741	·006055 –	·011	·021	·017857	·006250 –	·011	·021
898	·015608	·005846	·011	·021	·016722	·006048	·011	·021	·017837	·006243	·011	·021
899	·015590	·005840	·011	·021	·016704	·006041	·011	·021	·017817	·006236	·011	·021
900	·015573	·005833	·011	·021	·016685 +	·006035 –	·011	·021	·017798	·006229	·011	·021

$N=$ size of sample	18: $\bar{\eta}^2$	18: $\sigma_{\bar{\eta}^2}$	18: P_1 $\lambda_1=2{\cdot}75$	18: P_2 $\lambda_2=2{\cdot}35$	19: $\bar{\eta}^2$	19: $\sigma_{\bar{\eta}^2}$	19: P_1 $\lambda_1=2{\cdot}74$	19: P_2 $\lambda_2=2{\cdot}34$	20: $\bar{\eta}^2$	20: $\sigma_{\bar{\eta}^2}$	20: P_1 $\lambda_1=2{\cdot}73$	20: P_2 $\lambda_2=2{\cdot}33$
851	·020000	·006783	·011	·021	·021176	·006975 +	·011	·021	·022353	·007162	·011	·021
852	·019976	·006775 +	·011	·021	·021152	·006967	·011	·021	·022327	·007154	·011	·021
853	·019953	·006767	·011	·021	·021127	·006959	·011	·021	·022300	·007146	·011	·021
854	·019930	·006759	·011	·021	·021102	·006951	·011	·021	·022274	·007137	·011	·021
855	·019906	·006752	·011	·021	·021077	·006943	·011	·021	·022248	·007129	·011	·021
856	·019883	·006744	·011	·021	·021053	·006935 +	·011	·021	·022222	·007121	·011	·021
857	·019860	·006736	·011	·021	·021028	·006927	·011	·021	·022196	·007113	·011	·021
858	·019837	·006728	·011	·021	·021004	·006919	·011	·021	·022170	·007105 –	·011	·021
859	·019814	·006720	·011	·021	·020979	·006911	·011	·021	·022145 –	·007096	·011	·021
860	·019790	·006713	·011	·021	·020955 –	·006903	·011	·021	·022119	·007088	·011	·021
861	·019767	·006705 +	·011	·021	·020930	·006895 +	·011	·021	·022093	·007080	·011	·021
862	·019744	·006697	·011	·021	·020906	·006887	·011	·021	·022067	·007072	·011	·021
863	·019722	·006690	·011	·021	·020882	·006880	·011	·021	·022042	·007064	·011	·021
864	·019699	·006682	·011	·021	·020857	·006872	·011	·021	·022016	·007056	·011	·021
865	·019676	·006674	·011	·021	·020833	·006864	·011	·021	·021991	·007048	·011	·021
866	·019653	·006667	·011	·021	·020809	·006856	·011	·021	·021965 +	·007040	·011	·021
867	·019630	·006659	·011	·021	·020785 +	·006848	·011	·021	·021940	·007032	·011	·021
868	·019608	·006652	·011	·021	·020761	·006840	·011	·021	·021915 –	·007024	·011	·021
869	·019585 +	·006644	·011	·021	·020737	·006833	·011	·021	·021889	·007016	·011	·021
870	·019563	·006636	·011	·021	·020713	·006825 –	·011	·021	·021864	·007008	·011	·021
871	·019540	·006629	·011	·021	·020690	·006817	·011	·021	·021839	·007000	·011	·021
872	·019518	·006621	·011	·021	·020666	·006809	·011	·021	·021814	·006992	·011	·021
873	·019495 +	·006614	·011	·021	·020642	·006802	·011	·021	·021789	·006984	·011	·021
874	·019473	·006606	·011	·021	·020619	·006794	·011	·021	·021764	·006976	·011	·021
875	·019451	·006599	·011	·021	·020595 –	·006786	·011	·021	·021739	·006968	·011	·021
876	·019429	·006591	·011	·021	·020571	·006779	·011	·021	·021714	·006960	·011	·021
877	·019406	·006584	·011	·021	·020548	·006771	·011	·021	·021689	·006952	·011	·021
878	·019384	·006577	·011	·021	·020525 –	·006763	·011	·021	·021665 –	·006945 –	·011	·021
879	·019362	·006569	·011	·021	·020501	·006756	·011	·021	·021640	·006937	·011	·021
880	·019340	·006562	·011	·021	·020478	·006748	·011	·021	·021615 +	·006929	·011	·021
881	·019318	·006554	·011	·021	·020455 –	·006740	·011	·021	·021591	·006921	·011	·021
882	·019296	·006547	·011	·021	·020431	·006733	·011	·021	·021566	·006913	·011	·021
883	·019274	·006540	·011	·021	·020408	·006725 +	·011	·021	·021542	·006906	·011	·021
884	·019253	·006532	·011	·021	·020385 +	·006718	·011	·021	·021518	·006898	·011	·021
885	·019231	·006525 –	·011	·021	·020362	·006710	·011	·021	·021493	·006890	·011	·021
886	·019209	·006518	·011	·021	·020339	·006703	·011	·021	·021469	·006882	·011	·021
887	·019187	·006510	·011	·021	·020316	·006695 +	·011	·021	·021445 –	·006875 –	·011	·021
888	·019166	·006503	·011	·021	·020293	·006688	·011	·021	·021421	·006867	·011	·021
889	·019144	·006496	·011	·021	·020270	·006680	·011	·021	·021396	·006860	·011	·021
890	·019123	·006489	·011	·021	·020247	·006673	·011	·021	·021372	·006852	·011	·021
891	·019101	·006481	·011	·021	·020225 –	·006666	·011	·021	·021348	·006844	·011	·021
892	·019080	·006474	·011	·021	·020202	·006658	·011	·021	·021324	·006837	·011	·021
893	·019058	·006467	·011	·021	·020179	·006651	·011	·021	·021300	·006829	·011	·021
894	·019037	·006460	·011	·021	·020157	·006643	·011	·021	·021277	·006822	·011	·021
895	·019016	·006453	·011	·021	·020134	·006636	·011	·021	·021253	·006814	·011	·021
896	·018994	·006446	·011	·021	·020112	·006629	·011	·021	·021229	·006807	·011	·021
897	·018973	·006439	·011	·021	·020089	·006621	·011	·021	·021205 +	·006799	·011	·021
898	·018952	·006431	·011	·021	·020067	·006614	·011	·021	·021182	·006792	·011	·021
899	·018931	·006424	·011	·021	·020045 –	·006607	·011	·021	·021158	·006784	·011	·021
900	·018910	·006417	·011	·021	·020022	·006600	·011	·021	·021135 –	·006777	·011	·021

TABLE IV.—(*continued*).

N = size of sample	3: $\bar{\eta}^2$	3: $\sigma_{\bar{\eta}^2}$	3: P_1 $\lambda_1=3{\cdot}50$	3: P_2 $\lambda_2=2{\cdot}94$	4: $\bar{\eta}^2$	4: $\sigma_{\bar{\eta}^2}$	4: P_1 $\lambda_1=3{\cdot}20$	4: P_2 $\lambda_2=2{\cdot}80$	5: $\bar{\eta}^2$	5: $\sigma_{\bar{\eta}^2}$	5: P_1 $\lambda_1=3{\cdot}14$	5: P_2 $\lambda_2=2{\cdot}68$
901	·002222	·002217	·011	·019	·003333	·002714	·013	·020	·004444	·003132	·012	·021
902	·002220	·002215 −	·011	·019	·003330	·002711	·013	·020	·004440	·003129	·012	·021
903	·002217	·002212	·011	·019	·003326	·002708	·013	·020	·004435 −	·003125 +	·012	·021
904	·002215 −	·002210	·011	·019	·003322	·002705 +	·013	·020	·004430	·003122	·012	·021
905	·002212	·002208	·011	·019	·003319	·002702	·013	·020	·004425 −	·003118	·012	·021
906	·002210	·002205 +	·011	·019	·003315 −	·002699	·013	·020	·004420	·003115 −	·012	·021
907	·002208	·002203	·011	·019	·003311	·002696	·013	·020	·004415 +	·003112	·012	·021
908	·002205 +	·002200	·011	·019	·003308	·002693	·013	·020	·004410	·003108	·012	·021
909	·002203	·002198	·011	·019	·003304	·002690	·013	·020	·004405 +	·003105 −	·012	·021
910	·002200	·002195 +	·011	·019	·003300	·002687	·013	·020	·004400	·003101	·012	·021
911	·002198	·002193	·011	·019	·003297	·002684	·013	·020	·004396	·003098	·012	·021
912	·002195 +	·002191	·011	·019	·003293	·002681	·013	·020	·004391	·003095 −	·012	·021
913	·002193	·002188	·011	·019	·003289	·002678	·013	·020	·004386	·003091	·012	·021
914	·002191	·002186	·011	·019	·003286	·002676	·013	·020	·004381	·003088	·012	·021
915	·002188	·002183	·011	·019	·003282	·002673	·013	·020	·004376	·003084	·012	·021
916	·002186	·002181	·011	·019	·003279	·002670	·013	·020	·004372	·003081	·012	·021
917	·002183	·002179	·011	·019	·003275 +	·002667	·013	·020	·004367	·003078	·012	·021
918	·002181	·002176	·011	·019	·003272	·002664	·013	·020	·004362	·003074	·012	·021
919	·002179	·002174	·011	·019	·003268	·002661	·013	·020	·004357	·003071	·012	·021
920	·002176	·002172	·011	·019	·003264	·002658	·013	·020	·004353	·003068	·012	·021
921	·002174	·002169	·011	·019	·003261	·002655 +	·013	·020	·004348	·003064	·012	·021
922	·002172	·002167	·011	·019	·003257	·002652	·013	·020	·004343	·003061	·012	·021
923	·002169	·002164	·011	·019	·003254	·002650 −	·013	·020	·004338	·003058	·012	·021
924	·002167	·002162	·011	·019	·003250 +	·002647	·013	·020	·004334	·003054	·012	·021
925	·002165 −	·002160	·011	·019	·003247	·002644	·013	·020	·004329	·003051	·012	·021
926	·002162	·002157	·011	·019	·003243	·002641	·013	·020	·004324	·003048	·012	·021
927	·002160	·002155 +	·011	·019	·003240	·002638	·013	·020	·004320	·003045 −	·012	·021
928	·002157	·002153	·011	·019	·003236	·002635 +	·013	·020	·004315 −	·003041	·012	·021
929	·002155 +	·002151	·011	·019	·003233	·002632	·013	·020	·004310	·003038	·012	·021
930	·002153	·002148	·011	·019	·003229	·002630	·013	·020	·004306	·003035 −	·012	·021
931	·002151	·002146	·011	·019	·003226	·002627	·013	·020	·004301	·003032	·012	·021
932	·002148	·002144	·011	·019	·003222	·002624	·013	·020	·004296	·003028	·012	·021
933	·002146	·002141	·011	·019	·003219	·002621	·013	·020	·004292	·003025 +	·012	·021
934	·002144	·002139	·011	·019	·003215 +	·002618	·013	·020	·004287	·003022	·012	·021
935	·002141	·002137	·011	·019	·003212	·002616	·013	·020	·004283	·003019	·012	·021
936	·002139	·002134	·011	·019	·003209	·002613	·013	·020	·004278	·003015 +	·012	·021
937	·002137	·002132	·011	·019	·003205 +	·002610	·013	·020	·004274	·003012	·012	·021
938	·002134	·002130	·011	·019	·003202	·002607	·013	·020	·004269	·003009	·012	·021
939	·002132	·002128	·011	·019	·003198	·002604	·013	·020	·004264	·003006	·012	·021
940	·002130	·002125 +	·011	·019	·003195 −	·002602	·013	·020	·004260	·003003	·012	·021
941	·002128	·002123	·011	·019	·003191	·002599	·013	·020	·004255 +	·002999	·012	·021
942	·002125 +	·002121	·011	·019	·003188	·002596	·013	·020	·004251	·002996	·012	·021
943	·002123	·002119	·011	·019	·003185 −	·002593	·013	·020	·004246	·002993	·012	·021
944	·002121	·002116	·011	·019	·003181	·002591	·013	·020	·004242	·002990	·012	·021
945	·002119	·002114	·011	·019	·003178	·002588	·013	·020	·004237	·002987	·012	·021
946	·002116	·002112	·011	·019	·003175 −	·002585 +	·013	·020	·004233	·002984	·012	·021
947	·002114	·002110	·011	·019	·003171	·002582	·013	·020	·004228	·002980	·012	·021
948	·002112	·002107	·011	·019	·003168	·002580	·013	·020	·004224	·002977	·012	·021
949	·002110	·002105 +	·011	·019	·003165 −	·002577	·013	·020	·004219	·002974	·012	·021
950	·002107	·002103	·011	·019	·003161	·002574	·013	·020	·004215 −	·002971	·012	·021

N = size of sample	6: $\bar{\eta}^2$	6: $\sigma_{\bar{\eta}^2}$	6: P_1 $\lambda_1=3{\cdot}11$	6: P_2 $\lambda_2=2{\cdot}63$	7: $\bar{\eta}^2$	7: $\sigma_{\bar{\eta}^2}$	7: P_1 $\lambda_1=3{\cdot}08$	7: P_2 $\lambda_2=2{\cdot}58$	8: $\bar{\eta}^2$	8: $\sigma_{\bar{\eta}^2}$	8: P_1 $\lambda_1=3{\cdot}02$	8: P_2 $\lambda_2=2{\cdot}54$
901	·005556	·003500 −	·011	·021	·006667	·003832	·010	·021	·007778	·004137	·011	·021
902	·005549	·003496	·011	·021	·006659	·003828	·010	·021	·007769	·004132	·011	·021
903	·005543	·003492	·011	·021	·006652	·003823	·010	·021	·007761	·004127	·011	·021
904	·005537	·003488	·011	·021	·006645 −	·003819	·010	·021	·007752	·004123	·011	·021
905	·005531	·003485 −	·011	·021	·006637	·003815 +	·010	·021	·007743	·004118	·011	·021
906	·005525 −	·003481	·011	·021	·006630	·003811	·010	·021	·007735 −	·004114	·011	·021
907	·005519	·003477	·011	·021	·006623	·003807	·010	·021	·007726	·004109	·011	·021
908	·005513	·003473	·011	·021	·006615 +	·003802	·010	·021	·007718	·004105 −	·011	·021
909	·005507	·003469	·011	·021	·006608	·003798	·010	·021	·007709	·004100	·011	·021
910	·005501	·003465 +	·011	·021	·006601	·003794	·010	·021	·007701	·004096	·011	·021
911	·005495 −	·003462	·011	·021	·006593	·003790	·010	·021	·007692	·004091	·011	·021
912	·005488	·003458	·011	·021	·006586	·003786	·010	·021	·007684	·004087	·011	·021
913	·005482	·003454	·011	·021	·006579	·003782	·010	·021	·007675 +	·004082	·011	·021
914	·005476	·003450 +	·011	·021	·006572	·003778	·010	·021	·007667	·004078	·011	·021
915	·005470	·003447	·011	·021	·006565 −	·003773	·010	·021	·007659	·004074	·011	·021
916	·005464	·003443	·011	·021	·006557	·003769	·010	·021	·007650 +	·004069	·011	·021
917	·005459	·003439	·011	·021	·006550 +	·003765 +	·010	·021	·007642	·004065 −	·011	·021
918	·005453	·003435 +	·011	·021	·006543	·003761	·010	·021	·007634	·004060	·011	·021
919	·005447	·003432	·011	·021	·006536	·003757	·010	·021	·007625 +	·004056	·011	·021
920	·005441	·003428	·011	·021	·006529	·003753	·010	·021	·007617	·004052	·011	·021
921	·005435 −	·003424	·011	·021	·006522	·003749	·010	·021	·007609	·004047	·011	·021
922	·005429	·003420	·011	·021	·006515 −	·003745 −	·010	·021	·007600	·004043	·011	·021
923	·005423	·003417	·011	·021	·006508	·003741	·010	·021	·007592	·004038	·011	·021
924	·005417	·003413	·011	·021	·006501	·003737	·010	·021	·007584	·004034	·011	·021
925	·005411	·003409	·011	·021	·006494	·003733	·010	·021	·007576	·004030	·011	·021
926	·005405 +	·003406	·011	·021	·006486	·003729	·010	·021	·007568	·004025 +	·011	·021
927	·005400	·003402	·011	·021	·006479	·003725 −	·010	·021	·007559	·004021	·011	·021
928	·005394	·003398	·011	·021	·006472	·003721	·010	·021	·007551	·004017	·011	·021
929	·005388	·003395 −	·011	·021	·006466	·003717	·010	·021	·007543	·004012	·011	·021
930	·005382	·003391	·011	·021	·006459	·003713	·010	·021	·007535 −	·004008	·011	·021
931	·005376	·003388	·011	·021	·006452	·003709	·010	·021	·007527	·004004	·011	·021
932	·005371	·003384	·011	·021	·006445 −	·003705 −	·010	·021	·007519	·004000	·011	·021
933	·005365 −	·003380	·011	·021	·006438	·003701	·010	·021	·007511	·003995 +	·011	·021
934	·005359	·003377	·011	·021	·006431	·003697	·010	·021	·007503	·003991	·011	·021
935	·005353	·003373	·011	·021	·006424	·003693	·010	·021	·007495 −	·003987	·011	·021
936	·005348	·003369	·011	·021	·006417	·003689	·010	·021	·007487	·003983	·011	·021
937	·005342	·003366	·011	·021	·006410	·003685 +	·010	·021	·007479	·003978	·011	·021
938	·005336	·003362	·011	·021	·006403	·003681	·010	·021	·007471	·003974	·011	·021
939	·005330	·003359	·011	·021	·006397	·003677	·010	·021	·007463	·003970	·011	·021
940	·005325 −	·003355 +	·011	·021	·006390	·003673	·010	·021	·007455 −	·003966	·011	·021
941	·005319	·003352	·011	·021	·006383	·003670	·010	·021	·007447	·003961	·011	·021
942	·005313	·003348	·011	·021	·006376	·003666	·010	·021	·007439	·003957	·011	·021
943	·005308	·003345 −	·011	·021	·006369	·003662	·010	·021	·007431	·003953	·011	·021
944	·005302	·003341	·011	·021	·006363	·003658	·010	·021	·007423	·003949	·011	·021
945	·005297	·003337	·011	·021	·006356	·003654	·010	·021	·007415 +	·003945 −	·011	·021
946	·005291	·003334	·011	·021	·006349	·003650 +	·010	·021	·007407	·003941	·011	·021
947	·005285 +	·003330	·011	·021	·006342	·003646	·010	·021	·007400	·003936	·011	·021
948	·005280	·003327	·011	·021	·006336	·003643	·010	·021	·007392	·003932	·011	·021
949	·005274	·003323	·011	·021	·006329	·003639	·010	·021	·007384	·003928	·011	·021
950	·005269	·003320	·011	·021	·006322	·003635 −	·010	·021	·007376	·003924	·011	·021

TABLE IV.—(*continued*).

$N=$ size of sample	9				10				11			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=$ 2·96	P_2 $\lambda_2=$ 2·50	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=$ 2·92	P_2 $\lambda_2=$ 2·47	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=$ 2·88	P_2 $\lambda_2=$ 2·44
901	·008889	·004420	·011	·021	·010000	·004685 +	·011	·021	·011111	·004936	·011	·021
902	·008879	·004415 −	·011	·021	·009989	·004680	·011	·021	·011099	·004930	·011	·021
903	·008869	·004410	·011	·021	·009978	·004675 −	·011	·021	·011086	·004925 +	·011	·021
904	·008859	·004405 +	·011	·021	·009967	·004670	·011	·021	·011074	·004920	·011	·021
905	·008850 −	·004400	·011	·021	·009956	·004665 −	·011	·021	·011062	·004914	·011	·021
906	·008840	·004396	·011	·021	·009945 −	·004659	·011	·021	·011050 −	·004909	·011	·021
907	·008830	·004391	·011	·021	·009934	·004654	·011	·021	·011038	·004903	·011	·021
908	·008820	·004386	·011	·021	·009923	·004649	·011	·021	·011025 +	·004898	·011	·021
909	·008811	·004381	·011	·021	·009912	·004644	·011	·021	·011013	·004893	·011	·021
910	·008801	·004376	·011	·021	·009901	·004639	·011	·021	·011001	·004887	·011	·021
911	·008791	·004371	·011	·021	·009890	·004634	·011	·021	·010989	·004882	·011	·021
912	·008782	·004367	·011	·021	·009879	·004629	·011	·021	·010977	·004877	·011	·021
913	·008772	·004362	·011	·021	·009868	·004624	·011	·021	·010965 −	·004871	·011	·021
914	·008762	·004357	·011	·021	·009858	·004619	·011	·021	·010953	·004866	·011	·021
915	·008753	·004352	·011	·021	·009847	·004614	·011	·021	·010941	·004861	·011	·021
916	·008743	·004348	·011	·021	·009836	·004609	·011	·021	·010929	·004855 +	·011	·021
917	·008734	·004343	·011	·021	·009825 +	·004604	·011	·021	·010917	·004850 +	·011	·021
918	·008724	·004338	·011	·021	·009815 −	·004599	·011	·021	·010905 +	·004845 −	·011	·021
919	·008715 −	·004334	·011	·021	·009804	·004594	·011	·021	·010893	·004840	·011	·021
920	·008705 +	·004329	·011	·021	·009793	·004589	·011	·021	·010881	·004834	·011	·021
921	·008696	·004324	·011	·021	·009783	·004584	·011	·021	·010870	·004829	·011	·021
922	·008686	·004320	·011	·021	·009772	·004579	·011	·021	·010858	·004824	·011	·021
923	·008677	·004315 −	·011	·021	·009761	·004574	·011	·021	·010846	·004819	·011	·021
924	·008667	·004310	·011	·021	·009751	·004569	·011	·021	·010834	·004814	·011	·021
925	·008658	·004306	·011	·021	·009740	·004564	·011	·021	·010823	·004809	·011	·021
926	·008649	·004301	·011	·021	·009730	·004559	·011	·021	·010811	·004803	·011	·021
927	·008639	·004296	·011	·021	·009719	·004554	·011	·021	·010799	·004798	·011	·021
928	·008630	·004292	·011	·021	·009709	·004550 −	·011	·021	·010787	·004793	·011	·021
929	·008621	·004287	·011	·021	·009698	·004545 −	·011	·021	·010776	·004788	·011	·021
930	·008611	·004283	·011	·021	·009688	·004540	·011	·021	·010764	·004783	·011	·021
931	·008602	·004278	·011	·021	·009677	·004535 −	·011	·021	·010753	·004778	·011	·021
932	·008593	·004273	·011	·021	·009667	·004530	·011	·021	·010741	·004773	·011	·021
933	·008584	·004269	·011	·021	·009657	·004525 +	·011	·021	·010730	·004768	·011	·021
934	·008574	·004264	·011	·021	·009646	·004520	·011	·021	·010718	·004762	·011	·021
935	·008565 +	·004260	·011	·021	·009636	·004516	·011	·021	·010707	·004757	·011	·021
936	·008556	·004255 +	·011	·021	·009626	·004511	·011	·021	·010695 +	·004752	·011	·021
937	·008547	·004251	·011	·021	·009615 +	·004506	·011	·021	·010684	·004747	·011	·021
938	·008538	·004246	·011	·021	·009605 +	·004501	·011	·021	·010672	·004742	·011	·021
939	·008529	·004242	·011	·021	·009595 −	·004497	·011	·021	·010661	·004737	·011	·021
940	·008520	·004237	·011	·021	·009585 −	·004492	·011	·021	·010650 −	·004732	·011	·021
941	·008511	·004233	·011	·021	·009574	·004487	·011	·021	·010638	·004727	·011	·022
942	·008502	·004228	·011	·021	·009564	·004482	·011	·021	·010627	·004722	·011	·022
943	·008493	·004224	·011	·021	·009554	·004478	·011	·021	·010616	·004717	·011	·022
944	·008484	·004219	·011	·021	·009544	·004473	·011	·021	·010604	·004712	·011	·022
945	·008475 −	·004215 −	·011	·021	·009534	·004468	·011	·021	·010593	·004707	·011	·022
946	·008466	·004210	·011	·021	·009524	·004463	·011	·021	·010582	·004702	·011	·022
947	·008457	·004206	·011	·021	·009514	·004459	·011	·021	·010571	·004697	·011	·022
948	·008448	·004202	·011	·021	·009504	·004454	·011	·021	·010560	·004692	·011	·022
949	·008439	·004197	·011	·021	·009494	·004449	·011	·021	·010549	·004688	·011	·022
950	·008430	·004193	·011	·021	·009484	·004445 −	·011	·021	·010537	·004683	·011	·022

$N=$ size of sample	12				13				14			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=$ 2·84	P_2 $\lambda_2=$ 2·42	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=$ 2·80	P_2 $\lambda_2=$ 2·40	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=$ 2·79	P_2 $\lambda_2=$ 2·39
901	·012222	·005174	·011	·022	·013333	·005401	·012	·022	·014444	·005618	·011	·022
902	·012209	·005168	·011	·022	·013319	·005395 −	·012	·022	·014428	·005612	·011	·022
903	·012195 +	·005162	·011	·022	·013304	·005389	·012	·022	·014412	·005606	·011	·022
904	·012182	·005157	·011	·022	·013289	·005383	·012	·022	·014396	·005600	·011	·022
905	·012168	·005151	·011	·022	·013274	·005377	·012	·022	·014381	·005594	·011	·022
906	·012155 −	·005146	·011	·022	·013260	·005371	·012	·022	·014365 −	·005587	·011	·022
907	·012141	·005140	·011	·022	·013245 +	·005365 +	·012	·022	·014349	·005581	·011	·022
908	·012128	·005134	·011	·022	·013230	·005360	·012	·022	·014333	·005575 +	·011	·022
909	·012115 −	·005129	·011	·022	·013216	·005354	·012	·022	·014317	·005569	·011	·022
910	·012101	·005123	·011	·022	·013201	·005348	·012	·022	·014301	·005563	·011	·022
911	·012088	·005117	·011	·022	·013187	·005342	·012	·022	·014286	·005557	·011	·022
912	·012075 −	·005112	·011	·022	·013172	·005336	·012	·022	·014270	·005551	·011	·022
913	·012061	·005106	·011	·022	·013158	·005330	·012	·022	·014254	·005545 −	·011	·022
914	·012048	·005101	·011	·022	·013143	·005325 −	·012	·022	·014239	·005539	·011	·022
915	·012035 +	·005095 +	·011	·022	·013129	·005319	·012	·022	·014223	·005533	·011	·022
916	·012022	·005090	·011	·022	·013115 −	·005313	·012	·022	·014208	·005527	·011	·022
917	·012009	·005084	·011	·022	·013100	·005307	·012	·022	·014192	·005521	·011	·022
918	·011996	·005079	·011	·022	·013086	·005302	·012	·022	·014177	·005515 −	·011	·022
919	·011983	·005073	·011	·022	·013072	·005296	·012	·022	·014161	·005509	·011	·022
920	·011970	·005068	·011	·022	·013058	·005290	·012	·022	·014146	·005503	·011	·022
921	·011957	·005062	·011	·022	·013043	·005284	·012	·022	·014130	·005497	·011	·022
922	·011944	·005057	·011	·022	·013029	·005279	·012	·022	·014115 +	·005491	·011	·022
923	·011931	·005051	·011	·022	·013015 +	·005273	·012	·022	·014100	·005485 +	·011	·022
924	·011918	·005046	·011	·022	·013001	·005267	·012	·022	·014085 −	·005479	·011	·022
925	·011905 −	·005040	·011	·022	·012987	·005262	·012	·022	·014069	·005474	·011	·022
926	·011892	·005035 +	·011	·022	·012973	·005256	·012	·022	·014054	·005468	·011	·022
927	·011879	·005030	·011	·022	·012959	·005250 +	·012	·022	·014039	·005462	·011	·022
928	·011866	·005024	·011	·022	·012945 −	·005245 −	·012	·022	·014024	·005456	·011	·022
929	·011853	·005019	·011	·022	·012931	·005239	·012	·022	·014009	·005450 −	·011	·022
930	·011841	·005014	·011	·022	·012917	·005234	·012	·022	·013994	·005444	·011	·022
931	·011828	·005008	·011	·022	·012903	·005228	·012	·022	·013978	·005439	·011	·022
932	·011815 +	·005003	·011	·022	·012889	·005222	·012	·022	·013963	·005433	·011	·022
933	·011803	·004997	·011	·022	·012876	·005217	·012	·022	·013948	·005427	·011	·022
934	·011790	·004992	·011	·022	·012862	·005211	·012	·022	·013934	·005421	·011	·022
935	·011777	·004987	·011	·022	·012848	·005206	·012	·022	·013919	·005415 +	·011	·022
936	·011765 −	·004982	·011	·022	·012834	·005200	·012	·022	·013904	·005410	·011	·022
937	·011752	·004976	·011	·022	·012821	·005195 −	·012	·022	·013889	·005404	·011	·022
938	·011740	·004971	·011	·022	·012807	·005189	·012	·022	·013874	·005398	·011	·022
939	·011727	·004966	·011	·022	·012793	·005184	·012	·022	·013859	·005393	·011	·022
940	·011715 −	·004960	·011	·022	·012780	·005178	·012	·022	·013845 −	·005387	·011	·022
941	·011702	·004955 +	·011	·022	·012766	·005173	·012	·022	·013830	·005381	·011	·022
942	·011690	·004950 +	·011	·022	·012752	·005167	·012	·022	·013815 +	·005375 +	·011	·022
943	·011677	·004945 −	·011	·022	·012739	·005162	·012	·022	·013800	·005370	·011	·022
944	·011665 −	·004940	·011	·022	·012725 +	·005156	·012	·022	·013786	·005364	·011	·022
945	·011653	·004934	·011	·022	·012712	·005151	·012	·022	·013771	·005359	·011	·022
946	·011640	·004929	·011	·022	·012698	·005146	·012	·022	·013757	·005353	·011	·022
947	·011628	·004924	·011	·022	·012685 −	·005140	·012	·022	·013742	·005347	·011	·022
948	·011616	·004919	·011	·022	·012672	·005135 −	·012	·022	·013728	·005342	·011	·022
949	·011603	·004914	·011	·022	·012658	·005129	·012	·022	·013713	·005336	·011	·022
950	·011591	·004909	·011	·022	·012645 −	·005124	·012	·022	·013699	·005331	·011	·022

TABLE IV.—(*continued*).

N = size of sample	15				16				17				18				19				20			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·78$	P_2 $\lambda_2 = 2·38$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·77$	P_2 $\lambda_2 = 2·37$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·76$	P_2 $\lambda_2 = 2·36$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·75$	P_2 $\lambda_2 = 2·35$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·74$	P_2 $\lambda_2 = 2·34$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1 = 2·73$	P_2 $\lambda_2 = 2·33$
901	·015556	·005827	·011	·021	·016667	·006028	·011	·021	·017778	·006222	·011	·021	·018889	·006410	·011	·021	·020000	·006592	·011	·021	·021111	·006769	·011	·021
902	·015538	·005821	·011	·021	·016648	·006022	·011	·021	·017758	·006216	·011	·021	·018868	·006403	·011	·021	·019978	·006585 +	·011	·021	·021088	·006762	·011	·021
903	·015521	·005814	·011	·021	·016630	·006015 −	·011	·021	·017738	·006209	·011	·021	·018847	·006396	·011	·021	·019956	·006578	·011	·021	·021064	·006754	·011	·021
904	·015504	·005808	·011	·021	·016611	·006008	·011	·021	·017719	·006202	·011	·021	·018826	·006389	·011	·021	·019934	·006571	·011	·021	·021041	·006747	·011	·021
905	·015487	·005802	·011	·021	·016593	·006002	·011	·021	·017699	·006195 +	·011	·021	·018805 +	·006382	·011	·021	·019912	·006564	·011	·021	·021018	·006740	·011	·021
906	·015470	·005795 +	·011	·021	·016575 −	·005995 +	·011	·021	·017680	·006188	·011	·021	·018785 −	·006375 +	·011	·021	·019890	·006556	·011	·021	·020994	·006732	·011	·021
907	·015453	·005789	·011	·021	·016556	·005989	·011	·021	·017660	·006182	·011	·021	·018764	·006368	·011	·021	·019868	·006549	·011	·021	·020971	·006725 −	·011	·021
908	·015436	·005782	·011	·021	·016538	·005982	·011	·021	·017641	·006175 −	·011	·021	·018743	·006361	·011	·021	·019846	·006542	·011	·021	·020948	·006718	·011	·021
909	·015419	·005776	·011	·021	·016520	·005976	·011	·021	·017621	·006168	·011	·021	·018722	·006354	·011	·021	·019824	·006535 −	·011	·021	·020925 +	·006710	·011	·021
910	·015402	·005770	·011	·021	·016502	·005969	·011	·021	·017602	·006161	·011	·021	·018702	·006347	·011	·021	·019802	·006528	·011	·021	·020902	·006703	·011	·021
911	·015385 −	·005764	·011	·021	·016484	·005963	·011	·021	·017582	·006155 −	·011	·021	·018681	·006341	·011	·021	·019780	·006521	·011	·021	·020879	·006696	·011	·021
912	·015368	·005757	·011	·021	·016465 +	·005956	·011	·021	·017563	·006148	·011	·021	·018661	·006334	·011	·021	·019759	·006514	·011	·021	·020856	·006688	·011	·021
913	·015351	·005751	·011	·021	·016447	·005950 −	·011	·021	·017544	·006141	·011	·021	·018640	·006327	·011	·021	·019737	·006507	·011	·021	·020833	·006681	·011	·021
914	·015334	·005745 −	·011	·021	·016429	·005943	·011	·021	·017525 −	·006135 −	·011	·021	·018620	·006320	·011	·021	·019715 +	·006500 −	·011	·021	·020811	·006674	·011	·021
915	·015317	·005739	·011	·021	·016411	·005937	·011	·021	·017505 +	·006128	·011	·021	·018600	·006313	·011	·021	·019694	·006492	·011	·021	·020788	·006667	·011	·021
916	·015301	·005732	·011	·021	·016393	·005930	·011	·021	·017486	·006121	·011	·021	·018579	·006306	·011	·021	·019672	·006485 +	·011	·021	·020765 +	·006659	·011	·021
917	·015284	·005726	·011	·021	·016376	·005924	·011	·021	·017467	·006115 −	·011	·021	·018559	·006299	·011	·021	·019651	·006478	·011	·021	·020742	·006652	·011	·021
918	·015267	·005720	·011	·021	·016358	·005917	·011	·021	·017448	·006108	·011	·021	·018539	·006293	·011	·021	·019629	·006471	·011	·021	·020720	·006645 +	·011	·021
919	·015251	·005714	·011	·021	·016340	·005911	·011	·021	·017429	·006102	·011	·021	·018519	·006286	·011	·021	·019608	·006465 −	·011	·021	·020697	·006638	·011	·021
920	·015234	·005708	·011	·021	·016322	·005905 −	·011	·021	·017410	·006095 −	·011	·021	·018498	·006279	·011	·021	·019587	·006458	·011	·021	·020675 −	·006631	·011	·021
921	·015217	·005702	·011	·021	·016304	·005898	·011	·021	·017391	·006088	·011	·021	·018478	·006272	·011	·021	·019565 +	·006451	·011	·021	·020652	·006624	·011	·021
922	·015201	·005695 +	·011	·021	·016287	·005892	·011	·021	·017372	·006082	·011	·021	·018458	·006266	·011	·021	·019544	·006444	·011	·021	·020630	·006617	·011	·021
923	·015184	·005689	·011	·021	·016269	·005886	·011	·021	·017354	·006075 +	·011	·021	·018438	·006259	·011	·021	·019523	·006437	·011	·021	·020607	·006610	·011	·021
924	·015168	·005683	·011	·021	·016251	·005879	·011	·021	·017335 −	·006069	·011	·021	·018418	·006252	·011	·021	·019502	·006430	·011	·021	·020585 +	·006602	·011	·021
925	·015152	·005677	·011	·021	·016234	·005873	·011	·021	·017316	·006062	·011	·021	·018398	·006245 +	·011	·021	·019481	·006423	·011	·021	·020563	·006595 +	·011	·021
926	·015135 +	·005671	·011	·021	·016216	·005867	·011	·021	·017297	·006056	·011	·021	·018378	·006239	·011	·021	·019459	·006416	·011	·021	·020541	·006588	·011	·021
927	·015119	·005665 −	·011	·021	·016199	·005861	·011	·021	·017279	·006049	·011	·021	·018359	·006232	·011	·021	·019438	·006409	·011	·021	·020518	·006581	·011	·021
928	·015102	·005659	·011	·021	·016181	·005854	·011	·021	·017260	·006043	·011	·021	·018339	·006225 +	·011	·021	·019417	·006402	·011	·021	·020496	·006574	·011	·021
929	·015086	·005653	·011	·021	·016164	·005848	·011	·021	·017241	·006036	·011	·021	·018319	·006219	·011	·021	·019397	·006396	·011	·021	·020474	·006567	·011	·021
930	·015070	·005647	·011	·021	·016146	·005842	·011	·021	·017223	·006030	·011	·021	·018299	·006212	·011	·021	·019376	·006389	·011	·021	·020452	·006560	·011	·021
931	·015054	·005641	·011	·021	·016129	·005836	·011	·021	·017204	·006024	·011	·021	·018280	·006206	·011	·021	·019355 −	·006382	·011	·021	·020430	·006553	·011	·021
932	·015038	·005635 −	·011	·021	·016112	·005829	·011	·021	·017186	·006017	·011	·021	·018260	·006199	·011	·021	·019334	·006375 +	·011	·021	·020408	·006546	·011	·021
933	·015021	·005629	·011	·021	·016094	·005823	·011	·021	·017167	·006011	·011	·021	·018240	·006192	·011	·021	·019313	·006368	·011	·021	·020386	·006539	·011	·021
934	·015005 +	·005623	·011	·021	·016077	·005817	·011	·021	·017149	·006004	·011	·021	·018221	·006186	·011	·021	·019293	·006362	·011	·021	·020364	·006532	·011	·021
935	·014989	·005617	·011	·021	·016060	·005811	·011	·021	·017131	·005998	·011	·021	·018201	·006179	·011	·021	·019272	·006355 −	·011	·021	·020343	·006526	·011	·021
936	·014973	·005611	·011	·021	·016043	·005805 −	·011	·021	·017112	·005992	·011	·021	·018182	·006173	·011	·021	·019251	·006348	·011	·021	·020321	·006519	·011	·021
937	·014957	·005605 −	·011	·021	·016026	·005798	·011	·021	·017094	·005985 +	·011	·021	·018162	·006166	·011	·021	·019231	·006342	·011	·021	·020299	·006512	·011	·021
938	·014941	·005599	·011	·021	·016009	·005792	·011	·021	·017076	·005979	·011	·021	·018143	·006160	·011	·021	·019210	·006335 −	·011	·021	·020277	·006505 −	·011	·021
939	·014925 +	·005593	·011	·021	·015991	·005786	·011	·021	·017058	·005973	·011	·021	·018124	·006153	·011	·021	·019190	·006328	·011	·021	·020256	·006498	·011	·021
940	·014909	·005587	·011	·021	·015974	·005780	·011	·021	·017039	·005966	·011	·021	·018104	·006147	·011	·021	·019169	·006322	·011	·021	·020234	·006491	·011	·021
941	·014894	·005581	·011	·021	·015957	·005774	·011	·021	·017021	·005960	·011	·021	·018085 +	·006140	·011	·021	·019149	·006315 −	·011	·021	·020213	·006484	·011	·021
942	·014878	·005575 +	·011	·021	·015940	·005768	·011	·021	·017003	·005954	·011	·021	·018066	·006134	·011	·021	·019129	·006308	·011	·021	·020191	·006478	·011	·021
943	·014862	·005569	·011	·021	·015924	·005762	·011	·021	·016985 +	·005948	·011	·021	·018047	·006127	·011	·021	·019108	·006302	·011	·021	·020170	·006471	·011	·021
944	·014846	·005564	·011	·021	·015907	·005756	·011	·021	·016967	·005941	·011	·021	·018028	·006121	·011	·021	·019088	·006295 −	·011	·021	·020148	·006464	·011	·021
945	·014831	·005558	·011	·021	·015890	·005750 −	·011	·021	·016949	·005935 +	·011	·021	·018008	·006115 −	·011	·021	·019068	·006288	·011	·021	·020127	·006457	·011	·021
946	·014815 −	·005552	·011	·021	·015873	·005744	·011	·021	·016931	·005929	·011	·021	·017989	·006108	·011	·021	·019048	·006282	·011	·021	·020106	·006450 +	·011	·021
947	·014799	·005546	·011	·021	·015856	·005738	·011	·021	·016913	·005923	·011	·021	·017970	·006102	·011	·021	·019027	·006275 +	·011	·021	·020085 −	·006444	·011	·021
948	·014784	·005540	·011	·021	·015839	·005732	·011	·021	·016895 +	·005917	·011	·021	·017951	·006095 +	·011	·021	·019007	·006269	·011	·021	·020063	·006437	·011	·021
949	·014768	·005535 −	·011	·021	·015823	·005726	·011	·021	·016878	·005910	·011	·021	·017932	·006089	·011	·021	·018987	·006262	·011	·021	·020042	·006430	·011	·021
950	·014752	·005529	·011	·021	·015806	·005720	·011	·021	·016860	·005904	·011	·021	·017914	·006083	·011	·021	·018967	·006256	·011	·021	·020021	·006424	·011	·021

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	3				4				5			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3\cdot50$	P_2 $\lambda_2=2\cdot94$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3\cdot20$	P_2 $\lambda_2=2\cdot80$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3\cdot14$	P_2 $\lambda_2=2\cdot68$
951	·002105 +	·002101	·011	·019	·003158	·002572	·013	·020	·004211	·002968	·012	·021
952	·002103	·002099	·011	·019	·003155 −	·002569	·013	·020	·004206	·002965 −	·012	·021
953	·002101	·002096	·011	·019	·003151	·002566	·013	·020	·004202	·002962	·012	·021
954	·002099	·002094	·011	·019	·003148	·002564	·013	·020	·004197	·002959	·012	·021
955	·002096	·002092	·011	·019	·003145 −	·002561	·013	·020	·004193	·002955 +	·012	·021
956	·002094	·002090	·011	·019	·003141	·002558	·013	·020	·004188	·002952	·012	·021
957	·002092	·002088	·011	·019	·003138	·002556	·013	·020	·004184	·002949	·012	·021
958	·002090	·002086	·011	·019	·003135 −	·002553	·013	·020	·004180	·002946	·012	·021
959	·002088	·002083	·011	·019	·003132	·002550 +	·013	·020	·004175 +	·002943	·012	·021
960	·002086	·002081	·011	·019	·003128	·002548	·013	·020	·004171	·002940	·012	·021
961	·002083	·002079	·011	·019	·003125	·002545 −	·013	·020	·004167	·002937	·012	·021
962	·002081	·002077	·011	·019	·003122	·002542	·013	·020	·004162	·002934	·012	·021
963	·002079	·002075 −	·011	·019	·003119	·002540	·013	·020	·004158	·002931	·012	·021
964	·002077	·002073	·011	·019	·003115 +	·002537	·013	·020	·004154	·002928	·012	·021
965	·002075 −	·002070	·011	·019	·003112	·002534	·013	·020	·004149	·002925 −	·012	·021
966	·002073	·002068	·011	·019	·003109	·002532	·013	·020	·004145 +	·002922	·012	·021
967	·002070	·002066	·011	·019	·003106	·002529	·013	·020	·004141	·002919	·012	·021
968	·002068	·002064	·011	·019	·003102	·002527	·013	·020	·004137	·002916	·012	·021
969	·002066	·002062	·011	·019	·003099	·002524	·013	·020	·004132	·002913	·012	·021
970	·002064	·002060	·011	·019	·003096	·002521	·013	·020	·004128	·002910	·012	·021
971	·002062	·002058	·011	·019	·003093	·002519	·013	·020	·004124	·002907	·012	·021
972	·002060	·002055 +	·011	·019	·003090	·002516	·013	·020	·004119	·002904	·012	·021
973	·002058	·002053	·011	·019	·003086	·002514	·013	·020	·004115 +	·002901	·012	·021
974	·002055 +	·002051	·011	·019	·003083	·002511	·013	·020	·004111	·002898	·012	·021
975	·002053	·002049	·011	·019	·003080	·002508	·013	·020	·004107	·002895 −	·012	·021
976	·002051	·002047	·011	·019	·003077	·002506	·013	·020	·004103	·002892	·012	·021
977	·002049	·002045 −	·011	·019	·003074	·002503	·013	·020	·004098	·002889	·012	·021
978	·002047	·002043	·011	·019	·003071	·002501	·013	·020	·004094	·002886	·012	·021
979	·002045 −	·002041	·011	·019	·003067	·002498	·013	·020	·004090	·002883	·012	·021
980	·002043	·002039	·011	·019	·003064	·002496	·013	·020	·004086	·002880	·012	·021
981	·002041	·002037	·011	·019	·003061	·002493	·013	·020	·004082	·002877	·012	·021
982	·002039	·002035 −	·011	·019	·003058	·002491	·013	·020	·004077	·002874	·012	·021
983	·002037	·002033	·011	·019	·003055 −	·002488	·013	·020	·004073	·002871	·012	·021
984	·002035 −	·002030	·011	·019	·003052	·002486	·013	·020	·004069	·002869	·012	·021
985	·002033	·002028	·011	·019	·003049	·002483	·013	·020	·004065 +	·002866	·012	·021
986	·002030	·002026	·011	·019	·003046	·002480	·013	·020	·004061	·002863	·012	·021
987	·002028	·002024	·011	·019	·003043	·002478	·013	·020	·004057	·002860	·012	·021
988	·002026	·002022	·011	·019	·003040	·002475 +	·013	·020	·004053	·002857	·012	·021
989	·002024	·002020	·011	·019	·003036	·002473	·013	·020	·004049	·002854	·012	·021
990	·002022	·002018	·011	·019	·003033	·002470	·013	·020	·004044	·002851	·012	·021
991	·002020	·002016	·011	·019	·003030	·002468	·013	·020	·004040	·002848	·012	·021
992	·002018	·002014	·011	·019	·003027	·002466	·013	·020	·004036	·002845 +	·012	·021
993	·002016	·002012	·011	·019	·003024	·002463	·013	·020	·004032	·002843	·012	·021
994	·002014	·002010	·011	·019	·003021	·002461	·013	·020	·004028	·002840	·012	·021
995	·002012	·002008	·011	·019	·003018	·002458	·013	·020	·004024	·002837	·012	·021
996	·002010	·002006	·011	·019	·003015 +	·002456	·013	·020	·004020	·002834	·012	·021
997	·002008	·002004	·011	·019	·003012	·002453	·013	·020	·004016	·002831	·012	·021
998	·002006	·002002	·011	·019	·003009	·002451	·013	·020	·004012	·002828	·012	·021
999	·002004	·002000	·011	·019	·003006	·002448	·013	·020	·004008	·002826	·012	·021
1000	·002002	·001998	·011	·019	·003003	·002446	·013	·020	·004004	·002823	·012	·021

N = size of sample	6				7				8			
	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3\cdot11$	P_2 $\lambda_2=2\cdot63$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3\cdot08$	P_2 $\lambda_2=2\cdot58$	$\bar{\eta}^2$	$\sigma_{\bar{\eta}^2}$	P_1 $\lambda_1=3\cdot02$	P_2 $\lambda_2=2\cdot54$
951	·005263	·003316	·011	·021	·006316	·003631	·010	·021	·007368	·003920	·011	·021
952	·005258	·003313	·011	·021	·006309	·003627	·010	·021	·007361	·003916	·011	·021
953	·005252	·003310	·011	·021	·006303	·003623	·010	·021	·007353	·003912	·011	·021
954	·005247	·003306	·011	·021	·006296	·003620	·010	·021	·007345 +	·003908	·011	·021
955	·005241	·003303	·011	·021	·006289	·003616	·010	·021	·007338	·003904	·011	·021
956	·005236	·003299	·011	·021	·006283	·003612	·010	·021	·007330	·003899	·011	·021
957	·005230	·003296	·011	·021	·006276	·003608	·010	·021	·007322	·003895 +	·011	·021
958	·005225 −	·003292	·011	·021	·006270	·003605 −	·010	·021	·007315 −	·003891	·011	·021
959	·005219	·003289	·011	·021	·006263	·003601	·010	·021	·007307	·003887	·011	·021
960	·005214	·003285 +	·011	·021	·006257	·003597	·010	·021	·007299	·003883	·011	·021
961	·005208	·003282	·011	·021	·006250	·003593	·010	·021	·007292	·003879	·011	·021
962	·005203	·003279	·011	·021	·006243	·003590	·010	·021	·007284	·003875 +	·011	·021
963	·005198	·003275 +	·011	·021	·006237	·003586	·010	·021	·007277	·003871	·011	·021
964	·005192	·003272	·011	·021	·006231	·003582	·010	·021	·007269	·003867	·011	·021
965	·005187	·003268	·011	·021	·006224	·003579	·010	·021	·007261	·003863	·011	·021
966	·005181	·003265 +	·011	·021	·006218	·003575 −	·010	·021	·007254	·003859	·011	·021
967	·005176	·003262	·011	·021	·006211	·003571	·010	·021	·007246	·003855 +	·011	·021
968	·005171	·003258	·011	·021	·006205 −	·003567	·010	·021	·007239	·003851	·011	·021
969	·005165 +	·003255 +	·011	·021	·006198	·003564	·010	·021	·007231	·003847	·011	·021
970	·005160	·003252	·011	·021	·006192	·003560	·010	·021	·007224	·003843	·011	·021
971	·005155 −	·003248	·011	·021	·006186	·003557	·010	·021	·007216	·003839	·011	·021
972	·005149	·003245 −	·011	·021	·006179	·003553	·010	·021	·007209	·003836	·011	·021
973	·005144	·003242	·011	·021	·006173	·003549	·010	·021	·007202	·003832	·011	·021
974	·005139	·003238	·011	·021	·006166	·003546	·010	·021	·007194	·003828	·011	·021
975	·005133	·003235 +	·011	·021	·006160	·003542	·010	·021	·007187	·003824	·011	·021
976	·005128	·003232	·011	·021	·006154	·003538	·010	·021	·007179	·003820	·011	·021
977	·005123	·003228	·011	·021	·006148	·003535 −	·010	·021	·007172	·003816	·011	·021
978	·005118	·003225 +	·011	·021	·006141	·003531	·010	·021	·007165 −	·003812	·011	·021
979	·005112	·003222	·011	·021	·006135 −	·003528	·010	·021	·007157	·003808	·011	·021
980	·005107	·003219	·011	·021	·006129	·003524	·010	·021	·007150 +	·003804	·011	·021
981	·005102	·003215 +	·011	·021	·006122	·003520	·010	·021	·007143	·003800	·011	·021
982	·005097	·003212	·011	·021	·006116	·003517	·010	·021	·007136	·003797	·011	·021
983	·005092	·003209	·011	·021	·006110	·003513	·010	·021	·007128	·003793	·011	·021
984	·005086	·003206	·011	·021	·006104	·003510	·010	·021	·007121	·003789	·011	·021
985	·005081	·003202	·011	·021	·006098	·003506	·010	·021	·007114	·003785 +	·011	·021
986	·005076	·003199	·011	·021	·006091	·003503	·010	·021	·007107	·003781	·011	·021
987	·005071	·003196	·011	·021	·006085 +	·003499	·010	·021	·007099	·003777	·011	·021
988	·005066	·003193	·011	·021	·006079	·003496	·010	·021	·007092	·003774	·011	·021
989	·005061	·003189	·011	·021	·006073	·003492	·010	·021	·007085 +	·003770	·011	·021
990	·005056	·003186	·011	·021	·006067	·003488	·010	·021	·007078	·003766	·011	·021
991	·005051	·003183	·011	·021	·006061	·003485 −	·010	·021	·007071	·003762	·011	·021
992	·005045 +	·003180	·011	·021	·006054	·003481	·010	·021	·007064	·003758	·011	·021
993	·005040	·003177	·011	·021	·006048	·003478	·010	·021	·007056	·003755 −	·011	·021
994	·005035 +	·003173	·011	·021	·006042	·003474	·010	·021	·007049	·003751	·011	·021
995	·005030	·003170	·011	·021	·006036	·003471	·010	·021	·007042	·003747	·011	·021
996	·005025 +	·003167	·011	·021	·006030	·003468	·010	·021	·007035 +	·003743	·011	·021
997	·005020	·003164	·011	·021	·006024	·003464	·010	·021	·007028	·003740	·011	·021
998	·005015 +	·003161	·011	·021	·006018	·003461	·010	·021	·007021	·003736	·011	·021
999	·005010	·003158	·011	·021	·006012	·003457	·010	·021	·007014	·003732	·011	·021
1000	·005005 +	·003154	·011	·021	·006006	·003454	·010	·021	·007007	·003729	·011	·021

TABLE IV.—(*continued*).

N = size of sample	9: $\bar{\eta}^2$	9: $\sigma_{\bar{\eta}^2}$	9: P_1 $\lambda_1 = 2{\cdot}96$	9: P_2 $\lambda_2 = 2{\cdot}50$	10: $\bar{\eta}^2$	10: $\sigma_{\bar{\eta}^2}$	10: P_1 $\lambda_1 = 2{\cdot}92$	10: P_2 $\lambda_2 = 2{\cdot}47$	11: $\bar{\eta}^2$	11: $\sigma_{\bar{\eta}^2}$	11: P_1 $\lambda_1 = 2{\cdot}88$	11: P_2 $\lambda_2 = 2{\cdot}44$
951	·008421	·004188	·011	·021	·009474	·004440	·011	·021	·010526	·004678	·011	·022
952	·008412	·004184	·011	·021	·009464	·004435 +	·011	·021	·010515 +	·004673	·011	·022
953	·008403	·004180	·011	·021	·009454	·004431	·011	·021	·010504	·004668	·011	·022
954	·008395 −	·004175 −	·011	·021	·009444	·004426	·011	·021	·010493	·004663	·011	·022
955	·008386	·004171	·011	·021	·009434	·004422	·011	·021	·010482	·004658	·011	·022
956	·008377	·004167	·011	·021	·009424	·004417	·011	·021	·010471	·004653	·011	·022
957	·008368	·004162	·011	·021	·009414	·004412	·011	·021	·010460	·004649	·011	·022
958	·008359	·004158	·011	·021	·009404	·004408	·011	·021	·010449	·004644	·011	·022
959	·008351	·004154	·011	·021	·009395 −	·004403	·011	·021	·010438	·004639	·011	·022
960	·008342	·004149	·011	·021	·009385 −	·004399	·011	·021	·010428	·004634	·011	·022
961	·008333	·004145 −	·011	·021	·009375	·004394	·011	·021	·010417	·004629	·011	·022
962	·008325 −	·004141	·011	·021	·009365 +	·004390	·011	·021	·010406	·004625 −	·011	·022
963	·008316	·004136	·011	·021	·009356	·004385 −	·011	·021	·010395 +	·004620	·011	·022
964	·008307	·004132	·011	·021	·009346	·004380	·011	·021	·010384	·004615 −	·011	·022
965	·008299	·004128	·011	·021	·009336	·004376	·011	·021	·010373	·004610	·011	·022
966	·008290	·004124	·011	·021	·009326	·004371	·011	·021	·010363	·004605 +	·011	·022
967	·008282	·004119	·011	·021	·009317	·004367	·011	·021	·010352	·004601	·011	·022
968	·008273	·004115 +	·011	·021	·009307	·004362	·011	·021	·010341	·004596	·011	·022
969	·008264	·004111	·011	·021	·009298	·004358	·011	·021	·010331	·004591	·011	·022
970	·008256	·004107	·011	·021	·009288	·004353	·011	·021	·010320	·004587	·011	·022
971	·008247	·004102	·011	·021	·009278	·004349	·011	·021	·010309	·004582	·011	·022
972	·008239	·004098	·011	·021	·009269	·004345 −	·011	·021	·010299	·004577	·011	·022
973	·008230	·004094	·011	·021	·009259	·004340	·011	·021	·010288	·004573	·011	·022
974	·008222	·004090	·011	·021	·009250 −	·004336	·011	·021	·010277	·004568	·011	·022
975	·008214	·004086	·011	·021	·009240	·004331	·011	·021	·010267	·004563	·011	·022
976	·008205 +	·004082	·011	·021	·009231	·004327	·011	·021	·010256	·004559	·011	·022
977	·008197	·004077	·011	·021	·009221	·004322	·011	·021	·010246	·004554	·011	·022
978	·008188	·004073	·011	·021	·009212	·004318	·011	·021	·010235 +	·004549	·011	·022
979	·008180	·004069	·011	·021	·009202	·004314	·011	·021	·010225 −	·004545 −	·011	·022
980	·008172	·004065 −	·011	·021	·009193	·004309	·011	·021	·010215 −	·004540	·011	·022
981	·008163	·004061	·011	·021	·009184	·004305 −	·011	·021	·010204	·004535 +	·011	·022
982	·008155 −	·004057	·011	·021	·009174	·004301	·011	·021	·010194	·004531	·011	·022
983	·008147	·004053	·011	·021	·009165 −	·004296	·011	·021	·010183	·0045e6	·011	·022
984	·008138	·004048	·011	·021	·009156	·004292	·011	·021	·010173	·004522	·011	·022
985	·008130	·004044	·011	·021	·009146	·004288	·011	·021	·010163	·004517	·011	·022
986	·008122	·004040	·011	·021	·009137	·004283	·011	·021	·010152	·004513	·011	·022
987	·008114	·004036	·011	·021	·009128	·004279	·011	·021	·010142	·004508	·011	·022
988	·008105 +	·004032	·011	·021	·009119	·004275 −	·011	·021	·010132	·004503	·011	·022
989	·008097	·004028	·011	·021	·009109	·004270	·011	·021	·010121	·004499	·011	·022
990	·008089	·004024	·011	·021	·009100	·004266	·011	·021	010111	·004494	·011	·022
991	·008081	·004020	·011	·021	·009091	·004262	·011	·021	·010101	·004490	·011	·022
992	·008073	·004016	·011	·021	·009082	·004257	·011	·021	·010091	·004485 +	·011	·022
993	·008065 −	·004012	·011	·021	·009073	·004253	·011	·021	·010081	·004481	·011	·022
994	·008056	·004008	·011	·021	·009063	·004249	·011	·021	·010070	·004476	·011	·022
995	·008048	·004004	·011	·021	·009054	·004245 −	·011	·021	·010060	·004472	·011	·022
996	·008040	·004000	·011	·021	·009045 +	·004240	·011	·021	·010050 +	·004467	·011	·022
997	·008032	·003996	·011	·021	·009036	·004236	·011	·021	·010040	·004463	·011	·022
998	·008024	·003992	·011	·021	·009027	·004232	·011	·021	·010030	·004459	·011	·022
999	·008016	·003988	·011	·021	·009018	·004228	·011	·021	·010020	·004454	·011	·022
1000	·008008	·003984	·011	·021	·009009	·004223	·011	·021	·010010	·004450 −	·011	·022

N = size of sample	12: $\bar{\eta}^2$	12: $\sigma_{\bar{\eta}^2}$	12: P_1 $\lambda_1 = 2{\cdot}84$	12: P_2 $\lambda_2 = 2{\cdot}42$	13: $\bar{\eta}^2$	13: $\sigma_{\bar{\eta}^2}$	13: P_1 $\lambda_1 = 2{\cdot}80$	13: P_2 $\lambda_2 = 2{\cdot}40$	14: $\bar{\eta}^2$	14: $\sigma_{\bar{\eta}^2}$	14: P_1 $\lambda_1 = 2{\cdot}79$	14: P_2 $\lambda_2 = 2{\cdot}39$
951	·011579	·004903	·011	·022	·012632	·005119	·012	·022	·013684	·005325 −	·011	·022
952	·011567	·004898	·011	·022	·012618	·005113	·012	·022	·013670	·005319	·011	·022
953	·011555 −	·004893	·011	·022	·012605 +	·005108	·012	·022	·013655 +	·005314	·011	·022
954	·011542	·004888	·011	·022	·012592	·005103	·012	·022	·013641	·005308	·011	·022
955	·011530	·004883	·011	·022	·012579	·005097	·012	·022	·013627	·005303	·011	·022
956	·011518	·004878	·011	·022	·012565 +	·005092	·012	·022	·013613	·005297	·011	·022
957	·011506	·004873	·011	·022	·012552	·005087	·012	·022	·013598	·005292	·011	·022
958	·011494	·004868	·011	·022	·012539	·005082	·012	·022	·013584	·005286	·011	·022
959	·011482	·004863	·011	·022	·012526	·005076	·012	·022	·013570	·005281	·011	·022
960	·011470	·004858	·011	·022	·012513	·005071	·012	·022	·013556	·005275 +	·011	·022
961	·011458	·004853	·011	·022	·012500	·005066	·012	·022	·013542	·005270	·011	·022
962	·011446	·004848	·011	·022	·012487	·005061	·012	·022	·013528	·005264	·011	·022
963	·011435 −	·004843	·011	·022	·012474	·005055 +	·012	·022	·013514	·005259	·011	·022
964	·011423	·004838	·011	·022	·012461	·005050 +	·012	·022	·013499	·005254	·011	·022
965	·011411	·004833	·011	·022	·012448	·005045 −	·012	·022	·013485 +	·005248	·011	·022
966	·011399	·004828	·011	·022	·012435 +	·005040	·012	·022	·013472	·005243	·011	·022
967	·011387	·004823	·011	·022	·012422	·005035 −	·012	·022	·013458	·005237	·011	·022
968	·011375 +	·004818	·011	·022	·012410	·005029	·012	·022	·013444	·005232	·011	·022
969	·011364	·004813	·011	·022	·012397	·005024	·012	·022	·013430	·005227	·011	·022
970	·011352	·004808	·011	·022	·012384	·005019	·012	·022	·013416	·005221	·011	·022
971	·011340	·004803	·011	·022	·012371	·005014	·012	·022	·013402	·005216	·011	·022
972	·011329	·004798	·011	·022	·012358	·005009	·012	·022	·013388	·005211	·011	·022
973	·011317	·004793	·011	·022	·012346	·005004	·012	·022	·013374	·005205 +	·011	·022
974	·011305 +	·004788	·011	·022	·012333	·004999	·012	·022	·013361	·005200	·011	·022
975	·011294	·004783	·011	·022	·012320	·004994	·012	·022	·013347	·005195 −	·011	·022
976	·011282	·004779	·011	·022	·012308	·004988	·012	·022	·013333	·005189	·011	·022
977	·011270	·004774	·011	·022	·012295 +	·004983	·012	·022	·013320	·005184	·011	·022
978	·011259	·004769	·011	·022	·012282	·004978	·012	·022	·013306	·005179	·011	·022
979	·011247	·004764	·011	·022	·012270	·004973	·012	·022	·013292	·005174	·011	·022
980	·011236	·004759	·011	·022	·012257	·004968	·012	·022	·013279	·005168	·011	·022
981	·011224	·004754	·011	·022	·012245 −	·004963	·012	·022	·013265 +	·005163	·011	·022
982	·011213	·004750 −	·011	·022	·012232	·004958	·012	·022	·013252	·005158	·011	·022
983	·011202	·004745 −	·011	·022	·012220	·004953	·012	·022	·013238	·005153	·011	·022
984	·011190	·004740	·011	·022	·012208	·004948	·012	·022	·013225 −	·005148	·011	·022
985	·011179	·004735 +	·011	·022	·012195 +	·004943	·012	·022	·013211	·005142	·011	·022
986	·011168	·004730	·011	·022	·012183	·004938	·012	·022	·013198	·005137	·011	·022
987	·011156	·004726	·011	·022	·012170	·004933	·012	·022	·013185 −	·005132	·011	·022
988	·011145 −	·004721	·011	·022	·012158	·004928	·012	·022	·013171	·005127	·011	·022
989	·011134	·004716	·011	·022	·012146	·004923	·012	·022	·013158	·005122	·011	·022
990	·011122	·004711	·011	·022	·012133	·004918	·012	·022	·013145 −	·005117	·011	·022
991	·011111	·004707	·011	·022	·012121	·004913	·012	·022	·013131	·005111	·011	·022
992	·011100	·004702	·011	·022	·012109	·004908	·012	·022	·013118	·005106	·011	·022
993	·011089	·004697	·011	·022	·012097	·004904	·012	·022	·013105 −	·005101	·011	·022
994	·011078	·004693	·011	·022	·012085 −	·004899	·012	·022	·013092	·005096	·011	·022
995	·011066	·004688	·011	·022	·012072	·004894	·012	·022	·013078	·005091	·011	·022
996	·011055 +	·004683	·011	·022	·012060	·004889	·012	·022	·013065 +	·005086	·011	·022
997	·011044	·004678	·011	·022	·012048	·004884	·012	·022	·013052	·005081	·011	·022
998	·011033	·004674	·011	·022	·012036	·004879	·012	·022	·013039	·005076	·011	·022
999	·011022	·004669	·011	·022	·012024	·004874	·012	·022	·013026	·005071	·011	·022
1000	·011011	·004665 −	·011	·022	·012012	·004869	·012	·022	·013013	·005066	·011	·022

TABLE IV.—(*continued*).

n = number of arrays

N = size of sample	$n=15$: $\bar{\eta}^2$	$n=15$: $\sigma_{\bar{\eta}^2}$	$n=15$: P_1 $\lambda_1=2·78$	$n=15$: P_2 $\lambda_2=2·38$	$n=16$: $\bar{\eta}^2$	$n=16$: $\sigma_{\bar{\eta}^2}$	$n=16$: P_1 $\lambda_1=2·77$	$n=16$: P_2 $\lambda_2=2·37$
951	·014737	·005523	·011	·021	·015789	·005714	·011	·021
952	·014721	·005517	·011	·021	·015773	·005708	·011	·021
953	·014706	·005511	·011	·021	·015756	·005702	·011	·021
954	·014690	·005506	·011	·021	·015740	·005696	·011	·021
955	·014675 +	·005500 +	·011	·021	·015723	·005690	·011	·021
956	·014660	·005494	·011	·021	·015707	·005684	·011	·021
957	·014644	·005489	·011	·021	·015690	·005678	·011	·021
958	·014629	·005483	·011	·021	·015674	·005672	·011	·021
959	·014614	·005477	·011	·021	·015658	·005667	·011	·021
960	·014599	·005472	·011	·021	·015641	·005661	·011	·021
961	·014583	·005466	·011	·021	·015625	·005655 −	·011	·021
962	·014568	·005460	·011	·021	·015609	·005649	·011	·021
963	·014553	·005455 −	·011	·021	·015593	·005643	·011	·021
964	·014538	·005449	·011	·021	·015576	·005637	·011	·021
965	·014523	·005443	·011	·021	·015560	·005632	·011	·021
966	·014508	·005438	·011	·021	·015544	·005626	·011	·021
967	·014493	·005432	·011	·021	·015528	·005620	·011	·021
968	·014478	·005427	·011	·021	·015512	·005614	·011	·021
969	·014463	·005421	·011	·021	·015496	·005608	·011	·021
970	·014448	·005416	·011	·021	·015480	·005603	·011	·021
971	·014433	·005410	·011	·021	·015464	·005597	·011	·021
972	·014418	·005405 −	·011	·021	·015448	·005591	·011	·021
973	·014403	·005399	·011	·021	·015432	·005586	·011	·021
974	·014388	·005394	·011	·021	·015416	·005580	·011	·021
975	·014374	·005388	·011	·021	·015400	·005574	·011	·021
976	·014359	·005383	·011	·021	·015385 −	·005569	·011	·021
977	·014344	·005377	·011	·021	·015369	·005563	·011	·021
978	·014330	·005372	·011	·021	·015353	·005557	·011	·021
979	·014315 −	·005366	·011	·021	·015337	·005552	·011	·021
980	·014300	·005361	·011	·021	·015322	·005546	·011	·021
981	·014286	·005355 +	·011	·021	·015306	·005540	·011	·021
982	·014271	·005350 −	·011	·021	·015291	·005535 −	·011	·021
983	·014257	·005345 −	·011	·021	·015275 −	·005529	·011	·021
984	·014242	·005339	·011	·021	·015259	·005524	·011	·021
985	·014228	·005334	·011	·021	·015244	·005518	·011	·021
986	·014213	·005328	·011	·021	·015228	·005513	·011	·021
987	·014199	·005323	·011	·021	·015213	·005507	·011	·021
988	·014184	·005318	·011	·021	·015198	·005501	·011	·021
989	·014170	·005312	·011	·021	·015182	·005496	·011	·021
990	·014156	·005307	·011	·021	·015167	·005490	·011	·021
991	·014141	·005302	·011	·021	·015152	·005485 −	·011	·021
992	·014127	·005296	·011	·021	·015136	·005479	·011	·021
993	·014113	·005291	·011	·021	·015121	·005474	·011	·021
994	·014099	·005286	·011	·021	·015106	·005469	·011	·021
995	·014085 −	·005281	·011	·021	·015091	·005463	·011	·021
996	·014070	·005275 +	·011	·021	·015075 +	·005458	·011	·021
997	·014056	·005270	·011	·021	·015060	·005452	·011	·021
998	·014042	·005265 −	·011	·021	·015045 +	·005447	·011	·021
999	·014028	·005260	·011	·021	·015030	·005441	·011	·021
1000	·014014	·005254	·011	·021	·015015 +	·005436	·011	·021

N = size of sample	$n=17$: $\bar{\eta}^2$	$n=17$: $\sigma_{\bar{\eta}^2}$	$n=17$: P_1 $\lambda_1=2·76$	$n=17$: P_2 $\lambda_2=2·36$	$n=18$: $\bar{\eta}^2$	$n=18$: $\sigma_{\bar{\eta}^2}$	$n=18$: P_1 $\lambda_1=2·75$	$n=18$: P_2 $\lambda_2=2·35$
951	·016842	·005898	·011	·021	·017895 −	·006076	·011	·021
952	·016824	·005892	·011	·021	·017876	·006070	·011	·021
953	·016807	·005886	·011	·021	·017857	·006064	·011	·021
954	·016789	·005880	·011	·021	·017838	·006057	·011	·021
955	·016771	·005874	·011	·021	·017820	·006051	·011	·021
956	·016754	·005867	·011	·021	·017801	·006045 −	·011	·021
957	·016736	·005861	·011	·021	·017782	·006039	·011	·021
958	·016719	·005855 +	·011	·021	·017764	·006032	·011	·021
959	·016701	·005849	·011	·021	·017745 +	·006026	·011	·021
960	·016684	·005843	·011	·021	·017727	·006020	·011	·021
961	·016667	·005837	·011	·021	·017708	·006014	·011	·021
962	·016649	·005831	·011	·021	·017690	·006007	·011	·021
963	·016632	·005825 +	·011	·021	·017672	·006001	·011	·021
964	·016615 −	·005819	·011	·021	·017653	·005995 +	·011	·021
965	·016598	·005813	·011	·021	·017635 −	·005989	·011	·021
966	·016580	·005807	·011	·021	·017617	·005983	·011	·021
967	·016563	·005801	·011	·021	·017598	·005977	·011	·021
968	·016546	·005795 +	·011	·021	·017580	·005971	·011	·021
969	·016529	·005789	·011	·021	·017562	·005964	·011	·021
970	·016512	·005783	·011	·021	·017544	·005958	·011	·021
971	·016495 −	·005778	·011	·021	·017526	·005952	·011	·021
972	·016478	·005772	·011	·021	·017508	·005946	·011	·021
973	·016461	·005766	·011	·021	·017490	·005940	·011	·021
974	·016444	·005760	·011	·021	·017472	·005934	·011	·021
975	·016427	·005754	·011	·021	·017454	·005928	·011	·021
976	·016410	·005748	·011	·021	·017436	·005922	·011	·021
977	·016393	·005742	·011	·021	·017418	·005916	·011	·021
978	·016377	·005737	·011	·021	·017400	·005910	·011	·021
979	·016360	·005731	·011	·021	·017382	·005904	·011	·021
980	·016343	·005725 −	·011	·021	·017365 −	·005898	·011	·021
981	·016327	·005719	·011	·021	·017347	·005892	·011	·021
982	·016310	·005713	·011	·021	·017329	·005886	·011	·021
983	·016293	·005708	·011	·021	·017312	·005880	·011	·021
984	·016277	·005702	·011	·021	·017294	·005874	·011	·021
985	·016260	·005696	·011	·021	·017276	·005868	·011	·021
986	·016244	·005690	·011	·021	·017259	·005862	·011	·021
987	·016227	·005685 −	·011	·021	·017241	·005857	·011	·021
988	·016211	·005679	·011	·021	·017224	·005851	·011	·021
989	·016194	·005673	·011	·021	·017206	·005845 −	·011	·021
990	·016178	·005668	·011	·021	·017189	·005839	·011	·021
991	·016162	·005662	·011	·021	·017172	·005833	·011	·021
992	·016145 +	·005656	·011	·021	·017154	·005827	·011	·021
993	·016129	·005651	·011	·021	·017137	·005822	·011	·021
994	·016113	·005645 −	·011	·021	·017120	·005816	·011	·021
995	·016097	·005639	·011	·021	·017103	·005810	·011	·021
996	·016080	·005634	·011	·021	·017085 +	·005804	·011	·021
997	·016064	·005628	·011	·021	·017068	·005798	·011	·021
998	·016048	·005623	·011	·021	·017051	·005793	·011	·021
999	·016032	·005617	·011	·021	·017034	·005787	·011	·021
1000	·016016	·005611	·011	·021	·017017	·005781	·011	·021

N = size of sample	$n=19$: $\bar{\eta}^2$	$n=19$: $\sigma_{\bar{\eta}^2}$	$n=19$: P_1 $\lambda_1=2·74$	$n=19$: P_2 $\lambda_2=2·34$	$n=20$: $\bar{\eta}^2$	$n=20$: $\sigma_{\bar{\eta}^2}$	$n=20$: P_1 $\lambda_1=2·73$	$n=20$: P_2 $\lambda_2=2·33$
951	·018947	·006249	·011	·021	·020000	·006417	·011	·021
952	·018927	·006243	·011	·021	·019979	·006410	·011	·021
953	·018908	·006236	·011	·021	·019958	·006404	·011	·021
954	·018888	·006230	·011	·021	·019937	·006397	·011	·021
955	·018868	·006223	·011	·021	·019916	·006390	·011	·021
956	·018848	·006217	·011	·021	·019895 +	·006384	·011	·021
957	·018828	·006210	·011	·021	·019874	·006377	·011	·021
958	·018809	·006204	·011	·021	·019854	·006370	·011	·021
959	·018789	·006197	·011	·021	·019833	·006364	·011	·021
960	·018770	·006191	·011	·021	·019812	·006357	·011	·021
961	·018750	·006185 −	·011	·021	·019792	·006351	·011	·021
962	·018730	·006178	·011	·021	·019771	·006344	·011	·021
963	·018711	·006172	·011	·021	·019751	·006338	·011	·021
964	·018692	·006166	·011	·021	·019730	·006331	·011	·021
965	·018672	·006159	·011	·021	·019710	·006325 −	·011	·021
966	·018653	·006153	·011	·021	·019689	·006318	·011	·021
967	·018634	·006147	·011	·021	·019669	·006312	·011	·021
968	·018614	·006140	·011	·021	·019648	·006305 +	·011	·021
969	·018595 +	·006134	·011	·021	·019628	·006299	·011	·021
970	·018576	·006128	·011	·021	·019608	·006292	·011	·021
971	·018557	·006122	·011	·021	·019588	·006286	·011	·021
972	·018538	·006115 +	·011	·021	·019567	·006280	·011	·021
973	·018519	·006109	·011	·021	·019547	·006273	·011	·021
974	·018499	·006103	·011	·021	·019527	·006267	·011	·021
975	·018480	·006097	·011	·021	·019507	·006261	·011	·021
976	·018462	·006091	·011	·021	·019487	·006254	·011	·021
977	·018443	·006084	·011	·021	·019467	·006248	·011	·021
978	·018424	·006078	·011	·021	·019447	·006241	·011	·021
979	·018405 −	·006072	·011	·021	·019427	·006235 +	·011	·021
980	·018386	·006066	·011	·021	·019408	·006229	·011	·021
981	·018367	·006060	·011	·021	·019388	·006223	·011	·021
982	·018349	·006054	·011	·021	·019368	·006216	·011	·021
983	·018330	·006048	·011	·021	·019348	·006210	·011	·021
984	·018311	·006041	·011	·021	·019329	·006204	·011	·021
985	·018293	·006035 +	·011	·021	·019309	·006198	·011	·021
986	·018274	·006029	·011	·021	·019289	·006191	·011	·021
987	·018256	·006023	·011	·021	·019270	·006185 +	·011	·021
988	·018237	·006017	·011	·021	·019250 +	·006179	·011	·021
989	·018219	·006011	·011	·021	·019231	·006173	·011	·021
990	·018200	·006005 +	·011	·021	·019211	·006167	·011	·021
991	·018182	·005999	·011	·021	·019192	·006160	·011	·021
992	·018163	·005993	·011	·021	·019173	·006154	·011	·021
993	·018145 +	·005987	·011	·021	·019153	·006148	·011	·021
994	·018127	·005981	·011	·021	·019134	·006142	·011	·021
995	·018109	·005975 +	·011	·021	·019115 −	·006136	·011	·021
996	·018090	·005969	·011	·021	·019095 +	·006130	·011	·021
997	·018072	·005963	·011	·021	·019076	·006124	·011	·021
998	·018054	·005958	·011	·021	·019057	·006118	·011	·021
999	·018036	·005952	·011	·021	·019038	·006112	·011	·021
1000	·018018	·005946	·011	·021	·019019	·006106	·011	·021

Tables V *and* VI *for assisting the Computing of Tetrachoric Functions.*

TABLE V.

Values of p_s and q_s for use in the formula

$$\tau_s(x) = xp_s\,\tau_{s-1}(x) - q_s\,\tau_{s-2}(x).$$

s	p_s	q_s	s	p_s	q_s
2	·707,1067,812	·000,0000,000	14	·267,2612,419	·889,4991,800
3	·577,3502,692	·408,2482,905	15	·258,1988,897	·897,0852,271
4	·500,0000,000	·577,3502,692	16	·250,0000,000	·903,6961,141
5	·447,2135,955⁻	·670,8203,933	17	·242,5356,250	·909,5085,939
6	·408,2482,905⁻	·730,2967,433	18	·235,7022,604	·914,6591,208
7	·377,9644,730	·771,5167,498	19	·229,4157,339	·919,2547,198
8	·353,5533,906	·801,7837,257	20	·223,6067,978	·923,3805,169
9	·333,3333,333	·824,9579,114	21	·218,2178,902	·927,1050,693
10	·316,2277,660	·843,2740,427	22	·213,2007,163	·930,4842,104
11	·301,5113,446	·858,1163,303	23	·208,5144,141	·933,5638,714
12	·288,6751,346	·870,3882,798	24	·204,1241,452	·936,3821,838
13	·277,3500,981	·880,7048,459	25	·200,0000,000	·938,9710,681

TABLE VI.

Values of the ${}_q\chi_s$-Coefficients for determining $\delta^2\tau_s(x)$ and $\delta^4\tau_s(x)$ from the equations:

$$\delta^2\tau_s(x) = {}_1\chi_s\,\tau_{s+2}(x) + {}_2\chi_s\,\tau_{s+4}(x), \quad \delta^4\tau_s(x) = {}_3\chi_s\,\tau_{s+4}(x) + {}_4\chi_s\,\tau_{s+6}(x).$$

Order of Tetrachoric Function s	$\delta^2\tau_s$		$\delta^4\tau_s$	
	${}_1\chi_s$	${}_2\chi_s$	${}_3\chi_s$	${}_4\chi_s$
0	·0141,4214	·0000,4082	·0004,8990	·0000,0447
1	·0244,9490	·0000,9129	·0010,9545⁻	·0000,1183
2	·0346,4102	·0001,5811	·0018,9737	·0000,2366
3	·0447,2136	·0002,4152	·0028,9828	·0000,4099
4	·0547,7226	·0003,4157	·0040,9878	·0000,6481
5	·0648,0741	·0004,5826	·0054,9909	·0000,9612
6	·0748,3315⁻	·0005,9161	·0070,9930	·0001,3594
7	·0848,5281	·0007,4162	·0088,9944	·0001,8526
8	·0948,6833	·0009,0830	·0108,9954	·0002,4507
9	·1048,8089	·0010,9163	·0130,9962	·0003,1639
10	·1148,9125⁺	·0012,9164	·0154,9968	·0004,0020
11	·1248,9996	·0015,0831	·0180,9972	·0004,9751
12	·1349,0738	·0017,4165⁻	·0208,9976	·0006,0933
13	·1449,1377	·0019,9165⁻	·0238,9979	·0007,3664
14	·1549,1933	·0022,5832	·0270,9981	·0008,8045⁺
15	·1649,2422	·0025,4165⁺	·0304,9984	·0010,4177

TABLE VII.

Table of the First Twenty Tetrachoric Functions.

h	τ_0	τ_1	τ_2	τ_3	τ_4	h
0·0	+·500 0000	+·398 9423	+·000 0000	−·162 8675+	+·000 0000	0·0
0·1	+·460 1722	+·396 9525+	+·028 0688	−·160 4346	−·024 2273	0·1
0·2	+·420 7403	+·391 0427	+·055 3018	−·153 2568	−·047 2542	0·2
0·3	+·382 0886	+·381 3878	+·080 9046	−·141 6878	−·067 9635−	0·3
0·4	+·344 5783	+·368 2701	+·104 1625+	−·126 2904	−·085 3963	0·4
0·5	+·308 5375+	+·352 0653	+·124 4739	−·107 7976	−·098 8144	0·5
0·6	+·274 2531	+·333 2246	+·141 3752	−·087 0646	−·107 7424	0·6
0·7	+·241 9637	+·312 2539	+·154 5578	−·065 0133	−·111 9887	0·7
0·8	+·211 8554	+·289 6916	+·163 8743	−·042 5758	−·111 6432	0·8
0·9	+·184 0601	+·266 0853	+·169 3356	−·020 6395−	−·107 0537	0·9
1·0	+·158 6553	+·241 9707	+·171 0991	−·000 0000	−·098 7841	1·0
1·1	+·135 6661	+·217 8522	+·169 4492	+·018 6769	−·087 5592	1·1
1·2	+·115 0697	+·194 1861	+·164 7723	+·034 8815−	−·074 2025−	1·2
1·3	+·096 8005−	+·171 3686	+·157 5287	+·048 2730	−·059 5717	1·3
1·4	+·080 7567	+·149 7275−	+·148 2226	+·058 6809	−·044 4997	1·4
1·5	+·066 8072	+·129 5176	+·137 3742	+·066 0942	−·029 7424	1·5
1·6	+·054 7993	+·110 9208	+·125 4926	+·070 6419	−·015 9397	1·6
1·7	+·044 5655−	+·094 0491	+·113 0547	+·072 5673	−·003 5900	1·7
1·8	+·035 9303	+·078 9502	+·100 4871	+·072 1980	+·006 9620	1·8
1·9	+·028 7166	+·065 6158	+·088 1550+	+·069 9155−	+·015 5234	1·9
2·0	+·022 7501	+·053 9910	+·076 3548	+·066 1252	+·022 0417	2·0
2·1	+·017 8644	+·043 9836	+·065 3123	+·061 2307	+·026 5842	2·1
2·2	+·013 9034	+·035 4746	+·055 1855+	+·055 6126	+·029 3125−	2·2
2·3	+·010 7241	+·028 3270	+·046 0696	+·049 6116	+·030 4550+	2·3
2·4	+·008 1975+	+·022 3945+	+·038 0048	+·043 5184	+·030 2801	2·4
2·5	+·006 2097	+·017 5283	+·030 9859	+·037 5685−	+·029 0708	2·5
2·6	+·004 6612	+·013 5830	+·024 9720	+·031 9405−	+·027 1051	2·6
2·7	+·003 4670	+·010 4209	+·019 8955+	+·026 7597	+·024 6389	2·7
2·8	+·002 5551	+·007 9155−	+·015 6718	+·022 1033	+·021 8964	2·8
2·9	+·001 8658	+·005 9525+	+·012 2063	+·018 0071	+·019 0630	2·9
3·0	+·001 3499	+·004 4318	+·009 4014	+·014 4744	+·016 2837	3·0
3·1	+·000 9676	+·003 2668	+·007 1610	+·011 4829	+·013 6641	3·1
3·2	+·000 6871	+·002 3841	+·005 3946	+·008 9933	+·011 2747	3·2
3·3	+·000 4834	+·001 7226	+·004 0195+	+·006 9550+	+·009 1551	3·3
3·4	+·000 3369	+·001 2322	+·002 9625−	+·005 3122	+·007 3204	3·4
3·5	+·000 2326	+·000 8727	+·002 1598	+·004 0081	+·005 7671	3·5
3·6	+·000 1591	+·000 6119	+·001 5576	+·002 9877	+·004 4786	3·6
3·7	+·000 1078	+·000 4248	+·001 1114	+·002 2006	+·003 4296	3·7
3·8	+·000 0723	+·000 2919	+·000 7845−	+·001 6019	+·002 5906	3·8
3·9	+·000 0481	+·000 1987	+·000 5478	+·001 1524	+·001 9310	3·9
4·0	+·000 0317	+·000 1338	+·000 3785+	+·000 8195+	+·001 4205+	4·0

TABLE VII.—(*continued*).

Table of the First Twenty Tetrachoric Functions—(*continued*).

h	τ_5	τ_6	τ_7	τ_8	τ_9	h
0·0	+·109 2548	+·000 0000	−·084 2919	−·000 0000	+·069 5373	0·0
0·1	+·106 5394	+·022 0425+	−·081 3638	−·020 5500−	+·066 4367	0·1
0·2	+·098 5813	+·042 5587	−·072 8400	−·039 2734	+·057 4717	0·2
0·3	+·085 9288	+·060 1576	−·059 4743	−·054 5416	+·043 6096	0·3
0·4	+·069 4420	+·073 7045−	−·042 4326	−·065 0959	+·026 3256	0·4
0·5	+·050 2172	+·082 4144	−·023 1686	−·070 1742	+·007 4174	0·5
0·6	+·029 4944	+·085 9085+	−·003 2732	−·069 5744	−·011 2147	0·6
0·7	+·008 5543	+·084 2295+	+·015 6853	−·063 6520	−·027 7918	0·7
0·8	−·011 3820	+·077 8153	+·032 3105+	−·053 2523	−·040 8554	0·8
0·9	−·029 2429	+·067 4365−	+·045 5011	−·039 5911	−·049 4138	0·9
1·0	−·044 1776	+·054 1063	+·054 5340	−·024 1009	−·053 0219	1·0
1·1	−·055 6023	+·038 9747	+·059 1023	−·008 2639	−·051 7870	1·1
1·2	−·063 2204	+·023 2182	+·059 3064	+·006 5456	−·046 3071	1·2
1·3	−·067 0162	+·007 9380	+·055 6045+	+·019 1923	−·037 5547	1·3
1·4	−·067 2256	−·005 9246	+·048 7307	+·028 8707	−·026 7277	1·4
1·5	−·064 2891	−·017 6481	+·039 5946	+·035 1482	−·015 0898	1·5
1·6	−·058 7935+	−·026 7631	+·029 1754	+·037 9623	−·003 8219	1·6
1·7	−·051 4089	−·033 0572	+·018 4223	+·037 5773	+·006 0962	1·7
1·8	−·042 8277	−·036 5561	+·008 1718	+·034 5106	+·013 9649	1·8
1·9	−·033 7104	−·037 4849	−·000 9110	+·029 4428	+·019 3986	1·9
2·0	−·024 6434	−·036 2182	−·008 3656	+·023 1238	+·022 3172	2·0
2·1	−·016 1083	−·033 2243	−·013 9432	+·016 2865−	+·022 9031	2·1
2·2	−·008 4664	−·029 0109	−·017 5912	+·009 5777	+·021 5356	2·2
2·3	−·001 9547	−·024 0766	−·019 4221	+·003 5107	+·018 7140	2·3
2·4	+·003 3069	−·018 8733	−·019 6716	−·001 5596	+·014 9806	2·4
2·5	+·007 3005−	−·013 7793	−·018 6527	−·005 4388	+·010 8554	2·5
2·6	+·010 0902	−·009 0845+	−·016 7122	−·008 0787	+·006 7853	2·6
2·7	+·011 8000	−·004 9870	−·014 1931	−·009 5502	+·003 1136	2·7
2·8	+·012 5914	−·001 5978	−·011 4054	−·010 0097	+·000 0666	2·8
2·9	+·012 6436	+·001 0474	−·008 6067	−·009 6643	−·002 2420	2·9
3·0	+·012 1371	+·002 9730	−·005 9930	−·008 7402	−·003 7962	3·0
3·1	+·011 2405−	+·004 2467	−·003 6964	−·007 4562	−·004 6554	3·1
3·2	+·010 1022	+·004 9635+	−·001 7907	−·006 0056	−·004 9287	3·2
3·3	+·008 8455+	+·005 2310	−·000 3000	−·004 5441	−·004 7510	3·3
3·4	+·007 5673	+·005 1577	+·000 7897	−·003 1860	−·004 2623	3·4
3·5	+·006 3383	+·004 8449	+·001 5191	−·002 0048	−·003 5921	3·5
3·6	+·005 2061	+·004 3807	+·001 9441	−·001 0379	−·002 8493	3·6
3·7	+·004 1986	+·003 8375−	+·002 1273	−·000 2940	−·002 1175+	3·7
3·8	+·003 3280	+·003 2709	+·002 1303	+·000 2395+	−·001 4540	3·8
3·9	+·002 5948	+·002 7212	+·002 0092	+·000 5887	−·000 8923	3·9
4·0	+·001 9914	+·002 2145−	+·001 8116	+·000 7865−	−·000 4459	4·0

TABLE VII.—(*continued*).

Table of the First Twenty Tetrachoric Functions—(*continued*).

h	τ_{10}	τ_{11}	τ_{12}	τ_{13}	τ_{14}	h
0·0	+ ·000 0000	− ·059 6711	+ ·000 0000	+ ·052 5526	+ ·000 0000	*0·0*
0·1	+ ·019 4302	− ·056 4246	− ·018 5406	+ ·049 1792	+ ·017 8063	*0·1*
0·2	+ ·036 7531	− ·047 1011	− ·034 7088	+ ·039 5568	+ ·032 9879	*0·2*
0·3	+ ·050 1307	− ·032 8877	− ·046 4813	+ ·025 0968	+ ·043 3573	*0·3*
0·4	+ ·058 2237	− ·015 5684	− ·052 4749	+ ·007 8896	+ ·047 5198	*0·4*
0·5	+ ·060 3489	+ ·002 7329	− ·052 1325−	− ·009 6364	+ ·045 0841	*0·5*
0·6	+ ·056 5425−	+ ·019 8524	− ·045 7754	− ·025 1016	+ ·036 6919	*0·6*
0·7	+ ·047 5241	+ ·033 8789	− ·034 5184	− ·036 5389	+ ·023 8683	*0·7*
0·8	+ ·034 5706	+ ·043 3974	− ·020 0676	− ·042 6729	+ ·008 7263	*0·8*
0·9	+ ·019 3227	+ ·047 6462	− ·004 4394	− ·043 0704	− ·006 4111	*0·9*
1·0	+ ·003 5566	+ ·046 5713	+ ·010 3483	− ·038 1455−	− ·019 3996	*1·0*
1·1	− ·011 0454	+ ·040 7759	+ ·022 5619	− ·029 0283	− ·028 6027	*1·1*
1·2	− ·023 0920	+ ·031 3819	+ ·030 9700	− ·017 3307	− ·033 1060	*1·2*
1·3	− ·031 6230	+ ·019 8312	+ ·034 9665−	− ·004 8581	− ·032 7906	*1·3*
1·4	− ·036 1788	+ ·007 6639	+ ·034 5869	+ ·006 6802	− ·028 2655+	*1·4*
1·5	− ·036 7973	− ·003 6934	+ ·030 4286	+ ·015 9119	− ·020 6873	*1·5*
1·6	− ·033 9464	− ·013 0967	+ ·023 4974	+ ·021 9615+	− ·011 5098	*1·6*
1·7	− ·028 4107	− ·019 7937	+ ·015 0146	+ ·024 5117	− ·002 2188	*1·7*
1·8	− ·021 1529	− ·023 4636	+ ·006 2192	+ ·023 7693	+ ·005 9028	*1·8*
1·9	− ·013 1730	− ·024 1928	− ·001 8036	+ ·020 3562	+ ·011 9412	*1·9*
2·0	− ·005 3851	− ·022 3981	− ·008 2444	+ ·015 1529	+ ·015 4330	*2·0*
2·1	+ ·001 4755−	− ·018 7193	− ·012 6322	+ ·009 1287	+ ·016 3598	*2·1*
2·2	+ ·006 9057	− ·013 8993	− ·014 8379	+ ·003 1875+	+ ·015 0725+	*2·2*
2·3	+ ·010 6507	− ·008 6728	− ·015 0285+	− ·001 9486	+ ·012 1700	*2·3*
2·4	+ ·012 6846	− ·003 6761	− ·013 5875−	− ·005 8068	+ ·008 3614	*2·4*
2·5	+ ·013 1683	+ ·000 6108	− ·011 0207	− ·008 1794	+ ·004 3378	*2·5*
2·6	+ ·012 3914	+ ·003 8914	− ·007 8646	− ·009 0984	+ ·000 6733	*2·6*
2·7	+ ·010 7118	+ ·006 0485−	− ·004 6091	− ·008 7784	− ·002 2348	*2·7*
2·8	+ ·008 4999	+ ·007 1187	− ·001 6442	− ·007 5463	− ·004 1846	*2·8*
2·9	+ ·006 0936	+ ·007 2520	+ ·000 7673	− ·005 7698	− ·005 1544	*2·9*
3·0	+ ·003 7689	+ ·006 6667	+ ·002 4931	− ·003 7970	− ·005 2620	*3·0*
3·1	+ ·001 7239	+ ·005 6062	+ ·003 5165−	− ·001 9140	− ·004 7137	*3·1*
3·2	+ ·000 0768	+ ·004 3036	+ ·003 9086	− ·000 3212	− ·003 7514	*3·2*
3·3	− ·001 1260	+ ·002 9566	+ ·003 7966	+ ·000 8710	− ·002 6089	*3·3*
3·4	− ·001 8961	+ ·001 7139	+ ·003 3324	+ ·001 6331	− ·001 4803	*3·4*
3·5	− ·002 2851	+ ·000 6710	+ ·002 6669	+ ·001 9979	− ·000 5033	*3·5*
3·6	− ·002 3685−	− ·000 1258	+ ·001 9308	+ ·002 0386	+ ·000 2440	*3·6*
3·7	− ·002 2297	− ·000 6703	+ ·001 2247	+ ·001 8472	+ ·000 7372	*3·7*
3·8	− ·001 9493	− ·000 9856	+ ·000 6154	+ ·001 5166	+ ·000 9929	*3·8*
3·9	− ·001 5968	− ·001 1120	+ ·000 1379	+ ·001 1285+	+ ·001 0536	*3·9*
4·0	− ·001 2272	− ·001 0974	− ·000 1991	+ ·000 7457	+ ·000 9742	*4·0*

TABLE VII.—(*continued*).

Table of the First Twenty Tetrachoric Functions—(continued).

h	τ_{15}	τ_{16}	τ_{17}	τ_{18}	τ_{19}	h
0·0	−·047 1442	+·000 0000	+·042 8780	+·000 0000	−·039 4158	*0·0*
0·1	−·043 6581	−·017 1829	+·039 2907	+·016 6426	−·035 7364	*0·1*
0·2	−·033 7824	−·031 5002	+·029 1974	+·030 1883	−·025 4547	*0·2*
0·3	−·019 1556	−·040 6185^{-}	+·014 4667	+·038 1750^{+}	−·010 6712	*0·3*
0·4	−·002 1698	−·043 1604	−·002 2137	+·039 2684	+·005 6385^{-}	*0·4*
0·5	+·014 4650^{-}	−·038 9342	−·017 8775^{-}	+·033 5046	+·020 2772	*0·5*
0·6	+·028 2026	−·028 9280	−·029 8601	+·022 2364	+·030 5099	*0·6*
0·7	+·037 0925^{-}	−·015 0785^{-}	−·036 2959	+·007 8032	+·034 6183	*0·7*
0·8	+·040 0837	+·000 1309	−·036 4311	−·006 9892	+·032 2067	*0·8*
0·9	+·037 1480	+·014 1520	−·030 6973	−·019 4561	+·024 2015^{-}	*0·9*
1·0	+·029 2108	+·024 8341	−·020 5443	−·027 5570	+·012 5634	*1·0*
1·1	+·017 9171	+·030 7754	−·008 0852	−·030 2452	−·000 2002	*1·1*
1·2	+·005 2896	+·031 5046	+·004 3583	−·027 5833	−·011 6000	*1·2*
1·3	−·006 6483	+·027 4720	+·014 7085^{+}	−·020 6206	−·019 6708	*1·3*
1·4	−·016 2101	+·019 8699	+·021 4900	−·011 0828	−·023 3144	*1·4*
1·5	−·022 2864	+·010 3376	+·024 0306	−·000 9592	−·022 4203	*1·5*
1·6	−·024 4563	+·000 6188	+·022 4833	+·007 9130	−·017 7633	*1·6*
1·7	−·022 9630	−·007 7542	+·017 6879	+·014 1799	−·010 7294	*1·7*
1·8	−·018 5798	−·013 6952	+·010 9196	+·017 1592	−·002 9520	*1·8*
1·9	−·012 4032	−·016 6827	+·003 5931	+·016 8681	+·004 0496	*1·9*
2·0	−·005 6239	−·016 7587	−·003 0142	+·013 9076	+·009 1520	*2·0*
2·1	+·000 6813	−·014 4266	−·007 9675^{-}	+·009 2517	+·011 7814	*2·1*
2·2	+·005 7023	−·010 4847	−·010 7807	+·003 9997	+·011 9289	*2·2*
2·3	+·008 9753	−·005 8372	−·011 4193	−·000 8515^{+}	+·010 0479	*2·3*
2·4	+·010 3905^{+}	−·001 3219	−·010 2197	−·004 5721	+·006 8771	*2·4*
2·5	+·010 1377	+·002 4160	−·007 7554	−·006 7797	+·003 2407	*2·5*
2·6	+·008 6140	+·004 9907	−·004 6874	−·007 4374	−·000 1273	*2·6*
2·7	+·006 3171	+·006 2836	−·001 6306	−·006 7851	−·002 7038	*2·7*
2·8	+·003 7444	+·006 4027	+·000 9425^{+}	−·005 2343	−·004 2287	*2·8*
2·9	+·001 3165^{-}	+·005 6125^{-}	+·002 7502	−·003 2536	−·004 6928	*2·9*
3·0	−·000 6697	+·004 2530	+·003 7036	−·001 2712	−·004 2795^{-}	*3·0*
3·1	−·002 0559	+·002 6664	+·003 8746	+·000 3922	−·003 2828	*3·1*
3·2	−·002 8114	+·001 1410	+·003 4425^{+}	+·001 5529	−·002 0245^{+}	*3·2*
3·3	−·003 0043	−·000 1209	+·002 6357	+·002 1606	−·000 7871	*3·3*
3·4	−·002 7645^{-}	−·001 0121	+·001 6797	+·002 2718	+·000 2280	*3·4*
3·5	−·002 2471	−·001 5114	+·000 7608	+·002 0100	+·000 9146	*3·5*
3·6	−·001 6020	−·001 6623	+·000 0056	+·001 5252	+·001 2545^{-}	*3·6*
3·7	−·000 9528	−·001 5475^{+}	−·000 5222	+·000 9601	+·001 2950^{-}	*3·7*
3·8	−·000 3864	−·001 2643	−·000 8138	+·000 4275^{+}	+·001 1208	*3·8*
3·9	+·000 0486	−·000 9048	−·000 9000	+·000 0002	+·000 8276	*3·9*
4·0	+·000 3373	−·000 5432	−·000 8337	−·000 2892	+·000 5010	*4·0*

TABLE VIII. *Table for finding the Volumes of the Normal Bivariate Surface. Positive Correlation.*

k	r=·00									k
	h=0·0	*h*=0·1	*h*=0·2	*h*=0·3	*h*=0·4	*h*=0·5	*h*=0·6	*h*=0·7	*h*=0·8	
0·0	·250000	·230086	·210370	·191044	·172289	·154269	·137127	·120982	·105928	0·0
0·1	·230086	·211758	·193613	·175827	·158565	·141980	·126204	·111345	·097490	0·1
0·2	·210370	·193613	·177022	·160760	·144978	·129814	·115389	·101804	·089136	0·2
0·3	·191044	·175827	·160760	·145992	·131659	·117889	·104789	·092452	·080948	0·3
0·4	·172289	·158565	·144978	·131659	·118734	·106315	·094502	·083375	·073001	0·4
0·5	·154269	·141980	·129814	·117889	·106315	·095195	·084617	·074655	·065365	0·5
0·6	·137127	·126204	·115389	·104789	·094502	·084617	·075215	·066359	·058102	0·6
0·7	·120982	·111345	·101804	·092452	·083375	·074655	·066359	·058546	·051261	0·7
0·8	·105928	·097490	·089136	·080948	·073001	·065365	·058102	·051261	·044883	0·8
0·9	·092030	·084699	·077442	·070327	·063423	·056789	·050479	·044536	·038994	0·9
1·0	·079328	·073009	·066753	·060620	·054669	·048951	·043512	·038389	·033612	1·0
1·1	·067833	·062430	·057080	·051836	·046748	·041858	·037207	·032826	·028742	1·1
1·2	·057535	·052952	·048414	·043967	·039650	·035503	·031558	·027843	·024378	1·2
1·3	·048400	·044545	·040728	·036986	·033355	·029867	·026548	·023422	·020508	1·3
1·4	·040378	·037162	·033978	·030856	·027827	·024916	·022148	·019540	·017109	1·4
1·5	·033404	·030743	·028108	·025526	·023020	·020613	·018322	·016165	·014153	1·5
1·6	·027400	·025217	·023056	·020938	·018883	·016908	·015029	·013259	·011610	1·6
1·7	·022283	·020508	·018750	·017028	·015356	·013750	·012222	·010783	·009441	1·7
1·8	·017965	·016534	·015117	·013729	·012381	·011086	·009854	·008694	·007612	1·8
1·9	·014358	·013215	·012082	·010972	·009895	·008860	·007876	·006948	·006084	1·9
2·0	·011375	·010469	·009572	·008693	·007839	·007019	·006239	·005505	·004820	2·0
2·1	·008932	·008221	·007516	·006826	·006156	·005512	·004899	·004323	·003785	2·1
2·2	·006952	·006398	·005850	·005312	·004791	·004290	·003813	·003364	·002946	2·2
2·3	·005362	·004935	·004512	·004098	·003695	·003309	·002941	·002595	·002272	2·3
2·4	·004099	·003772	·003449	·003132	·002825	·002529	·002248	·001984	·001737	2·4
2·5	·003105	·002858	·002613	·002373	·002140	·001916	·001703	·001503	·001316	2·5
2·6	·002331	·002145	·001961	·001781	·001606	·001438	·001278	·001128	·000987	2·6

k	r=·00									k
	h=0·9	*h*=1·0	*h*=1·1	*h*=1·2	*h*=1·3	*h*=1·4	*h*=1·5	*h*=1·6	*h*=1·7	
0·0	·092030	·079328	·067833	·057535	·048400	·040378	·033404	·027400	·022283	0·0
0·1	·084699	·073009	·062430	·052952	·044545	·037162	·030743	·025217	·020508	0·1
0·2	·077442	·066753	·057080	·048414	·040728	·033978	·028108	·023056	·018750	0·2
0·3	·070327	·060620	·051836	·043967	·036986	·030856	·025526	·020938	·017028	0·3
0·4	·063423	·054669	·046748	·039650	·033355	·027827	·023020	·018883	·015356	0·4
0·5	056789	·048951	·041858	·035503	·029867	·024916	·020613	·016908	·013750	0·5
0·6	·050479	·043512	·037207	·031558	·026548	·022148	·018322	·015029	·012222	0·6
0·7	·044536	·038389	·032826	·027843	·023422	·019540	·016165	·013259	·010783	0·7
0·8	·038994	·033612	·028742	·024378	·020508	·017109	·014153	·011610	·009441	0·8
0·9	·033878	·029202	·024971	·021180	·017817	·014864	·012297	·010086	·008203	0·9
1·0	·029202	·025171	·021524	·018256	·015358	·012812	·010599	·008694	·007071	1·0
1·1	·024971	·021524	·018405	·015611	·013133	·010956	·009063	·007434	·006046	1·1
1·2	·021180	·018256	·015611	·013241	·011139	·009293	·007688	·006306	·005128	1·2
1·3	·017817	·015358	·013133	·011139	·009370	·007817	·006467	·005305	·004314	1·3
1·4	·014864	·012812	·010956	·009293	·007817	·006522	·005395	·004425	·003599	1·4
1·5	·012297	·010599	·009063	·007688	·006467	·005395	·004463	·003661	·002977	1·5
1·6	·010086	·008694	·007434	·006306	·005305	·004425	·003661	·003003	·002442	1·6
1·7	·008203	·007071	·006046	·005128	·004314	·003599	·002977	·002442	·001986	1·7
1·8	·006613	·005700	·004875	·004134	·003478	·002902	·002400	·001969	·001601	1·8
1·9	·005286	·004556	·003896	·003304	·002780	·002319	·001918	·001574	·001280	1·9
2·0	·004187	·003609	·003086	·002618	·002202	·001837	·001520	·001247	·001014	2·0
2·1	·003288	·002834	·002424	·002056	·001729	·001443	·001194	·000979	·000796	2·1
2·2	·002559	·002206	·001886	·001600	·001346	·001123	·000929	·000762	·000620	2·2
2·3	·001974	·001701	·001455	·001234	·001038	·000866	·000716	·000588	·000478	2·3
2·4	·001509	·001301	·001112	·000943	·000794	·000662	·000548	·000449	·000365	2·4
2·5	·001143	·000985	·000842	·000715	·000601	·000502	·000415	·000340	·000277	2·5
2·6	·000858	·000740	·000632	·000536	·000451	·000376	·000311	·000255	·000208	2·6

TABLE VIII. *Positive Correlation—(continued).*

k	*r* = ·00									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·017965	·014358	·011375	·008932	·006952	·005362	·004099	·003105	·002331	*0·0*
0·1	·016534	·013215	·010469	·008221	·006398	·004935	·003772	·002858	·002145	*0·1*
0·2	·015117	·012082	·009572	·007516	·005850	·004512	·003449	·002613	·001961	*0·2*
0·3	·013729	·010972	·008693	006826	·005312	·004098	·003132	·002373	·001781	*0·3*
0·4	·012381	·009895	·007839	·006156	·004791	·003695	·002825	·002140	·001606	*0·4*
0·5	·011086	·008860	·007019	·005512	·004290	·003309	·002529	·001916	·001438	*0·5*
0·6	·009854	·007876	·006239	·004899	·003813	·002941	·002248	·001703	·001278	*0·6*
0·7	·008694	·006948	·005505	·004323	·003364	·002595	·001984	·001503	·001128	*0·7*
0·8	·007612	·006084	·004820	·003785	·002946	·002272	·001737	·001316	·000987	*0·8*
0·9	·006613	·005286	·004187	·003288	·002559	·001974	·001509	·001143	·000858	*0·9*
1·0	·005700	·004556	·003609	·002834	·002206	·001701	·001301	·000985	·000740	*1·0*
1·1	·004875	·003896	·003086	·002424	·001886	·001455	·001112	·000842	·000632	*1·1*
1·2	·004134	·003304	·002618	·002056	·001600	·001234	·000943	·000715	·000536	*1·2*
1·3	·003478	·002780	·002202	·001729	·001346	·001038	·000794	·000601	·000451	*1·3*
1·4	·002902	·002319	·001837	·001443	·001123	·000866	·000662	·000502	·000376	*1·4*
1·5	·002400	·001918	·001520	·001194	·000929	·000716	·000548	·000415	·000311	*1·5*
1·6	·001969	·001574	·001247	·000979	·000762	·000588	·000449	·000340	·000255	*1·6*
1·7	·001601	·001280	·001014	·000796	·000620	·000478	·000365	·000277	·000208	*1·7*
1·8	·001291	·001032	·000817	·000642	·000500	·000385	·000295	·000223	·000168	*1·8*
1·9	·001032	·000825	·000653	·000513	·000399	·000308	·000235	·000178	·000134	*1·9*
2·0	·000817	·000653	·000518	·000406	·000316	·000244	·000186	·000141	·000106	*2·0*
2·1	·000642	·000513	·000406	·000319	·000248	·000192	·000146	·000111	·000083	*2·1*
2·2	·000500	·000399	·000316	·000248	·000193	·000149	·000114	·000086	·000065	*2·2*
2·3	·000385	·000308	·000244	·000192	·000149	·000115	·000088	·000067	·000050	*2·3*
2·4	·000295	·000235	·000186	·000146	·000114	·000088	·000067	·000051	·000038	*2·4*
2·5	·000223	·000178	·000141	·000111	·000086	·000067	·000051	·000039	·000029	*2·5*
2·6	·000168	·000134	·000106	·000083	·000065	·000050	·000038	·000029	·000022	*2·6*

k	*r* = ·05									*k*
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·257961	·238007	·218173	·198655	·179638	·161294	·143775	·127212	·111707	*0·0*
0·1	·238007	·219642	·201381	·183405	·165885	·148979	·132829	·117555	·103252	*0·1*
0·2	·218173	·201381	·184679	·168231	·152195	·136717	·121926	·107932	·094824	*0·2*
0·3	·198655	·183405	·168231	·153283	·138706	·124630	·111174	·098438	·086506	*0·3*
0·4	·179638	·165885	·152195	·138706	·125545	·112832	·100676	·089166	·078378	*0·4*
0·5	·161294	·148979	·136717	·124630	·112832	·101433	·090528	·080201	·070517	*0·5*
0·6	·143775	·132829	·121926	·111174	·100676	·090528	·080818	·071617	·062987	*0·6*
0·7	·127212	·117555	·107932	·098438	·089166	·080201	·071617	·063482	·055848	*0·7*
0·8	·111707	·103252	·094824	·086506	·078378	·070517	·062987	·055848	·049146	*0·8*
0·9	·097338	·089993	·082668	·075436	·068367	·061527	·054973	·048756	·042918	*0·9*
1·0	·084154	·077823	·071507	·065269	·059169	·053264	·047604	·042233	·037187	*1·0*
1·1	·072178	·066765	·061363	·056025	·050803	·045746	·040896	·036293	·031967	*1·1*
1·2	·061408	·056817	·052233	·047703	·043269	·038972	·034851	·030938	·027258	*1·2*
1·3	·051818	·047956	·044099	·040285	·036551	·032932	·029458	·026158	·023054	*1·3*
1·4	·043364	·040143	·036925	·033740	·030622	·027597	·024694	·021935	·019338	*1·4*
1·5	·035986	·033322	·030659	·028023	·025440	·022934	·020528	·018240	·016085	*1·5*
1·6	·029611	·027426	·025241	·023078	·020957	·018898	·016921	·015039	·013267	*1·6*
1·7	·024157	·022381	·020604	·018843	·017116	·015440	·013828	·012295	·010850	*1·7*
1·8	·019539	·018107	·016673	·015253	·013860	·012506	·011204	·009965	·008796	*1·8*
1·9	·015666	·014522	·013376	·012240	·011125	·010042	·008999	·008006	·007070	*1·9*
2·0	·012451	·011545	·010637	·009736	·008852	·007993	·007165	·006377	·005633	*2·0*
2·1	·009808	·009097	·008384	·007677	·006982	·006306	·005655	·005034	·004448	*2·1*
2·2	·007658	·007105	·006550	·005999	·005458	·004931	·004423	·003939	·003482	*2·2*
2·3	·005926	·005499	·005071	·004646	·004228	·003821	·003429	·003054	·002701	*2·3*
2·4	·004545	·004219	·003891	·003566	·003246	·002935	·002634	·002348	·002076	*2·4*
2·5	·003454	·003207	·002959	·002713	·002470	·002234	·002006	·001788	·001582	*2·5*
2·6	·002601	·002416	·002230	·002044	·001862	·001685	·001513	·001349	·001194	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	$r=\cdot05$									k
	$h=0\cdot9$	$h=1\cdot0$	$h=1\cdot1$	$h=1\cdot2$	$h=1\cdot3$	$h=1\cdot4$	$h=1\cdot5$	$h=1\cdot6$	$h=1\cdot7$	
0·0	·097338	·084154	·072178	·061408	·051818	·043364	·035986	·029611	·024157	*0·0*
0·1	·089993	·077823	·066765	·056817	·047956	·040143	·033322	·027426	·022381	*0·1*
0·2	·082668	·071507	·061363	·052233	·044099	·036925	·030659	·025241	·020604	*0·2*
0·3	·075436	·065269	·056025	·047703	·040285	·033740	·028023	·023078	·018843	*0·3*
0·4	·068367	·059169	·050803	·043269	·036551	·030622	·025440	·020957	·017116	*0·4*
0·5	·061527	·053264	·045746	·038972	·032932	·027597	·022934	·018898	·015440	*0·5*
0·6	·054973	·047604	·040896	·034851	·029458	·024694	·020528	·016921	·013828	*0·6*
0·7	·048756	·042233	·036293	·030938	·026158	·021935	·018240	·015039	·012295	*0·7*
0·8	·042918	·037187	·031967	·027258	·023054	·019338	·016085	·013267	·010850	*0·8*
0·9	·037490	·032494	·027941	·023833	·020164	·016919	·014078	·011615	·009502	*0·9*
1·0	·032494	·028172	·024232	·020676	·017499	·014687	·012225	·010090	·008257	*1·0*
1·1	·027941	·024232	·020850	·017796	·015066	·012650	·010533	·008696	·007119	*1·1*
1·2	·023833	·020676	·017796	·015195	·012868	·010808	·009002	·007435	·006088	*1·2*
1·3	·020164	·017499	·015066	·012868	·010901	·009159	·007631	·006305	·005165	*1·3*
1·4	·016919	·014687	·012650	·010808	·009159	·007698	·006416	·005303	·004345	*1·4*
1·5	·014078	·012225	·010533	·009002	·007631	·006416	·005350	·004423	·003626	*1·5*
1·6	·011615	·010090	·008696	·007435	·006305	·005303	·004423	·003658	·003000	*1·6*
1·7	·009502	·008257	·007119	·006088	·005165	·004345	·003626	·003000	·002461	*1·7*
1·8	·007706	·006699	·005777	·004943	·004195	·003530	·002947	·002439	·002002	*1·8*
1·9	·006196	·005388	·004648	·003978	·003377	·002843	·002374	·001966	·001614	*1·9*
2·0	·004938	·004295	·003707	·003174	·002695	·002270	·001896	·001571	·001290	*2·0*
2·1	·003901	·003394	·002930	·002510	·002132	·001797	·001501	·001244	·001022	*2·1*
2·2	·003054	·002659	·002296	·001967	·001672	·001409	·001178	·000976	·000803	*2·2*
2·3	·002370	·002064	·001783	·001528	·001299	·001096	·000916	·000760	·000625	*2·3*
2·4	·001823	·001588	·001372	·001177	·001001	·000844	·000706	·000586	·000482	*2·4*
2·5	·001389	·001211	·001047	·000898	·000764	·000644	·000539	·000448	·000368	*2·5*
2·6	·001049	·000915	·000791	·000679	·000578	·000488	·000408	·000339	·000279	*2·6*

k	$r=\cdot05$									k
	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$	
0·0	·019539	·015666	·012451	·009808	·007658	·005926	·004545	·003454	·002601	*0·0*
0·1	·018107	·014522	·011545	·009097	·007105	·005499	·004219	·003207	·002416	*0·1*
0·2	·016673	·013376	·010637	·008384	·006550	·005071	·003891	·002959	·002230	*0·2*
0·3	·015253	·012240	·009736	·007677	·005999	·004646	·003566	·002713	·002044	*0·3*
0·4	·013860	·011125	·008852	·006982	·005458	·004228	·003246	·002470	·001862	*0·4*
0·5	·012506	·010042	·007993	·006306	·004931	·003821	·002935	·002234	·001685	*0·5*
0·6	·011204	·008999	·007165	·005655	·004423	·003429	·002634	·002006	·001513	*0·6*
0·7	·009965	·008006	·006377	·005034	·003939	·003054	·002348	·001788	·001349	*0·7*
0·8	·008796	·007070	·005633	·004448	·003482	·002701	·002076	·001582	·001194	*0·8*
0·9	·007706	·006196	·004938	·003901	·003054	·002370	·001823	·001389	·001049	*0·9*
1·0	·006699	·005388	·004295	·003394	·002659	·002064	·001588	·001211	·000915	*1·0*
1·1	·005777	·004648	·003707	·002930	·002296	·001783	·001372	·001047	·000791	*1·1*
1·2	·004943	·003978	·003174	·002510	·001967	·001528	·001177	·000898	·000679	*1·2*
1·3	·004195	·003377	·002695	·002132	·001672	·001299	·001001	·000764	·000578	*1·3*
1·4	·003530	·002843	·002270	·001797	·001409	·001096	·000844	·000644	·000488	*1·4*
1·5	·002947	·002374	·001896	·001501	·001178	·000916	·000706	·000539	·000408	*1·5*
1·6	·002439	·001966	·001571	·001244	·000976	·000760	·000586	·000448	·000339	*1·6*
1·7	·002002	·001614	·001290	·001022	·000803	·000625	·000482	·000368	·000279	*1·7*
1·8	·001629	·001314	·001050	·000832	·000654	·000509	·000393	·000300	·000228	*1·8*
1·9	·001314	·001060	·000848	·000672	·000528	·000411	·000318	·000243	·000184	*1·9*
2·0	·001050	·000848	·000678	·000538	·000423	·000330	·000255	·000195	·000148	*2·0*
2·1	·000832	·000672	·000538	·000427	·000336	·000262	·000202	·000155	·000117	*2·1*
2·2	·000654	·000528	·000423	·000336	·000264	·000206	·000159	·000122	·000093	*2·2*
2·3	·000509	·000411	·000330	·000262	·000206	·000161	·000124	·000095	·000072	*2·3*
2·4	·000393	·000318	·000255	·000202	·000159	·000124	·000096	·000074	·000056	*2·4*
2·5	·000300	·000243	·000195	·000155	·000122	·000095	·000074	·000057	·000043	*2·5*
2·6	·000228	·000184	·000148	·000117	·000093	·000072	·000056	·000043	·000033	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	r = ·10									k
	h = 0·0	*h* = 0·1	*h* = 0·2	*h* = 0·3	*h* = 0·4	*h* = 0·5	*h* = 0·6	*h* = 0·7	*h* = 0·8	
0·0	·265942	·245948	·225996	·206283	·187002	·168332	·150435	·133450	·117492	0·0
0·1	·245948	·227549	·209176	·191012	·173234	·156008	·139485	·123794	·109042	0·1
0·2	·225996	·209176	·192368	·175741	·159456	·143667	·128512	·114110	·100562	0·2
0·3	·206283	·191012	·175741	·160623	·145808	·131433	·117625	·104496	·092135	0·3
0·4	·187002	·173234	·159456	·145808	·132422	·119425	·106933	·095045	·083846	0·4
0·5	·168332	·156008	·143667	·131433	·119425	·107758	·096536	·085849	·075774	0·5
0·6	·150435	·139485	·128512	·117625	·106933	·096536	·086527	·076990	·067992	0·6
0·7	·133450	·123794	·114110	·104496	·095045	·085849	·076990	·068541	·060564	0·7
0·8	·117492	·109042	·100562	·092135	·083846	·075774	·067992	·060564	·053546	0·8
0·9	·102649	·095313	·087944	·080616	·073402	·066371	·059588	·053109	·046982	0·9
1·0	·088981	·082662	·076310	·069988	·063759	·057684	·051818	·046210	·040903	1·0
1·1	·076521	·071122	·065690	·060280	·054945	·049738	·044705	·039890	·035330	1·1
1·2	·065276	·060701	·056094	·051502	·046970	·042542	·038260	·034159	·030273	1·2
1·3	·055229	·051384	·047509	·043643	·039825	·036091	·032477	·029014	·025729	1·3
1·4	·046342	·043138	·039906	·036678	·033488	·030366	·027342	·024441	·021687	1·4
1·5	·038560	·035912	·033239	·030568	·027925	·025337	·022827	·020417	·018128	1·5
1·6	·031813	·029644	·027452	·025260	·023089	·020962	·018896	·016913	·015026	1·6
1·7	·026023	·024261	·022480	·020696	·018928	·017194	·015510	·013890	·012348	1·7
1·8	·021103	·019685	·018249	·016811	·015384	·013983	·012621	·011310	·010061	1·8
1·9	·016965	·015833	·014686	·013536	·012394	·011272	·010180	·009129	·008126	1·9
2·0	·013518	·012623	·011715	·010804	·009898	·009008	·008140	·007304	·006506	2·0
2·1	·010677	·009975	·009263	·008547	·007836	·007135	·006452	·005793	·005163	2·1
2·2	·008358	·007813	·007259	·006702	·006147	·005601	·005068	·004553	·004061	2·2
2·3	·006484	·006064	·005638	·005208	·004780	·004358	·003946	·003547	·003166	2·3
2·4	·004985	·004665	·004339	·004011	·003683	·003360	·003044	·002738	·002446	2·4
2·5	·003798	·003556	·003309	·003061	·002813	·002567	·002327	·002095	·001872	2·5
2·6	·002867	·002686	·002501	·002315	·002128	·001944	·001763	·001588	·001420	2·6

k	r = ·10									k
	h = 0·9	*h* = 1·0	*h* = 1·1	*h* = 1·2	*h* = 1·3	*h* = 1·4	*h* = 1·5	*h* = 1·6	*h* = 1·7	
0·0	·102649	·088981	·076521	·065276	·055229	·046342	·038560	·031813	·026023	0·0
0·1	·095313	·082662	·071122	·060701	·051384	·043138	·035912	·029644	·024261	0·1
0·2	·087944	·076310	·065690	·056094	·047509	·039906	·033239	·027452	·022480	0·2
0·3	·080616	·069988	·060280	·051502	·043643	·036678	·030568	·025260	·020696	0·3
0·4	·073402	·063759	·054945	·046970	·039825	·033488	·027925	·023089	·018928	0·4
0·5	·066371	·057684	·049738	·042542	·036091	·030366	·025337	·020962	·017194	0·5
0·6	·059588	·051818	·044705	·038260	·032477	·027342	·022827	·018896	·015510	0·6
0·7	·053109	·046210	·039890	·034159	·029014	·024441	·020417	·016913	·013890	0·7
0·8	·046982	·040903	·035330	·030273	·025729	·021687	·018128	·015026	·012348	0·8
0·9	·041247	·035931	·031055	·026626	·022643	·019098	·015974	·013249	·010895	0·9
1·0	·035931	·031320	·027086	·023238	·019775	·016690	·013969	·011593	·009540	1·0
1·1	·031055	·027086	·023440	·020122	·017134	·014470	·012119	·010065	·008288	1·1
1·2	·026626	·023238	·020122	·017285	·014728	·012447	·010432	·008669	·007143	1·2
1·3	·022643	·019775	·017134	·014728	·012558	·010620	·008906	·007407	·006107	1·3
1·4	·019098	·016690	·014470	·012447	·010620	·008987	·007542	·006276	·005179	1·4
1·5	·015974	·013969	·012119	·010432	·008906	·007542	·006334	·005275	·004356	1·5
1·6	·013249	·011593	·010065	·008669	·007407	·006276	·005275	·004396	·003632	1·6
1·7	·010895	·009540	·008288	·007143	·006107	·005179	·004356	·003632	·003004	1·7
1·8	·008883	·007783	·006766	·005836	·004993	·004237	·003566	·002976	·002463	1·8
1·9	·007179	·006294	·005476	·004726	·004046	·003436	·002894	·002417	·002002	1·9
2·0	·005752	·005046	·004393	·003794	·003251	·002763	·002328	·001946	·001613	2·0
2·1	·004568	·004010	·003493	·003019	·002589	·002202	·001857	·001553	·001288	2·1
2·2	·003595	·003158	·002753	·002381	·002043	·001739	·001468	·001228	·001020	2·2
2·3	·002804	·002465	·002151	·001862	·001598	·001361	·001150	·000963	·000800	2·3
2·4	·002168	·001907	·001665	·001442	·001239	·001056	·000893	·000748	·000622	2·4
2·5	·001661	·001462	·001277	·001107	·000952	·000812	·000687	·000576	·000479	2·5
2·6	·001261	·001111	·000971	·000842	·000725	·000619	·000524	·000440	·000366	2·6

TABLE VIII. *Positive Correlation*—(*continued*).

k	*r*=·10									*k*
	h=*1·8*	*h*=*1·9*	*h*=*2·0*	*h*=*2·1*	*h*=*2·2*	*h*=*2·3*	*h*=*2·4*	*h*=*2·5*	*h*=*2·6*	
0·0	·021103	·016965	·013518	·010677	·008358	·006484	·004985	·003798	·002867	*0·0*
0·1	·019685	·015833	·012623	·009975	·007813	·006064	·004665	·003556	·002686	*0·1*
0·2	·018249	·014686	·011715	·009263	·007259	·005638	·004339	·003309	·002501	*0·2*
0·3	·016811	·013536	·010804	·008547	·006702	·005208	·004011	·003061	·002315	*0·3*
0·4	·015384	·012394	·009898	·007836	·006147	·004780	·003683	·002813	·002128	*0·4*
0·5	·013983	·011272	·009008	·007135	·005601	·004358	·003360	·002567	·001944	*0·5*
0·6	·012621	·010180	·008140	·006452	·005068	·003946	·003044	·002327	·001763	*0·6*
0·7	·011310	·009129	·007304	·005793	·004553	·003547	·002738	·002095	·001588	*0·7*
0·8	·010061	·008126	·006506	·005163	·004061	·003166	·002446	·001872	·001420	*0·8*
0·9	·008883	·007179	·005752	·004568	·003595	·002804	·002168	·001661	·001261	*0·9*
1·0	·007783	·006294	·005046	·004010	·003158	·002465	·001907	·001462	·001111	*1·0*
1·1	·006766	·005476	·004393	·003493	·002753	·002151	·001665	·001277	·000971	*1·1*
1·2	·005836	·004726	·003794	·003019	·002381	·001862	·001442	·001107	·000842	*1·2*
1·3	·004993	·004046	·003251	·002589	·002043	·001598	·001239	·000952	·000725	*1·3*
1·4	·004237	·003436	·002763	·002202	·001739	·001361	·001056	·000812	·000619	*1·4*
1·5	·003566	·002894	·002328	·001857	·001468	·001150	·000893	·000687	·000524	*1·5*
1·6	·002976	·002417	·001946	·001553	·001228	·000963	·000748	·000576	·000440	*1·6*
1·7	·002463	·002002	·001613	·001288	·001020	·000800	·000622	·000479	·000366	*1·7*
1·8	·002020	·001643	·001325	·001059	·000839	·000659	·000513	·000395	·000302	*1·8*
1·9	·001643	·001338	·001080	·000864	·000685	·000538	·000419	·000323	·000247	*1·9*
2·0	·001325	·001080	·000872	·000698	·000554	·000435	·000339	·000262	·000201	*2·0*
2·1	·001059	·000864	·000698	·000559	·000444	·000349	·000273	·000211	·000161	*2·1*
2·2	·000839	·000685	·000554	·000444	·000353	·000278	·000217	·000168	·000129	*2·2*
2·3	·000659	·000538	·000435	·000349	·000278	·000219	·000171	·000132	·000102	*2·3*
2·4	·000513	·000419	·000339	·000273	·000217	·000171	·000134	·000104	·000080	*2·4*
2·5	·000395	·000323	·000262	·000211	·000168	·000132	·000104	·000080	·000062	*2·5*
2·6	·000302	·000247	·000201	·000161	·000129	·000102	·000080	·000062	·000047	*2·6*

k	*r*=·15									*k*
	h=*0·0*	*h*=*0·1*	*h*=*0·2*	*h*=*0·3*	*h*=*0·4*	*h*=*0·5*	*h*=*0·6*	*h*=*0·7*	*h*=*0·8*	
0·0	·273964	·253929	·233856	·213946	·194397	·175397	·157115	·139703	·123287	*0·0*
0·1	·253929	·235500	·217016	·198665	·180629	·163082	·146183	·130072	·114867	*0·1*
0·2	·233856	·217016	·200109	·183307	·166777	·150679	·135159	·120348	·106357	*0·2*
0·3	·213946	·198665	·183307	·168028	·152981	·138312	·124155	·110631	·097843	*0·3*
0·4	·194397	·180629	·166777	·152981	·139380	·126106	·113283	·101019	·089411	*0·4*
0·5	·175397	·163082	·150679	·138312	·126106	·114181	·102648	·091607	·081144	*0·5*
0·6	·157115	·146183	·135159	·124155	·113283	·102648	·092352	·082484	·073122	*0·6*
0·7	·139703	·130072	·120348	·110631	·101019	·091607	·082484	·073730	·065416	*0·7*
0·8	·123287	·114867	·106357	·097843	·089411	·081144	·073122	·065416	·058088	*0·8*
0·9	·107964	·100662	·093273	·085871	·078532	·071328	·064330	·057598	·051190	*0·9*
1·0	·093807	·087525	·081161	·074778	·068441	·062214	·056156	·050323	·044763	*1·0*
1·1	·080859	·075499	·070061	·064602	·059175	·053835	·048634	·043620	·038835	*1·1*
1·2	·069136	·064600	·059993	·055361	·050752	·046211	·041782	·037508	·033423	*1·2*
1·3	·058628	·054822	·050952	·047055	·043173	·039343	·035604	·031989	·028532	*1·3*
1·4	·049305	·046139	·042915	·039665	·036422	·033219	·030088	·027058	·024156	*1·4*
1·5	·041117	·038505	·035842	·033155	·030470	·027814	·025215	·022696	·020280	*1·5*
1·6	·033998	·031862	·029682	·027479	·025274	·023092	·020952	·018876	·016883	*1·6*
1·7	·027870	·026139	·024370	·022579	·020785	·019007	·017262	·015566	·013935	*1·7*
1·8	·022650	·021259	·019835	·018393	·016946	·015510	·014098	·012725	·011403	*1·8*
1·9	·018246	·017139	·016004	·014852	·013696	·012546	·011414	·010312	·009249	*1·9*
2·0	·014569	·013696	·012799	·011888	·010971	·010059	·009160	·008283	·007437	*2·0*
2·1	·011530	·010847	·010145	·009431	·008711	·007994	·007286	·006595	·005926	*2·1*
2·2	·009044	·008515	·007970	·007415	·006855	·006296	·005744	·005204	·004681	*2·2*
2·3	·007030	·006623	·006205	·005777	·005346	·004914	·004487	·004069	·003664	*2·3*
2·4	·005415	·005106	·004787	·004461	·004131	·003801	·003474	·003153	·002842	*2·4*
2·5	·004133	·003900	·003659	·003413	·003163	·002913	·002665	·002421	·002184	*2·5*
2·6	·003126	·002952	·002772	·002587	·002400	·002213	·002026	·001842	·001664	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	$r=\cdot15$									k
	$h=0\cdot9$	$h=1\cdot0$	$h=1\cdot1$	$h=1\cdot2$	$h=1\cdot3$	$h=1\cdot4$	$h=1\cdot5$	$h=1\cdot6$	$h=1\cdot7$	
0·0	·107964	·093807	·080859	·069136	·058628	·049305	·041117	·033998	·027870	0·0
0·1	·100662	·087525	·075499	·064600	·054822	·046139	·038505	·031862	·026139	0·1
0·2	·093273	·081161	·070061	·059993	·050952	·042915	·035842	·029682	·024370	0·2
0·3	·085871	·074778	·064602	·055361	·047055	·039665	·033155	·027479	·022579	0·3
0·4	·078532	·068441	·059175	·050752	·043173	·036422	·030470	·025273	·020785	0·4
0·5	·071328	·062214	·053835	·046211	·039343	·033219	·027814	·023092	·019007	0·5
0·6	·064330	·056156	·048634	·041782	·035604	·030088	·025215	·020952	·017262	0·6
0·7	·057598	·050323	·043620	·037508	·031989	·027058	·022696	·018876	·015566	0·7
0·8	·051190	·044763	·038835	·033423	·028532	·024156	·020280	·016883	·013935	0·8
0·9	·045151	·039517	·034315	·029560	·025257	·021403	·017987	·014988	·012382	0·9
1·0	·039517	·034618	·030088	·025943	·022188	·018820	·015831	·013204	·010920	1·0
1·1	·034315	·030088	·026176	·022591	·019339	·016420	·013825	·011543	·009555	1·1
1·2	·029560	·025943	·022591	·019515	·016723	·014212	·011979	·010011	·008296	1·2
1·3	·025257	·022188	·019339	·016723	·014344	·012203	·010295	·008613	·007144	1·3
1·4	·021403	·018820	·016420	·014212	·012203	·010392	·008776	·007350	·006103	1·4
1·5	·017987	·015831	·013825	·011979	·010295	·008776	·007420	·006220	·005170	1·5
1·6	·014988	·013204	·011543	·010011	·008613	·007350	·006220	·005220	·004344	1·6
1·7	·012382	·010920	·009555	·008296	·007144	·006103	·005170	·004344	·003618	1·7
1·8	·010142	·008953	·007842	·006815	·005875	·005024	·004261	·003584	·002988	1·8
1·9	·008235	·007276	·006380	·005550	·004790	·004100	·003481	·002931	·002447	1·9
2·0	·006627	·005862	·005145	·004481	·003871	·003317	·002819	·002376	·001986	2·0
2·1	·005287	·004681	·004113	·003585	·003101	·002660	·002263	·001910	·001598	2·1
2·2	·004180	·003704	·003258	·002843	·002462	·002114	·001801	·001521	·001274	2·2
2·3	·003275	·002905	·002558	·002235	·001937	·001665	·001420	·001201	·001007	2·3
2·4	·002543	·002258	·001990	·001740	·001510	·001300	·001109	·000939	·000789	2·4
2·5	·001956	·001739	·001534	·001343	·001167	·001005	·000859	·000728	·000612	2·5
2·6	·001492	·001327	·001172	·001027	·000893	·000770	·000659	·000559	·000471	2·6

k	$r=\cdot15$									k
	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$	
0·0	·022650	·018246	·014569	·011530	·009044	·007030	·005415	·004133	·003126	0·0
0·1	·021259	·017139	·013696	·010847	·008515	·006623	·005106	·003900	·002952	0·1
0·2	·019835	·016004	·012799	·010145	·007970	·006205	·004787	·003659	·002772	0·2
0·3	·018393	·014852	·011888	·009431	·007415	·005777	·004461	·003413	·002587	0·3
0·4	·016946	·013696	·010971	·008711	·006855	·005346	·004131	·003163	·002400	0·4
0·5	·015510	·012546	·010059	·007994	·006296	·004914	·003801	·002913	·002213	0·5
0·6	·014098	·011414	·009160	·007286	·005744	·004487	·003474	·002665	·002026	0·6
0·7	·012725	·010312	·008283	·006595	·005204	·004069	·003153	·002421	·001842	0·7
0·8	·011403	·009249	·007437	·005926	·004681	·003664	·002842	·002184	·001664	0·8
0·9	·010142	·008235	·006627	·005287	·004180	·003275	·002543	·001956	·001492	0·9
1·0	·008953	·007276	·005862	·004681	·003704	·002905	·002258	·001739	·001327	1·0
1·1	·007842	·006380	·005145	·004113	·003258	·002558	·001990	·001534	·001172	1·1
1·2	·006815	·005550	·004481	·003585	·002843	·002235	·001740	·001343	·001027	1·2
1·3	·005875	·004790	·003871	·003101	·002462	·001937	·001510	·001167	·000893	1·3
1·4	·005024	·004100	·003317	·002660	·002114	·001665	·001300	·001005	·000770	1·4
1·5	·004261	·003481	·002819	·002263	·001801	·001420	·001109	·000859	·000659	1·5
1·6	·003584	·002931	·002376	·001910	·001521	·001201	·000939	·000728	·000559	1·6
1·7	·002988	·002447	·001986	·001598	·001274	·001007	·000789	·000612	·000471	1·7
1·8	·002471	·002025	·001646	·001325	·001058	·000837	·000656	·000510	·000393	1·8
1·9	·002025	·001662	·001352	·001090	·000871	·000690	·000542	·000421	·000325	1·9
2·0	·001646	·001352	·001101	·000889	·000711	·000564	·000443	·000345	·000266	2·0
2·1	·001325	·001090	·000889	·000718	·000575	·000457	·000359	·000280	·000217	2·1
2·2	·001058	·000871	·000711	·000575	·000461	·000367	·000289	·000226	·000174	2·2
2·3	·000837	·000690	·000564	·000457	·000367	·000292	·000230	·000180	·000139	2·3
2·4	·000656	·000542	·000443	·000359	·000289	·000230	·000182	·000142	·000110	2·4
2·5	·000510	·000421	·000345	·000280	·000226	·000180	·000142	·000111	·000086	2·5
2·6	·000393	·000325	·000266	·000217	·000174	·000139	·000110	·000086	·000067	2·6

TABLE VIII. *Positive Correlation*—(*continued*).

k	r = ·20									k
	h = 0·0	h = 0·1	h = 0·2	h = 0·3	h = 0·4	h = 0·5	h = 0·6	h = 0·7	h = 0·8	
0·0	·282047	·261971	·241774	·221662	·201840	·182502	·163829	·145981	·129097	0·0
0·1	·261971	·243515	·224922	·206384	·188087	·170215	·152934	·136397	·120731	0·1
0·2	·241774	·224922	·207922	·190949	·174174	·157765	·141879	·126655	·112215	0·2
0·3	·221662	·206384	·190949	·175516	·160242	·145281	·130776	·116856	·103635	0·3
0·4	·201840	·188087	·174174	·160242	·146434	·132889	·119738	·107100	·095079	0·4
0·5	·182502	·170215	·157765	·145281	·132889	·120715	·108878	·097486	·086634	0·5
0·6	·163829	·152934	·141879	·130776	·119738	·108878	·098302	·088109	·078384	0·6
0·7	·145981	·136397	·126655	·116856	·107100	·097486	·088109	·079057	·070408	0·7
0·8	·129097	·120731	·112215	·103635	·095079	·086634	·078384	·070408	·062776	0·8
0·9	·113286	·106044	·098659	·091206	·083762	·076403	·069203	·062230	·055547	0·9
1·0	·098633	·092413	·086062	·079641	·073217	·066856	·060622	·054576	·048771	1·0
1·1	·085189	·079893	·074475	·068989	·063491	·058038	·052686	·047485	·042484	1·1
1·2	·072981	·068509	·063927	·059279	·054613	·049978	·045420	·040984	·036711	1·2
1·3	·062008	·058265	·054422	·050518	·046592	·042684	·038836	·035084	·031464	1·3
1·4	·052246	·049139	·045945	·042693	·039418	·036153	·032931	·029784	·026744	1·4
1·5	·043649	·041094	·038461	·035777	·033068	·030363	·027689	·025073	·022541	1·5
1·6	·036156	·034072	·031922	·029725	·027505	·025283	·023084	·020928	·018838	1·6
1·7	·029690	·028007	·026266	·024484	·022680	·020872	·019079	·017318	·015608	1·7
1·8	·024169	·022820	·021424	·019992	·018539	·017081	·015632	·014206	·012819	1·8
1·9	·019501	·018431	·017321	·016181	·015022	·013856	·012695	·011552	·010437	1·9
2·0	·015596	·014755	·013880	·012980	·012063	·011140	·010219	·009310	·008422	2·0
2·1	·012361	·011706	·011023	·010319	·009601	·008877	·008152	·007436	·006735	2·1
2·2	·009709	·009204	·008676	·008130	·007573	·007009	·006445	·005886	·005338	2·2
2·3	·007558	·007171	·006766	·006348	·005919	·005485	·005050	·004617	·004193	2·3
2·4	·005829	·005536	·005229	·004911	·004584	·004253	·003920	·003589	·003263	2·4
2·5	·004455	·004235	·004004	·003764	·003518	·003267	·003015	·002764	·002516	2·5
2·6	·003373	·003210	·003038	·002859	·002675	·002487	·002298	·002109	·001922	2·6

k	r = ·20									k
	h = 0·9	h = 1·0	h = 1·1	h = 1·2	h = 1·3	h = 1·4	h = 1·5	h = 1·6	h = 1·7	
0·0	·113286	·098633	·085189	·072981	·062008	·052246	·043649	·036156	·029690	0·0
0·1	·106044	·092413	·079893	·068509	·058265	·049139	·041094	·034072	·028007	0·1
0·2	·098659	·086062	·074475	·063927	·054422	·045945	·038461	·031922	·026266	0·2
0·3	·091206	·079641	·068989	·059279	·050518	·042693	·035777	·029725	·024484	0·3
0·4	·083762	·073217	·063491	·054613	·046592	·039418	·033068	·027505	·022680	0·4
0·5	·076403	·066856	·058038	·049978	·042684	·036153	·030363	·025283	·020872	0·5
0·6	·069203	·060622	·052686	·045420	·038836	·032931	·027689	·023084	·019079	0·6
0·7	·062230	·054576	·047485	·040984	·035084	·029784	·025073	·020928	·017318	0·7
0·8	·055547	·048771	·042484	·036711	·031464	·026744	·022541	·018838	·015608	0·8
0·9	·049208	·043256	·037725	·032638	·028007	·023835	·020114	·016831	·013962	0·9
1·0	·043256	·038069	·033241	·028794	·024740	·021081	·017813	·014924	·012397	1·0
1·1	·037725	·033241	·029062	·025205	·021684	·018500	·015653	·013132	·010922	1·1
1·2	·032638	·028794	·025205	·021889	·018855	·016108	·013646	·011463	·009548	1·2
1·3	·028007	·024740	·021684	·018855	·016262	·013911	·011801	·009927	·008279	1·3
1·4	·023835	·021081	·018500	·016108	·013911	·011916	·010123	·008527	·007121	1·4
1·5	·020114	·017813	·015653	·013646	·011801	·010123	·008611	·007263	·006074	1·5
1·6	·016831	·014924	·013132	·011463	·009927	·008527	·007263	·006135	·005138	1·6
1·7	·013962	·012397	·010922	·009548	·008279	·007121	·006074	·005138	·004309	1·7
1·8	·011483	·010208	·009006	·007883	·006845	·005896	·005036	·004266	·003583	1·8
1·9	·009361	·008333	·007361	·006452	·005610	·004839	·004140	·003512	·002954	1·9
2·0	·007563	·006742	·005963	·005234	·004558	·003937	·003372	·002865	·002413	2·0
2·1	·006056	·005406	·004788	·004209	·003670	·003174	·002723	·002317	·001955	2·1
2·2	·004806	·004296	·003810	·003353	·002928	·002536	·002179	·001857	·001569	2·2
2·3	·003780	·003383	·003004	·002648	·002316	·002009	·001728	·001475	·001248	2·3
2·4	·002946	·002639	·002348	·002072	·001814	·001576	·001358	·001161	·000984	2·4
2·5	·002274	·002041	·001818	·001606	·001409	·001225	·001058	·000905	·000768	2·5
2·6	·001740	·001563	·001394	·001234	·001084	·000944	·000816	·000699	·000594	2·6

TABLE VIII. *Positive Correlation*—(*continued*).

k	*r* = ·20									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·024169	·019501	·015596	·012361	·009709	·007558	·005829	·004455	·003373	*0·0*
0·1	·022820	·018431	·014755	·011706	·009204	·007171	·005536	·004235	·003210	*0·1*
0·2	·021424	·017321	·013880	·011023	·008676	·006766	·005229	·004004	·003038	*0·2*
0·3	·019992	·016181	·012980	·010319	·008130	·006348	·004911	·003764	·002859	*0·3*
0·4	·018539	·015022	·012063	·009601	·007573	·005919	·004584	·003518	·002675	*0·4*
0·5	·017081	·013856	·011140	·008877	·007009	·005485	·004253	·003267	·002487	*0·5*
0·6	·015632	·012695	·010219	·008152	·006445	·005050	·003920	·003015	·002298	*0·6*
0·7	·014206	·011552	·009310	·007436	·005886	·004617	·003589	·002764	·002109	*0·7*
0·8	·012819	·010437	·008422	·006735	·005338	·004193	·003263	·002516	·001922	*0·8*
0·9	·011483	·009361	·007563	·006056	·004806	·003780	·002946	·002274	·001740	*0·9*
1·0	·010208	·008333	·006742	·005406	·004296	·003383	·002639	·002041	·001563	*1·0*
1·1	·009006	·007361	·005963	·004788	·003810	·003004	·002348	·001818	·001394	*1·1*
1·2	·007883	·006452	·005234	·004209	·003353	·002648	·002072	·001606	·001234	*1·2*
1·3	·006845	·005610	·004558	·003670	·002928	·002316	·001814	·001409	·001084	*1·3*
1·4	·005896	·004839	·003937	·003174	·002536	·002009	·001576	·001225	·000944	*1·4*
1·5	·005036	·004140	·003372	·002723	·002179	·001728	·001358	·001058	·000816	*1·5*
1·6	·004266	·003512	·002865	·002317	·001857	·001475	·001161	·000905	·000699	*1·6*
1·7	·003583	·002954	·002413	·001955	·001569	·001248	·000984	·000768	·000594	*1·7*
1·8	·002984	·002463	·002016	·001635	·001314	·001047	·000826	·000646	·000501	*1·8*
1·9	·002463	·002037	·001669	·001356	·001091	·000871	·000688	·000539	·000419	*1·9*
2·0	·002016	·001669	·001370	·001114	·000898	·000718	·000569	·000446	·000347	*2·0*
2·1	·001635	·001356	·001114	·000908	·000733	·000587	·000465	·000366	·000285	*2·1*
2·2	·001314	·001091	·000898	·000733	·000593	·000475	·000378	·000297	·000232	*2·2*
2·3	·001047	·000871	·000718	·000587	·000475	·000382	·000304	·000239	·000187	*2·3*
2·4	·000826	·000688	·000569	·000465	·000378	·000304	·000242	·000191	·000149	*2·4*
2·5	·000646	·000539	·000446	·000366	·000297	·000239	·000191	·000151	·000118	*2·5*
2·6	·000501	·000419	·000347	·000285	·000232	·000187	·000149	·000118	·000093	*2·6*

k	*r* = ·25									*k*
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·290215	·270096	·249772	·229452	·209348	·189662	·170586	·152291	·134927	*0·0*
0·1	·270096	·251617	·232916	·214188	·195627	·177422	·159752	·142778	·126642	*0·1*
0·2	·249772	·232916	·215828	·198685	·181666	·164945	·148686	·133042	·118145	*0·2*
0·3	·229452	·214188	·198685	·183105	·167609	·152357	·137501	·123181	·109521	*0·3*
0·4	·209348	·195627	·181666	·167609	·153602	·139790	·126313	·113298	·100861	*0·4*
0·5	·189662	·177422	·164945	·152357	·139790	·127375	·115238	·103496	·092254	*0·5*
0·6	·170586	·159752	·148686	·137501	·126313	·115238	·104390	·093875	·083789	*0·6*
0·7	·152291	·142778	·133042	·123181	·113298	·103496	·093875	·084532	·075552	*0·7*
0·8	·134927	·126642	·118145	·109521	·100861	·092254	·083789	·075552	·067620	*0·8*
0·9	·118617	·111461	·104106	·096626	·089099	·081603	·074216	·067012	·060061	*0·9*
1·0	·103456	·097326	·091014	·084580	·078091	·071617	·065223	·058975	·052933	*1·0*
1·1	·089507	·084302	·078930	·073442	·067897	·062351	·056863	·051489	·046282	*1·1*
1·2	·076806	·072424	·067892	·063252	·058553	·053844	·049174	·044590	·040140	*1·2*
1·3	·065362	·061705	·057914	·054026	·050078	·046114	·042173	·038298	·034527	*1·3*
1·4	·055155	·052131	·048988	·045758	·042471	·039163	·035867	·032619	·029452	*1·4*
1·5	·046146	·043667	·041086	·038426	·035714	·032977	·030246	·027547	·024910	*1·5*
1·6	·038276	·036263	·034161	·031991	·029773	·027530	·025286	·023065	·020888	*1·6*
1·7	·031473	·029852	·028157	·026402	·024605	·022783	·020957	·019144	·017364	*1·7*
1·8	·025651	·024359	·023004	·021599	·020155	·018689	·017216	·015750	·014308	*1·8*
1·9	·020721	·019700	·018628	·017512	·016364	·015195	·014017	·012843	·011685	*1·9*
2·0	·016589	·015790	·014949	·014072	·013167	·012244	·011311	·010379	·009458	*2·0*
2·1	·013161	·012542	·011889	·011205	·010499	·009776	·009045	·008312	·007586	*2·1*
2·2	·010347	·009872	·009369	·008842	·008296	·007735	·007167	·006596	·006030	*2·2*
2·3	·008061	·007699	·007316	·006913	·006495	·006065	·005627	·005187	·004749	*2·3*
2·4	·006222	·005950	·005660	·005355	·005038	·004711	·004377	·004041	·003705	*2·4*
2·5	·004758	·004555	·004339	·004110	·003872	·003625	·003374	·003119	·002864	*2·5*
2·6	·003605	·003455	·003295	·003125	·002948	·002764	·002576	·002385	·002194	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	*r* = ·25									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·118617	·103456	·089507	·076806	·065362	·055155	·046146	·038276	·031473	*0·0*
0·1	·111461	·097326	·084302	·072424	·061705	·052131	·043667	·036263	·029852	*0·1*
0·2	·104106	·091014	·078930	·067892	·057914	·048988	·041086	·034161	·028157	*0·2*
0·3	·096626	·084580	·073442	·063252	·054026	·045758	·038426	·031991	·026402	*0·3*
0·4	·089099	·078091	·067897	·058553	·050078	·042471	·035714	·029773	·024605	*0·4*
0·5	·081603	·071617	·062351	·053844	·046114	·039163	·032977	·027530	·022783	*0·5*
0·6	·074216	·065223	·056863	·049174	·042173	·035867	·030246	·025286	·020957	*0·6*
0·7	·067012	·058975	·051489	·044590	·038298	·032619	·027547	·023065	·019144	*0·7*
0·8	·060061	·052933	·046282	·040140	·034527	·029452	·024910	·020888	·017364	*0·8*
0·9	·053424	·047153	·041289	·035863	·030896	·026395	·022359	·018778	·015635	*0·9*
1·0	·047153	·041680	·036552	·031797	·027435	·023475	·019917	·016755	·013972	*1·0*
1·1	·041289	·036552	·032104	·027972	·024173	·020716	·017605	·014834	·012390	*1·1*
1·2	·035863	·031797	·027972	·024410	·021128	·018137	·015438	·013030	·010902	*1·2*
1·3	·030896	·027435	·024173	·021128	·018318	·015750	·013429	·011353	·009515	*1·3*
1·4	·026395	·023475	·020716	·018137	·015750	·013565	·011586	·009812	·008237	*1·4*
1·5	·022359	·019917	·017605	·015438	·013429	·011586	·009912	·008409	·007072	*1·5*
1·6	·018778	·016755	·014834	·013030	·011353	·009812	·008409	·007146	·006020	*1·6*
1·7	·015635	·013972	·012390	·010902	·009515	·008237	·007072	·006020	·005081	*1·7*
1·8	·012903	·011550	·010259	·009042	·007905	·006856	·005896	·005028	·004252	*1·8*
1·9	·010555	·009463	·008420	·007433	·006510	·005656	·004873	·004163	·003526	*1·9*
2·0	·008557	·007684	·006848	·006056	·005313	·004624	·003991	·003416	·002899	*2·0*
2·1	·006874	·006183	·005520	·004890	·004298	·003747	·003240	·002778	·002362	*2·1*
2·2	·005472	·004931	·004409	·003912	·003445	·003008	·002606	·002239	·001907	*2·2*
2·3	·004317	·003896	·003489	·003102	·002736	·002393	·002077	·001788	·001526	*2·3*
2·4	·003374	·003050	·002736	·002436	·002153	·001887	·001640	·001414	·001209	*2·4*
2·5	·002612	·002365	·002126	·001896	·001678	·001473	·001283	·001109	·000950	*2·5*
2·6	·002004	·001817	·001636	·001462	·001296	·001140	·000995	·000861	·000739	*2·6*

k	*r* = ·25									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·025651	·020721	·016589	·013161	·010347	·008061	·006222	·004758	·003605	*0·0*
0·1	·024359	·019700	·015790	·012542	·009872	·007699	·005950	·004555	·003455	*0·1*
0·2	·023004	·018628	·014949	·011889	·009369	·007316	·005660	·004339	·003295	*0·2*
0·3	·021599	·017512	·014072	·011205	·008842	·006913	·005355	·004110	·003125	*0·3*
0·4	·020155	·016364	·013167	·010499	·008296	·006495	·005038	·003872	·002948	*0·4*
0·5	·018689	·015195	·012244	·009776	·007735	·006065	·004711	·003625	·002764	*0·5*
0·6	·017216	·014017	·011311	·009045	·007167	·005627	·004377	·003374	·002576	*0·6*
0·7	·015750	·012843	·010379	·008312	·006596	·005187	·004041	·003119	·002385	*0·7*
0·8	·014308	·011685	·009458	·007586	·006030	·004749	·003705	·002864	·002194	*0·8*
0·9	·012903	·010555	·008557	·006874	·005472	·004317	·003374	·002612	·002004	*0·9*
1·0	·011550	·009463	·007684	·006183	·004931	·003896	·003050	·002365	·001817	*1·0*
1·1	·010259	·008420	·006848	·005520	·004409	·003489	·002736	·002126	·001636	*1·1*
1·2	·009042	·007433	·006056	·004890	·003912	·003102	·002436	·001896	·001462	*1·2*
1·3	·007905	·006510	·005313	·004298	·003445	·002736	·002153	·001678	·001296	*1·3*
1·4	·006856	·005656	·004624	·003747	·003008	·002393	·001887	·001473	·001140	*1·4*
1·5	·005896	·004873	·003991	·003240	·002606	·002077	·001640	·001283	·000995	*1·5*
1·6	·005028	·004163	·003416	·002778	·002239	·001788	·001414	·001109	·000861	*1·6*
1·7	·004252	·003526	·002899	·002362	·001907	·001526	·001209	·000950	·000739	*1·7*
1·8	·003564	·002962	·002439	·001991	·001610	·001291	·001025	·000807	·000629	*1·8*
1·9	·002962	·002466	·002034	·001664	·001348	·001083	·000862	·000679	·000531	*1·9*
2·0	·002439	·002034	·001682	·001378	·001119	·000900	·000718	·000567	·000444	*2·0*
2·1	·001991	·001664	·001378	·001131	·000920	·000742	·000593	·000469	·000368	*2·1*
2·2	·001610	·001348	·001119	·000920	·000750	·000606	·000485	·000385	·000302	*2·2*
2·3	·001291	·001083	·000900	·000742	·000606	·000490	·000393	·000313	·000246	*2·3*
2·4	·001025	·000862	·000718	·000593	·000485	·000393	·000316	·000252	·000199	*2·4*
2·5	·000807	·000679	·000567	·000469	·000385	·000313	·000252	·000201	·000159	*2·5*
2·6	·000629	·000531	·000444	·000368	·000302	·000246	·000199	·000159	·000126	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	r = ·30									k
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·298493	·278330	·257873	·237337	·216939	·196893	·177399	·158641	·140782	*0·0*
0·1	·278330	·259830	·241021	·222100	·203268	·184722	·166651	·149228	·132606	*0·1*
0·2	·257873	·241021	·223850	·206540	·189274	·172235	·155596	·139521	·124154	*0·2*
0·3	·237337	·222100	·206540	·190819	·175103	·159558	·144347	·129620	·115511	*0·3*
0·4	·216939	·203268	·189274	·175103	·160904	·146828	·133023	·119628	·106767	*0·4*
0·5	·196893	·184722	·172235	·159558	·146828	·134179	·121745	·109652	·098015	*0·5*
0·6	·177399	·166651	·155596	·144347	·133023	·121745	·110632	·099798	·089349	*0·6*
0·7	·158641	·149228	·139521	·129620	·119628	·109652	·099798	·090168	·080859	*0·7*
0·8	·140782	·132606	·124154	·115511	·106767	·098015	·089349	·080859	·072631	*0·8*
0·9	·123958	·116917	·109620	·102139	·094551	·086936	·079378	·071954	·064742	*0·9*
1·0	·108275	·102264	·096019	·089599	·083070	·076501	·069964	·063528	·057259	*1·0*
1·1	·093808	·088722	·083424	·077962	·072394	·066777	·061172	·055639	·050236	*1·1*
1·2	·080604	·076339	·071884	·067279	·062571	·057810	·053047	·048332	·043715	*1·2*
1·3	·068679	·065135	·061422	·057574	·053630	·049630	·045618	·041635	·037725	*1·3*
1·4	·058021	·055103	·052037	·048852	·045577	·042247	·038897	·035564	·032282	*1·4*
1·5	·048596	·046215	·043708	·041094	·038400	·035653	·032882	·030117	·027387	*1·5*
1·6	·040348	·038424	·036392	·034268	·032072	·029827	·027556	·025283	·023034	*1·6*
1·7	·033206	·031665	·030034	·028324	·026551	·024733	·022889	·021039	·019202	*1·7*
1·8	·027085	·025864	·024566	·023203	·021785	·020327	·018844	·017351	·015865	*1·8*
1·9	·021895	·020936	·019914	·018837	·017714	·016556	·015374	·014181	·012991	*1·9*
2·0	·017540	·016794	·015997	·015154	·014273	·013362	·012429	·011485	·010541	*2·0*
2·1	·013923	·013349	·012733	·012080	·011396	·010686	·009957	·009217	·008474	*2·1*
2·2	·010951	·010513	·010042	·009541	·009015	·008467	·007903	·007329	·006750	*2·2*
2·3	·008534	·008203	·007847	·007466	·007065	·006646	·006214	·005773	·005327	*2·3*
2·4	·006589	·006342	·006074	·005788	·005486	·005169	·004841	·004505	·004165	*2·4*
2·5	·005040	·004857	·004658	·004445	·004219	·003982	·003736	·003482	·003225	*2·5*
2·6	·003819	·003685	·003539	·003382	·003215	·003039	·002855	·002667	·002474	*2·6*

k	r = ·30									k
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·123958	·108275	·093808	·080604	·068679	·058021	·048596	·040348	·033206	*0·0*
0·1	·116917	·102264	·088722	·076339	·065135	·055103	·046215	·038424	·031665	*0·1*
0·2	·109620	·096019	·083424	·071884	·061422	·052037	·043708	·036392	·030034	*0·2*
0·3	·102139	·089599	·077962	·067279	·057574	·048852	·041094	·034268	·028324	*0·3*
0·4	·094551	·083070	·072394	·062571	·053630	·045577	·038400	·032072	·026551	*0·4*
0·5	·086936	·076501	·066777	·057810	·049630	·042247	·035653	·029827	·024733	*0·5*
0·6	·079378	·069964	·061172	·053047	·045618	·038897	·032882	·027556	·022889	*0·6*
0·7	·071954	·063528	·055639	·048332	·041635	·035564	·030117	·025283	·021039	*0·7*
0·8	·064742	·057259	·050236	·043715	·037725	·032282	·027387	·023034	·019202	*0·8*
0·9	·057810	·051217	·045015	·039243	·033928	·029086	·024722	·020831	·017398	*0·9*
1·0	·051217	·045458	·040026	·034958	·030279	·026007	·022147	·018697	·015646	*1·0*
1·1	·045015	·040026	·035308	·030895	·026811	·023073	·019686	·016652	·013962	*1·1*
1·2	·039243	·034958	·030895	·027085	·023551	·020306	·017360	·014714	·012362	*1·2*
1·3	·033928	·030279	·026811	·023551	·020517	·017726	·015185	·012896	·010857	*1·3*
1·4	·029086	·026007	·023073	·020306	·017726	·015345	·013172	·011210	·009457	*1·4*
1·5	·024722	·022147	·019686	·017360	·015185	·013172	·011330	·009662	·008168	*1·5*
1·6	·020831	·018697	·016652	·014714	·012896	·011210	·009662	·008257	·006996	*1·6*
1·7	·017398	·015646	·013962	·012362	·010857	·009457	·008168	·006996	·005940	*1·7*
1·8	·014402	·012977	·011603	·010294	·009059	·007908	·006845	·005875	·004999	*1·8*
1·9	·011815	·010666	·009556	·008495	·007492	·006553	·005685	·004890	·004170	*1·9*
2·0	·009605	·008688	·007799	·006948	·006140	·005382	·004679	·004033	·003447	*2·0*
2·1	·007737	·007012	·006307	·005630	·004986	·004380	·003816	·003296	·002824	*2·1*
2·2	·006174	·005607	·005054	·004520	·004011	·003531	·003083	·002670	·002292	*2·2*
2·3	·004882	·004442	·004012	·003595	·003197	·002821	·002468	·002142	·001843	*2·3*
2·4	·003824	·003486	·003155	·002833	·002525	·002232	·001958	·001703	·001468	*2·4*
2·5	·002967	·002710	·002457	·002211	·001975	·001750	·001538	·001341	·001159	*2·5*
2·6	·002280	·002087	·001896	·001710	·001530	·001359	·001197	·001046	·000906	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	r = ·30									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·027085	·021895	·017540	·013923	·010951	·008534	·006589	·005040	·003819	*0·0*
0·1	·025864	·020936	·016794	·013349	·010513	·008203	·006342	·004857	·003685	*0·1*
0·2	·024566	·019914	·015997	·012733	·010042	·007847	·006074	·004658	·003539	*0·2*
0·3	·023203	·018837	·015154	·012080	·009541	·007466	·005788	·004445	·003382	*0·3*
0·4	·021785	·017714	·014273	·011396	·009015	·007065	·005486	·004219	·003215	*0·4*
0·5	·020327	·016556	·013362	·010686	·008467	·006646	·005169	·003982	·003039	*0·5*
0·6	·018844	·015374	·012429	·009957	·007903	·006214	·004841	·003736	·002855	*0·6*
0·7	·017351	·014181	·011485	·009217	·007329	·005773	·004505	·003482	·002667	*0·7*
0·8	·015865	·012991	·010541	·008474	·006750	·005327	·004165	·003225	·002474	*0·8*
0·9	·014402	·011815	·009605	·007737	·006174	·004882	·003824	·002967	·002280	*0·9*
1·0	·012977	·010666	·008688	·007012	·005607	·004442	·003486	·002710	·002087	*1·0*
1·1	·011603	·009556	·007799	·006307	·005054	·004012	·003155	·002457	·001896	*1·1*
1·2	·010294	·008495	·006948	·005630	·004520	·003595	·002833	·002211	·001710	*1·2*
1·3	·009059	·007492	·006140	·004986	·004011	·003197	·002525	·001975	·001530	*1·3*
1·4	·007908	·006553	·005382	·004380	·003531	·002821	·002232	·001750	·001359	*1·4*
1·5	·006845	·005685	·004679	·003816	·003083	·002468	·001958	·001538	·001197	*1·5*
1·6	·005875	·004890	·004033	·003296	·002670	·002142	·001703	·001341	·001046	*1·6*
1·7	·004999	·004170	·003447	·002824	·002292	·001843	·001468	·001159	·000906	*1·7*
1·8	·004216	·003525	·002920	·002398	·001951	·001572	·001255	·000993	·000778	*1·8*
1·9	·003525	·002953	·002453	·002018	·001646	·001329	·001064	·000844	·000663	*1·9*
2·0	·002920	·002453	·002041	·001684	·001376	·001114	·000894	·000710	·000559	*2·0*
2·1	·002398	·002018	·001684	·001392	·001140	·000925	·000744	·000593	·000468	*2·1*
2·2	·001951	·001646	·001376	·001140	·000936	·000762	·000614	·000490	·000388	*2·2*
2·3	·001572	·001329	·001114	·000925	·000762	·000621	·000502	·000402	·000319	*2·3*
2·4	·001255	·001064	·000894	·000744	·000614	·000502	·000407	·000326	·000259	*2·4*
2·5	·000993	·000844	·000710	·000593	·000490	·000402	·000326	·000262	·000209	*2·5*
2·6	·000778	·000663	·000559	·000468	·000388	·000319	·000259	·000209	·000167	*2·6*

k	r = ·35									*k*
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·306909	·286699	·266102	·245340	·224635	·204210	·184280	·165040	·146666	*0·0*
0·1	·286699	·268182	·249265	·230146	·211033	·192133	·173644	·155754	·138630	*0·1*
0·2	·266102	·249265	·232016	·214539	·197022	·179656	·162625	·146105	·130253	*0·2*
0·3	·245340	·230146	·214539	·198682	·182747	·166907	·151333	·136187	·121617	*0·3*
0·4	·224635	·211033	·197022	·182747	·168362	·154025	·139890	·126106	·112811	*0·4*
0·5	·204210	·192133	·179656	·166907	·154025	·141148	·128418	·115971	·103932	*0·5*
0·6	·184280	·173644	·162625	·151333	·139890	·128418	·117045	·105893	·095077	*0·6*
0·7	·165040	·155754	·146105	·136187	·126106	·115971	·105893	·095983	·086343	*0·7*
0·8	·146666	·138630	·130253	·121617	·112811	·103932	·095077	·086343	·077823	*0·8*
0·9	·129308	·122415	·115206	·107752	·100127	·092416	·084702	·077070	·069602	*0·9*
1·0	·113085	·107225	·101078	·094700	·088158	·081519	·074857	·068246	·061758	*1·0*
1·1	·098086	·093150	·087955	·082549	·076984	·071320	·065619	·059943	·054355	*1·1*
1·2	·084366	·080247	·075897	·071356	·066667	·061879	·057043	·052214	·047444	*1·2*
1·3	·071950	·068545	·064937	·061158	·057244	·053233	·049169	·045098	·041063	*1·3*
1·4	·060834	·058046	·055082	·051967	·048729	·045401	·042018	·038617	·035237	*1·4*
1·5	·050987	·048727	·046315	·043772	·041120	·038385	·035595	·032781	·029974	*1·5*
1·6	·042359	·040543	·038600	·036544	·034392	·032166	·029887	·027581	·025273	*1·6*
1·7	·034878	·033434	·031884	·030237	·028509	·026713	·024870	·022998	·021119	*1·7*
1·8	·028460	·027323	·026099	·024793	·023418	·021985	·020508	·019004	·017488	*1·8*
1·9	·023013	·022127	·021169	·020145	·019061	·017929	·016757	·015560	·014349	*1·9*
2·0	·018438	·017755	·017013	·016217	·015372	·014486	·013566	·012622	·011665	*2·0*
2·1	·014638	·014116	·013547	·012935	·012283	·011596	·010881	·010144	·009395	*2·1*
2·2	·011513	·011118	·010687	·010221	·009722	·009195	·008645	·008076	·007495	*2·2*
2·3	·008971	·008676	·008352	·008000	·007623	·007223	·006804	·006369	·005923	*2·3*
2·4	·006925	·006706	·006465	·006203	·005921	·005621	·005304	·004975	·004637	*2·4*
2·5	·005295	·005135	·004958	·004764	·004555	·004332	·004096	·003849	·003595	*2·5*
2·6	·004011	·003895	·003766	·003624	·003471	·003307	·003132	·002950	·002760	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	r = ·35									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·129308	·113085	·098086	·084366	·071950	·060834	·050987	·042359	·034878	*0·0*
0·1	·122415	·107225	·093150	·080247	·068545	·058046	·048727	·040543	·033434	*0·1*
0·2	·115206	·101078	·087955	·075897	·064937	·055082	·046315	·038600	·031884	*0·2*
0·3	·107752	·094700	·082549	·071356	·061158	·051967	·043772	·036544	·030237	*0·3*
0·4	·100127	·088158	·076984	·066667	·057244	·048729	·041120	·034392	·028509	*0·4*
0·5	·092416	·081519	·071320	·061879	·053233	·045401	·038385	·032166	·026713	*0·5*
0·6	·084702	·074857	·065619	·057043	·049169	·042018	·035595	·029887	·024870	*0·6*
0·7	·077070	·068246	·059943	·052214	·045098	·038617	·032781	·027581	·022998	*0·7*
0·8	·069602	·061758	·054355	·047444	·041063	·035237	·029974	·025273	·021119	*0·8*
0·9	·062376	·055460	·048914	·042785	·037110	·031913	·027206	·022989	·019252	*0·9*
1·0	·055460	·049414	·043675	·038285	·033279	·028682	·024506	·020754	·017419	*1·0*
1·1	·048914	·043675	·038685	·033986	·029608	·025576	·021902	·018591	·015640	*1·1*
1·2	·042785	·038285	·033986	·029924	·026129	·022622	·019417	·016521	·013931	*1·2*
1·3	·037110	·033279	·029608	·026129	·022868	·019845	·017074	·014561	·012308	*1·3*
1·4	·031913	·028682	·025576	·022622	·019845	·017262	·014887	·012727	·010785	*1·4*
1·5	·027206	·024506	·021902	·019417	·017074	·014887	·012870	·011030	·009370	*1·5*
1·6	·022989	·020754	·018591	·016521	·014561	·012727	·011030	·009477	·008070	*1·6*
1·7	·019252	·017419	·015640	·013931	·012308	·010785	·009370	·008070	·006890	*1·7*
1·8	·015977	·014489	·013039	·011642	·010311	·009056	·007888	·006811	·005830	*1·8*
1·9	·013138	·011941	·010771	·009640	·008559	·007536	·006580	·005697	·004889	*1·9*
2·0	·010704	·009751	·008816	·007909	·007039	·006214	·005439	·004721	·004062	*2·0*
2·1	·008640	·007889	·007149	·006429	·005735	·005076	·004454	·003876	·003344	*2·1*
2·2	·006908	·006322	·005742	·005176	·004629	·004107	·003614	·003153	·002727	*2·2*
2·3	·005471	·005018	·004569	·004128	·003701	·003292	·002904	·002540	·002203	*2·3*
2·4	·004292	·003945	·003601	·003261	·002931	·002613	·002311	·002027	·001763	*2·4*
2·5	·003335	·003072	·002810	·002551	·002299	·002055	·001822	·001602	·001397	*2·5*
2·6	·002566	·002369	·002172	·001977	·001785	·001600	·001422	·001254	·001096	*2·6*

k	r = ·35									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·028460	·023013	·018438	·014638	·011513	·008971	·006925	·005295	·004011	*0·0*
0·1	·027323	·022127	·017755	·014116	·011118	·008676	·006706	·005135	·003895	*0·1*
0·2	·026099	·021169	·017013	·013547	·010687	·008352	·006465	·004958	·003766	*0·2*
0·3	·024793	·020145	·016217	·012935	·010221	·008000	·006203	·004764	·003624	*0·3*
0·4	·023418	·019061	·015372	·012283	·009722	·007623	·005921	·004555	·003471	*0·4*
0·5	·021985	·017929	·014486	·011596	·009195	·007223	·005621	·004332	·003307	*0·5*
0·6	·020508	·016757	·013566	·010881	·008645	·006804	·005304	·004096	·003132	*0·6*
0·7	·019004	·015560	·012622	·010144	·008076	·006369	·004975	·003849	·002950	*0·7*
0·8	·017488	·014349	·011665	·009395	·007495	·005923	·004637	·003595	·002760	*0·8*
0·9	·015977	·013138	·010704	·008640	·006908	·005471	·004292	·003335	·002566	*0·9*
1·0	·014489	·011941	·009751	·007889	·006322	·005018	·003945	·003072	·002369	*1·0*
1·1	·013039	·010771	·008816	·007149	·005742	·004569	·003601	·002810	·002172	*1·1*
1·2	·011642	·009640	·007909	·006429	·005176	·004128	·003261	·002551	·001977	*1·2*
1·3	·010311	·008559	·007039	·005735	·004629	·003701	·002931	·002299	·001785	*1·3*
1·4	·009056	·007536	·006214	·005076	·004107	·003292	·002613	·002055	·001600	*1·4*
1·5	·007888	·006580	·005439	·004454	·003614	·002904	·002311	·001822	·001422	*1·5*
1·6	·006811	·005697	·004721	·003876	·003153	·002540	·002027	·001602	·001254	*1·6*
1·7	·005830	·004889	·004062	·003344	·002727	·002203	·001763	·001397	·001096	*1·7*
1·8	·004946	·004159	·003464	·002860	·002338	·001894	·001519	·001207	·000950	*1·8*
1·9	·004159	·003505	·002928	·002423	·001987	·001614	·001298	·001035	·000816	*1·9*
2·0	·003464	·002928	·002453	·002035	·001673	·001363	·001100	·000879	·000695	*2·0*
2·1	·002860	·002423	·002035	·001694	·001396	·001140	·000923	·000739	·000587	*2·1*
2·2	·002338	·001987	·001673	·001396	·001155	·000946	·000767	·000616	·000491	*2·2*
2·3	·001894	·001614	·001363	·001140	·000946	·000777	·000632	·000509	·000406	*2·3*
2·4	·001519	·001298	·001100	·000923	·000767	·000632	·000516	·000417	·000334	*2·4*
2·5	·001207	·001035	·000879	·000739	·000616	·000509	·000417	·000338	·000271	*2·5*
2·6	·000950	·000816	·000695	·000587	·000491	·000406	·000334	·000271	·000218	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	$r=\cdot 40$									*k*
	$h=0\cdot 0$	$h=0\cdot 1$	$h=0\cdot 2$	$h=0\cdot 3$	$h=0\cdot 4$	$h=0\cdot 5$	$h=0\cdot 6$	$h=0\cdot 7$	$h=0\cdot 8$	
0·0	·315495	·295235	·274491	·253487	·232457	·211633	·191242	·171495	·152582	*0·0*
0·1	·295235	·276706	·257677	·238353	·218947	·199675	·180750	·162371	·144720	*0·1*
0·2	·274491	·257677	·240356	·222710	·204936	·187232	·169794	·152809	·136451	*0·2*
0·3	·253487	·238353	·222710	·206724	·190569	·174428	·158481	·142902	·127851	*0·3*
0·4	·232457	·218947	·204936	·190569	·176005	·161405	·146934	·132752	·119009	*0·4*
0·5	·211633	·199675	·187232	·174428	·161405	·148306	·135281	·122474	·110023	*0·5*
0·6	·191242	·180750	·169794	·158481	·146934	·135281	·123653	·112182	·100994	*0·6*
0·7	·171495	·162371	·152809	·142902	·132752	·122474	·112182	·101994	·092023	*0·7*
0·8	·152582	·144720	·136451	·127851	·119009	·110023	·100994	·092023	·083213	*0·8*
0·9	·134666	·127955	·120869	·113473	·105840	·098055	·090203	·082375	·074659	*0·9*
1·0	·117883	·112208	·106193	·099890	·093363	·086679	·079913	·073143	·066446	*1·0*
1·1	·102331	·097578	·092521	·087202	·081671	·075987	·070212	·064411	·058651	*1·1*
1·2	·088079	·084137	·079926	·075480	·070839	·066051	·061167	·056243	·051335	*1·2*
1·3	·075160	·071923	·068451	·064771	·060914	·056920	·052829	·048689	·044547	*1·3*
1·4	·063577	·060945	·058111	·055095	·051922	·048622	·045229	·041782	·038320	*1·4*
1·5	·053305	·051187	·048897	·046449	·043864	·041165	·038379	·035537	·032671	*1·5*
1·6	·044294	·042606	·040774	·038809	·036724	·034538	·032273	·029953	·027605	*1·6*
1·7	·036474	·035144	·033693	·032131	·030466	·028715	·026892	·025017	·023111	*1·7*
1·8	·029762	·028724	·027588	·026358	·025043	·023653	·022201	·020702	·019171	*1·8*
1·9	·024063	·023261	·022380	·021423	·020395	·019303	·018158	·016971	·015754	*1·9*
2·0	·019276	·018663	·017987	·017249	·016454	·015606	·014712	·013782	·012825	*2·0*
2·1	·015297	·014834	·014321	·013758	·013149	·012497	·011807	·011086	·010341	*2·1*
2·2	·012026	·011680	·011295	·010870	·010409	·009913	·009386	·008833	·008258	*2·2*
2·3	·009366	·009110	·008823	·008507	·008161	·007788	·007389	·006969	·006531	*2·3*
2·4	·007225	·007038	·006827	·006594	·006337	·006059	·005761	·005446	·005116	*2·4*
2·5	·005521	·005386	·005233	·005062	·004874	·004669	·004449	·004214	·003968	*2·5*
2·6	·004179	·004082	·003972	·003848	·003712	·003563	·003401	·003229	·003047	*2·6*

k	$r=\cdot 40$									*k*
	$h=0\cdot 9$	$h=1\cdot 0$	$h=1\cdot 1$	$h=1\cdot 2$	$h=1\cdot 3$	$h=1\cdot 4$	$h=1\cdot 5$	$h=1\cdot 6$	$h=1\cdot 7$	
0·0	·134666	·117883	·102331	·088079	·075160	·063577	·053305	·044294	·036474	*0·0*
0·1	·127955	·112208	·097578	·084137	·071923	·060945	·051187	·042606	·035144	*0·1*
0·2	·120869	·106193	·092521	·079926	·068451	·058111	·048897	·040774	·033693	*0·2*
0·3	·113473	·099890	·087202	·075480	·064771	·055095	·046449	·038809	·032131	*0·3*
0·4	·105840	·093363	·081671	·070839	·060914	·051922	·043864	·036724	·030466	*0·4*
0·5	·098055	·086679	·075987	·066051	·056920	·048622	·041165	·034538	·028715	*0·5*
0·6	·090203	·079913	·070212	·061167	·052829	·045229	·038379	·032273	·026892	*0·6*
0·7	·082375	·073143	·064411	·056243	·048689	·041782	·035537	·029953	·025017	*0·7*
0·8	·074659	·066446	·058651	·051335	·044547	·038320	·032671	·027605	·023111	*0·8*
0·9	·067140	·059896	·052997	·046500	·040451	·034882	·029814	·025254	·021196	*0·9*
1·0	·059896	·053563	·047510	·041789	·036445	·031508	·026999	·022929	·019294	*1·0*
1·1	·052997	·047510	·042246	·037254	·032573	·028234	·024258	·020655	·017427	*1·1*
1·2	·046500	·041789	·037254	·032937	·028874	·025094	·021618	·018457	·015615	*1·2*
1·3	·040451	·036445	·032573	·028874	·025380	·022117	·019105	·016356	·013876	*1·3*
1·4	·034882	·031508	·028234	·025094	·022117	·019326	·016741	·014373	·012228	*1·4*
1·5	·029814	·026999	·024258	·021618	·019105	·016741	·014542	·012520	·010683	*1·5*
1·6	·025254	·022929	·020655	·018457	·016356	·014373	·012520	·010811	·009251	*1·6*
1·7	·021196	·019294	·017427	·015615	·013876	·012228	·010683	·009251	·007940	*1·7*
1·8	·017627	·016086	·014568	·013089	·011664	·010308	·009032	·007844	·006752	*1·8*
1·9	·014521	·013287	·012065	·010870	·009714	·008609	·007565	·006590	·005690	*1·9*
2·0	·011851	·010871	·009898	·008942	·008013	·007122	·006277	·005484	·004750	*2·0*
2·1	·009579	·008810	·008043	·007286	·006548	·005836	·005159	·004521	·003927	*2·1*
2·2	·007669	·007071	·006473	·005879	·005299	·004737	·004199	·003691	·003216	*2·2*
2·3	·006080	·005621	·005158	·004699	·004246	·003807	·003385	·002984	·002608	*2·3*
2·4	·004774	·004424	·004071	·003718	·003370	·003030	·002702	·002389	·002095	*2·4*
2·5	·003711	·003448	·003181	·002914	·002648	·002388	·002136	·001894	·001666	*2·5*
2·6	·002857	·002661	·002462	·002260	·002060	·001863	·001671	·001487	·001311	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	*r* = ·40									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·029762	·024063	·019276	·015297	·012026	·009366	·007225	·005521	·004179	*0·0*
0·1	·028724	·023261	·018663	·014834	·011680	·009110	·007038	·005386	·004082	*0·1*
0·2	·027588	·022380	·017987	·014321	·011295	·008823	·006827	·005233	·003972	*0·2*
0·3	·026358	·021423	·017249	·013758	·010870	·008507	·006594	·005062	·003848	*0·3*
0·4	·025043	·020395	·016454	·013149	·010409	·008161	·006337	·004874	·003712	*0·4*
0·5	·023653	·019303	·015606	·012497	·009913	·007788	·006059	·004669	·003563	*0·5*
0·6	·022201	·018158	·014712	·011807	·009386	·007389	·005761	·004449	·003401	*0·6*
0·7	·020702	·016971	·013782	·011086	·008833	·006969	·005446	·004214	·003229	*0·7*
0·8	·019171	·015754	·012825	·010341	·008258	·006531	·005116	·003968	·003047	*0·8*
0·9	·017627	·014521	·011851	·009579	·007669	·006080	·004774	·003711	·002857	*0·9*
1·0	·016086	·013287	·010871	·008810	·007071	·005621	·004424	·003448	·002661	*1·0*
1·1	·014568	·012065	·009898	·008043	·006473	·005158	·004071	·003181	·002462	*1·1*
1·2	·013089	·010870	·008942	·007286	·005879	·004699	·003718	·002914	·002260	*1·2*
1·3	·011664	·009714	·008013	·006548	·005299	·004246	·003370	·002648	·002060	*1·3*
1·4	·010308	·008609	·007122	·005836	·004737	·003807	·003030	·002388	·001863	*1·4*
1·5	·009032	·007565	·006277	·005159	·004199	·003385	·002702	·002136	·001671	*1·5*
1·6	·007844	·006590	·005484	·004521	·003691	·002984	·002389	·001894	·001487	*1·6*
1·7	·006752	·005690	·004750	·003927	·003216	·002608	·002095	·001666	·001311	*1·7*
1·8	·005760	·004868	·004076	·003381	·002777	·002260	·001820	·001452	·001147	*1·8*
1·9	·004868	·004127	·003467	·002884	·002377	·001940	·001568	·001255	·000994	*1·9*
2·0	·004076	·003467	·002921	·002438	·002015	·001650	·001338	·001074	·000854	*2·0*
2·1	·003381	·002884	·002438	·002041	·001693	·001391	·001131	·000911	·000727	*2·1*
2·2	·002777	·002377	·002015	·001693	·001409	·001161	·000948	·000766	·000613	*2·2*
2·3	·002260	·001940	·001650	·001391	·001161	·000960	·000786	·000637	·000512	*2·3*
2·4	·001820	·001568	·001338	·001131	·000948	·000786	·000646	·000525	·000423	*2·4*
2·5	·001452	·001255	·001074	·000911	·000766	·000637	·000525	·000429	·000347	*2·5*
2·6	·001147	·000994	·000854	·000727	·000613	·000512	·000423	·000347	·000281	*2·6*

k	*r* = ·45									*k*
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·324288	·303974	·283071	·261810	·240432	·219182	·198300	·178014	·158530	*0·0*
0·1	·303974	·285438	·266295	·246755	·227039	·207375	·187987	·169091	·150884	*0·1*
0·2	·283071	·266295	·248905	·231089	·213048	·194990	·177124	·159651	·142759	*0·2*
0·3	·261810	·246755	·231089	·214979	·198603	·182152	·165817	·149783	·134229	*0·3*
0·4	·240432	·227039	·213048	·198603	·183864	·169000	·154185	139590	·125380	*0·4*
0·5	·219182	·207375	·194990	·182152	·169000	·155684	·142361	·129186	·116309	*0·5*
0·6	·198300	·187987	·177124	·165817	·154185	·142361	·130483	·118691	·107120	*0·6*
0·7	·178014	·169091	·159651	·149783	·139590	·129186	·118691	·108229	·097923	*0·7*
0·8	·158530	·150884	·142759	·134229	·125380	·116309	·107120	·097923	·088825	*0·8*
0·9	·140029	·133540	·126615	·119312	·111704	·103870	·095901	·087889	·079932	*0·9*
1·0	·122658	·117207	·111362	·105172	·098693	·091993	·085148	·078236	·071341	*1·0*
1·1	·106532	·101999	·097116	·091921	·086459	·080785	·074962	·069056	·063139	*1·1*
1·2	·091729	·087998	·083961	·079645	·075087	·070330	·065426	·060429	·055401	*1·2*
1·3	·078294	·075255	·071951	·068403	·064637	·060690	·056601	·052416	·048186	*1·3*
1·4	·066235	·063786	·061110	·058223	·055145	·051903	·048529	·045060	·041536	*1·4*
1·5	·055531	·053579	·051435	·049111	·046621	·043986	·041230	·038384	·035480	*1·5*
1·6	·046136	·044596	·042897	·041046	·039053	·036934	·034708	·032397	·030027	*1·6*
1·7	·037981	·036779	·035447	·033989	·032411	·030725	·028945	·027088	·025176	*1·7*
1·8	·030979	·030052	·029019	·027882	·026646	·025320	·023912	·022436	·020909	*1·8*
1·9	·025034	·024326	·023534	·022658	·021701	·020667	·019566	·018406	·017200	*1·9*
2·0	·020041	·019507	·018906	·018238	·017505	·016709	·015857	·014955	·014012	*2·0*
2·1	·015893	·015494	·015044	·014540	·013985	·013379	·012727	·012033	·011304	*2·1*
2·2	·012485	·012191	·011856	·011481	·011065	·010609	·010115	·009588	·009031	*2·2*
2·3	·009714	·009500	·009255	·008978	·008670	·008330	·007961	·007564	·007143	*2·3*
2·4	·007487	·007332	·007155	·006953	·006727	·006477	·006204	·005909	·005594	*2·4*
2·5	·005715	·005605	·005478	·005332	·005169	·004987	·004787	·004570	·004338	*2·5*
2·6	·004321	·004243	·004153	·004050	·003933	·003802	·003657	·003500	·003330	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	$r=\cdot45$									k
	$h=0\cdot9$	$h=1\cdot0$	$h=1\cdot1$	$h=1\cdot2$	$h=1\cdot3$	$h=1\cdot4$	$h=1\cdot5$	$h=1\cdot6$	$h=1\cdot7$	
0·0	·140029	·122658	·106532	·091729	·078294	·066235	·055531	·046136	·037981	0·0
0·1	·133540	·117207	·101999	·087998	·075255	·063786	·053579	·044596	·036779	0·1
0·2	·126615	·111362	·097116	·083961	·071951	·061110	·051435	·042897	·035447	0·2
0·3	·119312	·105172	·091921	·079645	·068403	·058223	·049111	·041046	·033989	0·3
0·4	·111704	·098693	·086459	·075087	·064637	·055145	·046621	·039053	·032411	0·4
0·5	·103870	·091993	·080785	·070330	·060690	·051903	·043986	·036934	·030725	0·5
0·6	·095901	·085148	·074962	·065426	·056601	·048529	·041230	·034708	·028945	0·6
0·7	·087889	·078236	·069056	·060429	·052416	·045060	·038384	·032397	·027088	0·7
0·8	·079932	·071341	·063139	·055401	·048186	·041536	·035480	·030027	·025176	0·8
0·9	·072120	·064543	·057280	·050400	·043959	·038000	·032551	·027627	·023229	0·9
1·0	·064543	·057922	·051549	·045486	·039787	·034494	·029634	·025225	·021272	1·0
1·1	·057280	·051549	·046008	·040715	·035719	·031059	·026763	·022850	·019327	1·1
1·2	·050400	·045486	·040715	·036138	·031798	·027734	·023971	·020529	·017418	1·2
1·3	·043959	·039787	·035719	·031798	·028066	·024554	·021289	·018290	·015568	1·3
1·4	·038000	·034494	·031059	·027734	·024554	·021549	·018743	·016154	·013795	1·4
1·5	·032551	·029634	·026763	·023971	·021289	·018743	·016355	·014142	·012116	1·5
1·6	·027627	·025225	·022850	·020529	·018290	·016154	·014142	·012269	·010547	1·6
1·7	·023229	·021272	·019327	·017418	·015568	·013795	·012116	·010547	·009097	1·7
1·8	·019347	·017769	·016193	·014639	·013126	·011669	·010283	·008981	·007773	1·8
1·9	·015960	·014700	·013438	·012186	·010961	·009776	·008644	·007576	·006579	1·9
2·0	·013038	·012045	·011043	·010046	·009065	·008112	·007197	·006329	·005515	2·0
2·1	·010548	·009772	·008987	·008201	·007424	·006665	·005933	·005235	·004578	2·1
2·2	·008450	·007851	·007241	·006628	·006019	·005422	·004843	·004288	·003763	2·2
2·3	·006702	·006245	·005777	·005304	·004832	·004367	·003913	·003477	·003062	2·3
2·4	·005263	·004917	·004562	·004202	·003840	·003482	·003131	·002791	·002467	2·4
2·5	·004091	·003833	·003567	·003295	·003021	·002748	·002479	·002218	·001967	2·5
2·6	·003149	·002958	·002761	·002558	·002352	·002147	·001943	·001744	·001553	2·6

k	$r=\cdot45$									k
	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$	
0·0	·030979	·025034	·020041	·015893	·012485	·009714	·007487	·005715	·004321	0·0
0·1	·030052	·024326	·019507	·015494	·012191	·009500	·007332	·005605	·004243	0·1
0·2	·029019	·023534	·018906	·015044	·011856	·009255	·007155	·005478	·004153	0·2
0·3	·027882	·022658	·018238	·014540	·011481	·008978	·006953	·005332	·004050	0·3
0·4	·026646	·021701	·017505	·013985	·011065	·008670	·006727	·005169	·003933	0·4
0·5	·025320	·020667	·016709	·013379	·010609	·008330	·006477	·004987	·003802	0·5
0·6	·023912	·019566	·015857	·012727	·010115	·007961	·006204	·004787	·003657	0·6
0·7	·022436	·018406	·014955	·012033	·009588	·007564	·005909	·004570	·003500	0·7
0·8	·020909	·017200	·014012	·011304	·009031	·007143	·005594	·004338	·003330	0·8
0·9	·019347	·015960	·013038	·010548	·008450	·006702	·005263	·004091	·003149	0·9
1·0	·017769	·014700	·012045	·009772	·007851	·006245	·004917	·003833	·002958	1·0
1·1	·016193	·013438	·011043	·008987	·007241	·005777	·004562	·003567	·002761	1·1
1·2	·014639	·012186	·010046	·008201	·006628	·005304	·004202	·003295	·002558	1·2
1·3	·013126	·010961	·009065	·007424	·006019	·004832	·003840	·003021	·002352	1·3
1·4	·011669	·009776	·008112	·006665	·005422	·004367	·003482	·002748	·002147	1·4
1·5	·010283	·008644	·007197	·005933	·004843	·003913	·003131	·002479	·001943	1·5
1·6	·008981	·007576	·006329	·005235	·004288	·003477	·002791	·002218	·001744	1·6
1·7	·007773	·006579	·005515	·004578	·003763	·003062	·002467	·001967	·001553	1·7
1·8	·006665	·005661	·004763	·003968	·003273	·002673	·002161	·001729	·001370	1·8
1·9	·005661	·004826	·004074	·003406	·002820	·002312	·001876	·001507	·001198	1·9
2·0	·004763	·004074	·003452	·002897	·002407	·001980	·001613	·001300	·001038	2·0
2·1	·003968	·003406	·002897	·002440	·002035	·001680	·001374	·001112	·000890	2·1
2·2	·003273	·002820	·002407	·002035	·001703	·001412	·001159	·000941	·000757	2·2
2·3	·002673	·002312	·001980	·001680	·001412	·001175	·000968	·000789	·000637	2·3
2·4	·002161	·001876	·001613	·001374	·001159	·000968	·000800	·000655	·000531	2·4
2·5	·001729	·001507	·001300	·001112	·000941	·000789	·000655	·000539	·000438	2·5
2·6	·001370	·001198	·001038	·000890	·000757	·000637	·000531	·000438	·000358	2·6

TABLE VIII. *Positive Correlation—(continued).*

k	r = ·50									k
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·333333	·312961	·291886	·270344	·248589	·226878	·205468	·184605	·164512	*0·0*
0·1	·312961	·294422	·275161	·255392	·235345	·215260	·195377	·175927	·157126	*0·1*
0·2	·291886	·275161	·257709	·239718	·221397	·202965	·184644	·166650	·149190	*0·2*
0·3	·270344	·255392	·239718	·223488	·206888	·190114	·173370	·156858	·140769	*0·3*
0·4	·248589	·235345	·221397	·206888	·191979	·176847	·161676	·146649	·131946	*0·4*
0·5	·226878	·215260	·202965	·190114	·176847	·163320	·149694	·136139	·122816	*0·5*
0·6	·205468	·195377	·184644	·173370	·161676	·149694	·137570	·125451	·113486	*0·6*
0·7	·184605	·175927	·166650	·156858	·146649	·136139	·125451	·114718	·104071	*0·7*
0·8	·164512	·157126	·149190	·140769	·131946	·122816	·113486	·104071	·094686	*0·8*
0·9	·145388	·139168	·132448	·125281	·117733	·109882	·101819	·093640	·085448	*0·9*
1·0	·127398	·122215	·116586	·110550	·104159	·097477	·090578	·083546	·076465	*1·0*
1·1	·110671	·106398	·101733	·096704	·091350	·085722	·079882	·073896	·067839	*1·1*
1·2	·095297	·091814	·087990	·083844	·079407	·074718	·069825	·064784	·059656	*1·2*
1·3	·081329	·078522	·075421	·072042	·068404	·064539	·060485	·056284	·051988	*1·3*
1·4	·068785	·066546	·064061	·061337	·058388	·055237	·051913	·048451	·044891	*1·4*
1·5	·057646	·055882	·053912	·051740	·049377	·046836	·044142	·041320	·038401	*1·5*
1·6	·047867	·046493	·044950	·043238	·041365	·039340	·037180	·034905	·032539	*1·6*
1·7	·039379	·038321	·037126	·035793	·034325	·032729	·031018	·029204	·027307	*1·7*
1·8	·032095	·031290	·030375	·029348	·028211	·026968	·025627	·024198	·022695	*1·8*
1·9	·025912	·025307	·024615	·023834	·022963	·022006	·020968	·019854	·018677	*1·9*
2·0	·020724	·020274	·019756	·019169	·018510	·017782	·016987	·016130	·015218	*2·0*
2·1	·016417	·016087	·015704	·015268	·014776	·014228	·013627	·012974	·012276	*2·1*
2·2	·012882	·012642	·012363	·012043	·011679	·011272	·010823	·010332	·009804	*2·2*
2·3	·010011	·009840	·009638	·009406	·009141	·008842	·008510	·008145	·007750	*2·3*
2·4	·007706	·007585	·007441	·007275	·007083	·006867	·006624	·006357	·006065	*2·4*
2·5	·005875	·005790	·005689	·005571	·005435	·005280	·005105	·004911	·004698	*2·5*
2·6	·004436	·004377	·004307	·004225	·004129	·004019	·003894	·003755	·003602	*2·6*

k	r = ·50									k
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·145388	·127398	·110671	·095297	·081329	·068785	·057646	·047867	·039379	*0·0*
0·1	·139168	·122215	·106398	·091814	·078522	·066546	·055882	·046493	·038321	*0·1*
0·2	·132448	·116586	·101733	·087990	·075421	·064061	·053912	·044950	·037126	*0·2*
0·3	·125281	·110550	·096704	·083844	·072042	·061337	·051740	·043238	·035793	*0·3*
0·4	·117733	·104159	·091350	·079407	·068404	·058388	·049377	·041365	·034325	*0·4*
0·5	·109882	·097477	·085722	·074718	·064539	·055237	·046836	·039340	·032729	*0·5*
0·6	·101819	·090578	·079882	·069825	·060485	·051913	·044142	·037180	·031018	*0·6*
0·7	·093640	·083546	·073896	·064784	·056284	·048451	·041320	·034905	·029204	*0·7*
0·8	·085448	·076465	·067839	·059656	·051988	·044891	·038401	·032539	·027307	*0·8*
0·9	·077344	·069426	·061786	·054504	·047649	·041275	·035421	·030110	·025349	*0·9*
1·0	·069426	·062514	·055812	·049394	·043323	·037651	·032418	·027648	·023353	*1·0*
1·1	·061786	·055812	·049991	·044388	·039062	·034063	·029428	·025184	·021345	*1·1*
1·2	·054504	·049394	·044388	·039545	·034920	·030556	·026490	·022749	·019349	*1·2*
1·3	·047649	·043323	·039062	·034920	·030942	·027170	·023639	·020373	·017391	*1·3*
1·4	·041275	·037651	·034063	·030556	·027170	·023944	·020907	·018085	·015494	*1·4*
1·5	·035421	·032418	·029428	·026490	·023639	·020907	·018323	·015909	·013681	*1·5*
1·6	·030110	·027648	·025184	·022749	·020373	·018085	·015909	·013864	·011969	*1·6*
1·7	·025349	·023353	·021345	·019349	·017391	·015494	·013681	·011969	·010372	*1·7*
1·8	·021134	·019534	·017915	·016297	·014701	·013146	·011652	·010233	·008902	*1·8*
1·9	·017447	·016178	·014888	·013591	·012304	·011044	·009826	·008663	·007566	*1·9*
2·0	·014260	·013266	·012249	·011221	·010196	·009186	·008204	·007261	·006367	*2·0*
2·1	·011539	·010769	·009977	·009171	·008363	·007563	·006780	·006024	·005304	*2·1*
2·2	·009242	·008654	·008043	·007420	·006790	·006163	·005546	·004947	·004373	*2·2*
2·3	·007328	·006883	·006419	·005941	·005457	·004971	·004490	·004021	·003568	*2·3*
2·4	·005751	·005418	·005069	·004708	·004339	·003968	·003598	·003234	·002882	*2·4*
2·5	·004468	·004222	·003962	·003692	·003415	·003134	·002852	·002574	·002303	*2·5*
2·6	·003435	·003255	·003065	·002865	·002659	·002449	·002237	·002027	·001820	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	*r* = ·50									*k*
	h=*1·8*	*h*=*1·9*	*h*=*2·0*	*h*=*2·1*	*h*=*2·2*	*h*=*2·3*	*h*=*2·4*	*h*=*2·5*	*h*=*2·6*	
0·0	·032095	·025912	·020724	·016417	·012882	·010011	·007706	·005875	·004436	*0·0*
0·1	·031290	·025307	·020274	·016087	·012642	·009840	·007585	·005790	·004377	*0·1*
0·2	·030375	·024615	·019756	·015704	·012363	·009638	·007441	·005689	·004307	*0·2*
0·3	·029348	·023834	·019169	·015268	·012043	·009406	·007275	·005571	·004225	*0·3*
0·4	·028211	·022963	·018510	·014776	·011679	·009141	·007083	·005435	·004129	*0·4*
0·5	·026968	·022006	·017782	·014228	·011272	·008842	·006867	·005280	·004019	*0·5*
0·6	·025627	·020968	·016987	·013627	·010823	·008510	·006624	·005105	·003894	*0·6*
0·7	·024198	·019854	·016130	·012974	·010332	·008145	·006357	·004911	·003755	*0·7*
0·8	·022695	·018677	·015218	·012276	·009804	·007750	·006065	·004698	·003602	*0·8*
0·9	·021134	·017447	·014260	·011539	·009242	·007328	·005751	·004468	·003435	*0·9*
1·0	·019534	·016178	·013266	·010769	·008654	·006883	·005418	·004222	·003255	*1·0*
1·1	·017915	·014888	·012249	·009977	·008043	·006419	·005069	·003962	·003065	*1·1*
1·2	·016297	·013591	·011221	·009171	·007420	·005941	·004708	·003692	·002865	*1·2*
1·3	·014701	·012304	·010196	008363	·006790	·005457	·004339	·003415	·002659	*1·3*
1·4	·013146	·011044	·009186	·007563	·006163	·004971	·003968	·003134	·002449	*1·4*
1·5	·011652	·009826	·008204	·006780	·005546	·004490	·003598	·002852	·002237	*1·5*
1·6	·010233	·008663	·007261	·006024	·004947	·004021	·003234	·002574	·002027	*1·6*
1·7	·008902	·007566	·006367	·005304	·004373	·003568	·002882	·002303	·001820	*1·7*
1·8	·007671	·006546	·005531	·004626	·003830	·003138	·002544	·002041	·001620	*1·8*
1·9	·006546	·005608	·004758	·003996	·003322	·002733	·002225	·001793	·001429	*1·9*
2·0	·005531	·004758	·004053	·003418	·002853	·002358	·001928	·001560	·001249	*2·0*
2·1	·004626	·003996	·003418	·002895	·002427	·002014	·001654	·001344	·001081	*2·1*
2·2	·003830	·003322	·002853	·002427	·002043	·001703	·001405	·001146	·000926	*2·2*
2·3	·003138	·002733	·002358	·002014	·001703	·001426	·001181	·000968	·000785	*2·3*
2·4	·002544	·002225	·001928	·001654	·001405	·001181	·000983	·000809	·000659	*2·4*
2·5	·002041	·001793	·001560	·001344	·001146	·000968	·000809	·000669	·000548	*2·5*
2·6	·001620	·001429	·001249	·001081	·000926	·000785	·000659	·000548	·000451	*2·6*

k	*r* = ·55									*k*
	h=*0·0*	*h*=*0·1*	*h*=*0·2*	*h*=*0·3*	*h*=*0·4*	*h*=*0·5*	*h*=*0·6*	*h*=*0·7*	*h*=*0·8*	
0·0	·342686	·322250	·300984	·279133	·256963	·234747	·212762	·191272	·170523	*0·0*
0·1	·322250	·303714	·284328	·264313	·243907	·223364	·202942	·182893	·163452	*0·1*
0·2	·300984	·284328	·266819	·248648	·230030	·211196	·192384	·173829	·155757	*0·2*
0·3	·279133	·264313	·248648	·232305	·215474	·198360	·181181	·164155	·147493	*0·3*
0·4	·256963	·243907	·230030	·215474	·200401	·184994	·169449	·153964	·138735	*0·4*
0·5	·234747	·223364	·211196	·198360	·184994	·171258	·157324	·143371	·129577	*0·5*
0·6	·212762	·202942	·192384	·181181	·169449	·157324	·144956	·132503	·120128	*0·6*
0·7	·191272	·182893	·173829	·164155	·153964	·143371	·132503	·121500	·110505	*0·7*
0·8	·170523	·163452	·155757	·147493	·138735	·129577	·120128	·110505	·100834	*0·8*
0·9	·150733	·144834	·138373	·131391	·123947	·116116	·107987	·099659	·091241	*0·9*
1·0	·132086	·127220	·121858	·116026	·109769	·103146	·096229	·089099	·081849	*1·0*
1·1	·114725	·110759	·106360	·101545	·096345	·090807	·084986	·078950	·072774	*1·1*
1·2	·098756	·095562	·091995	·088065	·083794	·079216	·074374	·069320	·064118	*1·2*
1·3	·084240	·081698	·078840	·075671	·072205	·068464	·064482	·060300	·055967	*1·3*
1·4	·071200	·069202	·066940	·064415	·061634	·058614	·055378	·051957	·048390	*1·4*
1·5	·059623	·058071	·056303	·054315	·052112	·049703	·047104	·044339	·041436	*1·5*
1·6	·049463	·048273	·046908	·045363	·043638	·041739	·039678	·037469	·035135	*1·6*
1·7	·040650	·039749	·038708	·037522	·036188	·034710	·033095	·031352	·029498	*1·7*
1·8	·033093	·032419	·031635	·030736	·029718	·028581	·027331	·025972	·024518	*1·8*
1·9	·026686	·026188	·025605	·024932	·024164	·023302	·022346	·021300	·020173	*1·9*
2·0	·021314	·020952	·020524	·020026	·019455	·018808	·018087	·017292	·016429	*2·0*
2·1	·016862	·016601	·016291	·015928	·015508	·015030	·014492	·013895	·013243	*2·1*
2·2	·013213	·013027	·012806	·012544	·012240	·011890	·011494	·011052	·010565	*2·2*
2·3	·010254	·010124	·009968	·009782	·009564	·009311	·009024	·008700	·008342	*2·3*
2·4	·007882	·007792	·007683	·007552	·007398	·007219	·007012	·006779	·006518	*2·4*
2·5	·006000	·005939	·005864	·005773	·005666	·005540	·005394	·005227	·005040	*2·5*
2·6	·004524	·004483	·004432	·004370	·004296	·004209	·004107	·003990	·003857	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	r = ·55									k
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·150733	·132086	·114725	·098756	·084240	·071200	·059623	·049463	·040650	*0·0*
0·1	·144834	·127220	·110759	·095562	·081698	·069202	·058071	·048273	·039749	*0·1*
0·2	·138373	·121858	·106360	·091995	·078840	·066940	·056303	·046908	·038708	*0·2*
0·3	·131391	·116026	·101545	·088065	·075671	·064415	·054315	·045363	·037522	*0·3*
0·4	·123947	·109769	·096345	·083794	·072205	·061634	·052112	·043638	·036188	*0·4*
0·5	·116116	·103146	·090807	·079216	·068464	·058614	·049703	·041739	·034710	*0·5*
0·6	·107987	·096229	·084986	·074374	·064482	·055378	·047104	·039678	·033095	*0·6*
0·7	·099659	·089099	·078950	·069320	·060300	·051957	·044339	·037469	·031352	*0·7*
0·8	·091241	·081849	·072774	·064118	·055967	·048390	·041436	·035135	·029498	*0·8*
0·9	·082843	·074574	·066539	·058833	·051537	·044720	·038431	·032703	·027553	*0·9*
1·0	·074574	·067369	·060327	·053536	·047070	·040995	·035360	·030202	·025540	*1·0*
1·1	·066539	·060327	·054221	·048296	·042624	·037265	·032266	·027665	·023484	*1·1*
1·2	·058833	·053536	·048296	·043183	·038259	·033579	·029190	·025127	·021414	*1·2*
1·3	·051537	·047070	·042624	·038259	·034030	·029987	·026172	·022620	·019357	*1·3*
1·4	·044720	·040995	·037265	·033579	·029987	·026531	·023251	·020180	·017340	*1·4*
1·5	·038431	·035360	·032266	·029190	·026172	·023251	·020462	·017834	·015390	*1·5*
1·6	·032703	·030202	·027665	·025127	·022620	·020180	·017834	·015610	·013530	*1·6*
1·7	·027553	·025540	·023484	·021414	·019357	·017340	·015390	·013530	·011778	*1·7*
1·8	·022981	·021380	·019735	·018066	·016397	·014751	·013148	·011609	·010151	*1·8*
1·9	·018974	·017716	·016414	·015086	·013748	·012420	·011118	·009860	·008661	*1·9*
2·0	·015505	·014529	·013512	·012467	·011408	·010349	·009304	·008288	·007313	*2·0*
2·1	·012540	·011792	·011007	·010195	·009367	·008533	·007704	·006893	·006110	*2·1*
2·2	·010037	·009471	·008873	·008250	·007610	·006961	·006312	·005673	·005051	*2·2*
2·3	·007950	·007527	·007077	·006605	·006116	·005618	·005116	·004618	·004130	*2·3*
2·4	·006231	·005919	·005585	·005231	·004863	·004485	·004102	·003719	·003341	*2·4*
2·5	·004832	·004605	·004360	·004099	·003825	·003542	·003253	·002962	·002673	*2·5*
2·6	·003709	·003545	·003368	·003177	·002976	·002767	·002552	·002333	·002115	*2·6*

k	r = ·55									k
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·033093	·026686	·021314	·016862	·013213	·010254	·007882	·006000	·004524	*0·0*
0·1	·032419	·026188	·020952	·016601	·013027	·010124	·007792	·005939	·004483	*0·1*
0·2	·031635	·025605	·020524	·016291	·012806	·009968	·007683	·005864	·004432	*0·2*
0·3	·030736	·024932	·020026	·015928	·012544	·009782	·007552	·005773	·004370	*0·3*
0·4	·029718	·024164	·019455	·015508	·012240	·009564	·007398	·005666	·004296	*0·4*
0·5	·028581	·023302	·018808	·015030	·011890	·009311	·007219	·005540	·004209	*0·5*
0·6	·027331	·022346	·018087	·014492	·011494	·009024	·007012	·005394	·004107	*0·6*
0·7	·025972	·021300	·017292	·013895	·011052	·008700	·006779	·005227	·003990	*0·7*
0·8	·024518	·020173	·016429	·013243	·010565	·008342	·006518	·005040	·003857	*0·8*
0·9	·022981	·018974	·015505	·012540	·010037	·007950	·006231	·004832	·003709	*0·9*
1·0	·021380	·017716	·014529	·011792	·009471	·007527	·005919	·004605	·003545	*1·0*
1·1	·019735	·016414	·013512	·011007	·008873	·007077	·005585	·004360	·003368	*1·1*
1·2	·018066	·015086	·012467	·010195	·008250	·006605	·005231	·004099	·003177	*1·2*
1·3	·016397	·013748	·011408	·009367	·007610	·006116	·004863	·003825	·002976	*1·3*
1·4	·014751	·012420	·010349	·008533	·006961	·005618	·004485	·003542	·002767	*1·4*
1·5	·013148	·011118	·009304	·007704	·006312	·005116	·004102	·003253	·002552	*1·5*
1·6	·011609	·009860	·008288	·006893	·005673	·004618	·003719	·002962	·002333	*1·6*
1·7	·010151	·008661	·007313	·006110	·005051	·004130	·003341	·002673	·002115	*1·7*
1·8	·008789	·007532	·006389	·005363	·004454	·003659	·002974	·002390	·001900	*1·8*
1·9	·007532	·006484	·005527	·004661	·003889	·003210	·002621	·002117	·001691	*1·9*
2·0	·006389	·005527	·004732	·004010	·003362	·002788	·002288	·001856	·001490	*2·0*
2·1	·005363	·004661	·004010	·003414	·002876	·002397	·001977	·001612	·001300	*2·1*
2·2	·004454	·003889	·003362	·002876	·002435	·002040	·001690	·001385	·001123	*2·2*
2·3	·003659	·003210	·002788	·002397	·002040	·001717	·001430	·001178	·000960	*2·3*
2·4	·002974	·002621	·002288	·001977	·001690	·001430	·001197	·000991	·000811	*2·4*
2·5	·002390	·002117	·001856	·001612	·001385	·001178	·000991	·000825	·000679	*2·5*
2·6	·001900	·001691	·001490	·001300	·001123	·000960	·000811	·000679	·000562	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	*r* = ·60									*k*
	h=*0·0*	*h*=*0·1*	*h*=*0·2*	*h*=*0·3*	*h*=*0·4*	*h*=*0·5*	*h*=*0·6*	*h*=*0·7*	*h*=*0·8*	
0·0	·352416	·331907	·310427	·288230	·265596	·242818	·220195	·198017	·176552	*0·0*
0·1	·331907	·313382	·293864	·273578	·252775	·231727	·210712	·190003	·169863	*0·1*
0·2	·310427	·293864	·276306	·257945	·239006	·219734	·200384	·181214	·162473	*0·2*
0·3	·288230	·273578	·257945	·241495	·224423	·206945	·189295	·171710	·154423	*0·3*
0·4	·265596	·252775	·239006	·224423	·209191	·193500	·177558	·161579	·145781	*0·4*
0·5	·242818	·231727	·219734	·206945	·193500	·179560	·165307	·150932	·136634	*0·5*
0·6	·220195	·210712	·200384	·189295	·177558	·165307	·152698	·139901	·127090	*0·6*
0·7	·198017	·190003	·181214	·171710	·161579	·150932	·139901	·128629	·117273	*0·7*
0·8	·176552	·169863	·162473	·154423	·145781	·136634	·127090	·117273	·107315	*0·8*
0·9	·156043	·150528	·144390	·137654	·130369	·122604	·114443	·105989	·097355	*0·9*
1·0	·136692	·132203	·127168	·121601	·115536	·109022	·102127	·094932	·087532	*1·0*
1·1	·118663	·115055	·110977	·106434	·101446	·096050	·090294	·084245	·077977	*1·1*
1·2	·102072	·099210	·095950	·092290	·088240	·083824	·079080	·074055	·068811	*1·2*
1·3	·086991	·084751	·082178	·079267	·076021	·072455	·068592	·064471	·060137	*1·3*
1·4	·073448	·071718	·069715	·067431	·064863	·062019	·058915	·055578	·052040	*1·4*
1·5	·061433	·060115	·058576	·056807	·054802	·052564	·050102	·047434	·044585	*1·5*
1·6	·050899	·049908	·048742	·047391	·045846	·044109	·042182	·040077	·037810	*1·6*
1·7	·041773	·041038	·040167	·039148	·037974	·036643	·035155	·033516	·031737	*1·7*
1·8	·033957	·033420	·032778	·032020	·031141	·030134	·029001	·027741	·026364	*1·8*
1·9	·027341	·026954	·026487	·025932	·025281	·024531	·023679	·022725	·021673	*1·9*
2·0	·021804	·021529	·021194	·020793	·020319	·019768	·019136	·018423	·017629	*2·0*
2·1	·017223	·017030	·016793	·016507	·016167	·015767	·015305	·014779	·014190	*2·1*
2·2	·013474	·013341	·013176	·012975	·012734	·012448	·012115	·011733	·011300	*2·2*
2·3	·010441	·010350	·010237	·010098	·009929	·009728	·009491	·009217	·008904	*2·3*
2·4	·008013	·007952	·007876	·007781	·007664	·007524	·007359	·007165	·006942	*2·4*
2·5	·006092	·006051	·006000	·005936	·005857	·005761	·005647	·005512	·005355	*2·5*
2·6	·004586	·004560	·004526	·004484	·004431	·004366	·004288	·004196	·004087	*2·6*

k	*r* = ·60									*k*
	h=*0·9*	*h*=*1·0*	*h*=*1·1*	*h*=*1·2*	*h*=*1·3*	*h*=*1·4*	*h*=*1·5*	*h*=*1·6*	*h*=*1·7*	
0·0	·156043	·136692	·118663	·102072	·086991	·073448	·061433	·050899	·041773	*0·0*
0·1	·150528	·132203	·115055	·099210	·084751	·071718	·060115	·049908	·041038	*0·1*
0·2	·144390	·127168	·110977	·095950	·082178	·069715	·058576	·048742	·040167	*0·2*
0·3	·137654	·121601	·106434	·092290	·079267	·067431	·056807	·047391	·039148	*0·3*
0·4	·130369	·115536	·101446	·088240	·076021	·064863	·054802	·045846	·037974	*0·4*
0·5	·122604	·109022	·096050	·083824	·072455	·062019	·052564	·044109	·036643	*0·5*
0·6	·114443	·102127	·090294	·079080	·068592	·058915	·050102	·042182	·035155	*0·6*
0·7	·105989	·094932	·084245	·074055	·064471	·055578	·047434	·040077	·033516	*0·7*
0·8	·097355	·087532	·077977	·068811	·060137	·052040	·044585	·037810	·031737	*0·8*
0·9	·088661	·080028	·071576	·063415	·055645	·048346	·041585	·035406	·029835	*0·9*
1·0	·080028	·072526	·065131	·057944	·051055	·044544	·038474	·032894	·027832	*1·0*
1·1	·071576	·065131	·058734	·052474	·046434	·040687	·035295	·030305	·025752	*1·1*
1·2	·063415	·057944	·052474	·047083	·041846	·036830	·032091	·027678	·023624	*1·2*
1·3	·055645	·051055	·046434	·041846	·037358	·033028	·028910	·025049	·021479	*1·3*
1·4	·048346	·044544	·040687	·036830	·033028	·029335	·025797	·022457	·019348	*1·4*
1·5	·041585	·038474	·035295	·032091	·028910	·025797	·022794	·019938	·017261	*1·5*
1·6	·035406	·032894	·030305	·027678	·025049	·022457	·019938	·017526	·015247	*1·6*
1·7	·029835	·027832	·025752	·023624	·021479	·019348	·017261	·015247	·013332	*1·7*
1·8	·024880	·023303	·021653	·019952	·018224	·016494	·014787	·013127	·011536	*1·8*
1·9	·020529	·019305	·018014	·016672	·015298	·013911	·012532	·011181	·009876	*1·9*
2·0	·016761	·015823	·014826	·013781	·012702	·011605	·010506	·009420	·008363	*2·0*
2·1	·013538	·012830	·012070	·011267	·010432	·009576	·008711	·007849	·007005	*2·1*
2·2	·010819	·010291	·009720	·009112	·008474	·007814	·007142	·006468	·005802	*2·2*
2·3	·008554	·008165	·007742	·007287	·006806	·006305	·005791	·005270	·004751	*2·3*
2·4	·006690	·006408	·006099	·005764	·005406	·005031	·004642	·004245	·003846	*2·4*
2·5	·005176	·004975	·004752	·004508	·004246	·003969	·003679	·003381	·003079	*2·5*
2·6	·003962	·003821	·003662	·003487	·003298	·003096	·002883	·002662	·002436	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	$r=\cdot 60$									k
	$h=1{\cdot}8$	$h=1{\cdot}9$	$h=2{\cdot}0$	$h=2{\cdot}1$	$h=2{\cdot}2$	$h=2{\cdot}3$	$h=2{\cdot}4$	$h=2{\cdot}5$	$h=2{\cdot}6$	
0·0	·033957	·027341	·021804	·017223	·013474	·010441	·008013	·006092	·004586	*0·0*
0·1	·033420	·026954	·021529	·017030	·013341	·010350	·007952	·006051	·004560	*0·1*
0·2	·032778	·026487	·021194	·016793	·013176	·010237	·007876	·006000	·004526	*0·2*
0·3	·032020	·025932	·020793	·016507	·012975	·010098	·007781	·005936	·004484	*0·3*
0·4	·031141	·025281	·020319	·016167	·012734	·009929	·007664	·005857	·004431	*0·4*
0·5	·030134	·024531	·019768	·015767	·012448	·009728	·007524	·005761	·004366	*0·5*
0·6	·029001	·023679	·019136	·015305	·012115	·009491	·007359	·005647	·004288	*0·6*
0·7	·027741	·022725	·018423	·014779	·011733	·009217	·007165	·005512	·004196	*0·7*
0·8	·026364	·021673	·017629	·014190	·011300	·008904	·006942	·005355	·004087	*0·8*
0·9	·024880	·020529	·016761	·013538	·010819	·008554	·006690	·005176	·003962	*0·9*
1·0	·023303	·019305	·015823	·012830	·010291	·008165	·006408	·004975	·003821	*1·0*
1·1	·021653	·018014	·014826	·012070	·009720	·007742	·006099	·004752	·003662	*1·1*
1·2	·019952	·016672	·013781	·011267	·009112	·007287	·005764	·004508	·003487	*1·2*
1·3	·018224	·015298	·012702	·010432	·008474	·006806	·005406	·004246	·003298	*1·3*
1·4	·016494	·013911	·011605	·009576	·007814	·006305	·005031	·003969	·003096	*1·4*
1·5	·014787	·012532	·010506	·008711	·007142	·005791	·004642	·003679	·002883	*1·5*
1·6	·013127	·011181	·009420	·007849	·006468	·005270	·004245	·003381	·002662	*1·6*
1·7	·011536	·009876	·008363	·007005	·005802	·004751	·003846	·003079	·002436	*1·7*
1·8	·010033	·008634	·007350	·006188	·005153	·004242	·003452	·002778	·002209	*1·8*
1·9	·008634	·007469	·006392	·005411	·004529	·003749	·003068	·002481	·001984	*1·9*
2·0	·007350	·006392	·005500	·004681	·003940	·003279	·002698	·002194	·001764	*2·0*
2·1	·006188	·005411	·004681	·004006	·003390	·002837	·002348	·001920	·001552	*2·1*
2·2	·005153	·004529	·003940	·003390	·002886	·002429	·002021	·001662	·001351	*2·2*
2·3	·004242	·003749	·003279	·002837	·002429	·002056	·001720	·001423	·001164	*2·3*
2·4	·003452	·003068	·002698	·002348	·002021	·001720	·001448	·001205	·000991	*2·4*
2·5	·002778	·002481	·002194	·001920	·001662	·001423	·001205	·001009	·000835	*2·5*
2·6	·002209	·001984	·001764	·001552	·001351	·001164	·000991	·000835	·000695	*2·6*

k	$r=\cdot 65$									k
	$h=0{\cdot}0$	$h=0{\cdot}1$	$h=0{\cdot}2$	$h=0{\cdot}3$	$h=0{\cdot}4$	$h=0{\cdot}5$	$h=0{\cdot}6$	$h=0{\cdot}7$	$h=0{\cdot}8$	
0·0	·362615	·342023	·320297	·297702	·274538	·251123	·227783	·204836	·182581	*0·0*
0·1	·342023	·323519	·303856	·283267	·262017	·240399	·218716	·197271	·176354	*0·1*
0·2	·320297	·303856	·286256	·267694	·248401	·228640	·208690	·188833	·169349	*0·2*
0·3	·297702	·283267	·267694	·251145	·233818	·215944	·197774	·179568	·161588	*0·3*
0·4	·274538	·262017	·248401	·233818	·218433	·202444	·186072	·169552	·153125	*0·4*
0·5	·251123	·240399	·228640	·215944	·202444	·188305	·173717	·158889	·144039	*0·5*
0·6	·227783	·218716	·208690	·197774	·186072	·173717	·160870	·147712	·134436	*0·6*
0·7	·204836	·197271	·188833	·179568	·169552	·158889	·147712	·136173	·124440	*0·7*
0·8	·182581	·176354	·169349	·161588	·153125	·144039	·134436	·124440	·114194	*0·8*
0·9	·161285	·156232	·150493	·144080	·137024	·129383	·121237	·112687	·103850	*0·9*
1·0	·141177	·137133	·132498	·127270	·121468	·115127	·108308	·101089	·093564	*1·0*
1·1	122437	·119247	·115556	·111355	·106648	·101459	·095827	·089813	·083489	*1·1*
1·2	·105196	·102716	·099819	·096490	·092726	·088538	·083951	·079008	·073764	*1·2*
1·3	·089536	·087635	·085395	·082795	·079828	·076495	·072812	·068805	·064516	*1·3*
1·4	·075487	·074053	·072345	·070345	·068040	·065426	·062510	·059308	·055849	*1·4*
1·5	·063040	·061974	·060692	·059176	·057411	·055391	·053115	·050594	·047843	*1·5*
1·6	·052146	·051365	·050417	·049284	·047954	·046415	·044666	·042708	·040552	*1·6*
1·7	·042723	·042161	·041470	·040637	·039649	·038495	·037169	·035672	·034007	*1·7*
1·8	·034671	·034271	·033776	·033173	·032450	·031597	·030608	·029479	·028213	*1·8*
1·9	·027868	·027589	·027239	·026809	·026288	·025668	·024941	·024103	·023154	*1·9*
2·0	·022187	·021995	·021752	·021450	·021080	·020636	·020110	·019497	·018797	*2·0*
2·1	·017497	·017366	·017200	·016991	·016733	·016420	·016045	·015604	·015094	*2·1*
2·2	·013667	·013580	·013468	·013326	·013149	·012931	·012668	·012355	·011991	*2·2*
2·3	·010574	·010517	·010443	·010348	·010228	·010079	·009897	·009679	·009422	*2·3*
2·4	·008104	·008067	·008019	·007956	·007876	·007776	·007653	·007503	·007324	*2·4*
2·5	·006152	·006129	·006098	·006057	·006005	·005939	·005856	·005755	·005633	*2·5*
2·6	·004626	·004612	·004592	·004566	·004533	·004489	·004435	·004368	·004286	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	*r* = ·65									*k*
	h = 0·9	*h* = 1·0	*h* = 1·1	*h* = 1·2	*h* = 1·3	*h* = 1·4	*h* = 1·5	*h* = 1·6	*h* = 1·7	
0·0	·161285	·141177	·122437	·105196	·089536	·075487	·063040	·052146	·042723	0·0
0·1	·156232	·137133	·119247	·102716	·087635	·074053	·061974	·051365	·042161	0·1
0·2	·150493	·132498	·115556	·099819	·085395	·072345	·060692	·050417	·041470	0·2
0·3	·144080	·127270	·111355	·096490	·082795	·070345	·059176	·049284	·040637	0·3
0·4	·137024	·121468	·106648	·092726	·079828	·068040	·057411	·047954	·039649	0·4
0·5	·129383	·115127	·101459	·088538	·076495	·065426	·055391	·046415	·038495	0·5
0·6	·121237	·108308	·095827	·083951	·072812	·062510	·053115	·044666	·037169	0·6
0·7	·112687	·101089	·089813	·079008	·068805	·059308	·050594	·042708	·035672	0·7
0·8	·103850	·093564	·083489	·073764	·064516	·055849	·047843	·040552	·034007	0·8
0·9	·094856	·085842	·076943	·068288	·059997	·052171	·044891	·038217	·032187	0·9
1·0	·085842	·078038	·070272	·062660	·055311	·048323	·041774	·035728	·030227	1·0
1·1	·076943	·070272	·063578	·056964	·050527	·044359	·038534	·033117	·028153	1·1
1·2	·068288	·062660	·056964	·051288	·045720	·040340	·035220	·030422	·025991	1·2
1·3	·059997	·055311	·050527	·045720	·040963	·036329	·031883	·027683	·023775	1·3
1·4	·052171	·048323	·044359	·040340	·036329	·032388	·028576	·024944	·021538	1·4
1·5	·044891	·041774	·038534	·035220	·031883	·028576	·025349	·022249	·019316	1·5
1·6	·038217	·035728	·033117	·030422	·027683	·024944	·022249	·019636	·017144	1·6
1·7	·032187	·030227	·028153	·025991	·023775	·021538	·019316	·017144	·015055	1·7
1·8	·026814	·025294	·023670	·021961	·020192	·018391	·016585	·014804	·013075	1·8
1·9	·022095	·020933	·019680	·018348	·016957	·015527	·014080	·012639	·011228	1·9
2·0	·018007	·017133	·016179	·015157	·014079	·012960	·011817	·010668	·009532	2·0
2·1	·014515	·013866	·013152	·012379	·011556	·010693	·009803	·008900	·007999	2·1
2·2	·011571	·011097	·010571	·009995	·009375	·008720	·008037	·007338	·006633	2·2
2·3	·009124	·008783	·008400	·007978	·007519	·007028	·006512	·005978	·005436	2·3
2·4	·007115	·006874	·006600	·006295	·005960	·005598	·005214	·004813	·004401	2·4
2·5	·005488	·005320	·005127	·004910	·004669	·004407	·004125	·003828	·003520	2·5
2·6	·004187	·004072	·003938	·003786	·003616	·003428	·003225	·003008	·002781	2·6

k	*r* = ·65									*k*
	h = 1·8	*h* = 1·9	*h* = 2·0	*h* = 2·1	*h* = 2·2	*h* = 2·3	*h* = 2·4	*h* = 2·5	*h* = 2·6	
0·0	·034671	·027868	·022187	·017497	·013667	·010574	·008104	·006152	·004626	0·0
0·1	·034271	·027589	·021995	·017366	·013580	·010517	·008067	·006129	·004612	0·1
0·2	·033776	·027239	·021752	·017200	·013468	·010443	·008019	·006098	·004592	0·2
0·3	·033173	·026809	·021450	·016991	·013326	·010348	·007956	·006057	·004566	0·3
0·4	·032450	·026288	·021080	·016733	·013149	·010228	·007876	·006005	·004533	0·4
0·5	·031597	·025668	·020636	·016420	·012931	·010079	·007776	·005939	·004489	0·5
0·6	·030608	·024941	·020110	·016045	·012668	·009897	·007653	·005856	·004435	0·6
0·7	·029479	·024103	·019497	·015604	·012355	·009679	·007503	·005755	·004368	0·7
0·8	·028213	·023154	·018797	·015094	·011991	·009422	·007324	·005633	·004286	0·8
0·9	·026814	·022095	·018007	·014515	·011571	·009124	·007115	·005488	·004187	0·9
1·0	·025294	·020933	·017133	·013866	·011097	·008783	·006874	·005320	·004072	1·0
1·1	·023670	·019680	·016179	·013152	·010571	·008400	·006600	·005127	·003938	1·1
1·2	·021961	·018348	·015157	·012379	·009995	·007978	·006295	·004910	·003786	1·2
1·3	·020192	·016957	·014079	·011556	·009375	·007519	·005960	·004669	·003616	1·3
1·4	·018391	·015527	·012960	·010693	·008720	·007028	·005598	·004407	·003428	1·4
1·5	·016585	·014080	·011817	·009803	·008037	·006512	·005214	·004125	·003225	1·5
1·6	·014804	·012639	·010668	·008900	·007338	·005978	·004813	·003828	·003008	1·6
1·7	·013075	·011228	·009532	·007999	·006633	·005436	·004401	·003520	·002781	1·7
1·8	·011422	·009867	·008427	·007114	·005935	·004892	·003984	·003205	·002547	1·8
1·9	·009867	·008575	·007368	·006258	·005253	·004357	·003570	·002889	·002310	1·9
2·0	·008427	·007368	·006370	·005444	·004598	·003838	·003164	·002577	·002073	2·0
2·1	·007114	·006258	·005444	·004682	·003980	·003343	·002774	·002274	·001841	2·1
2·2	·005935	·005253	·004598	·003980	·003405	·002878	·002404	·001983	·001616	2·2
2·3	·004892	·004357	·003838	·003343	·002878	·002449	·002059	·001710	·001403	2·3
2·4	·003984	·003570	·003164	·002774	·002404	·002059	·001743	·001457	·001204	2·4
2·5	·003205	·002889	·002577	·002274	·001983	·001710	·001457	·001227	·001020	2·5
2·6	·002547	·002310	·002073	·001841	·001616	·001403	·001204	·001020	·000854	2·6

TABLE VIII. *Positive Correlation—(continued).*

k	r = ·70									k
	h = 0·0	*h = 0·1*	*h = 0·2*	*h = 0·3*	*h = 0·4*	*h = 0·5*	*h = 0·6*	*h = 0·7*	*h = 0·8*	
0·0	·373407	·352717	·330699	·307637	·283853	·259697	·235531	·211712	·188570	*0·0*
0·1	·352717	·334247	·314423	·293485	·271717	·249439	·226988	·204702	·182909	*0·1*
0·2	·330699	·314423	·296795	·278012	·258319	·237999	·217360	·196720	·176391	*0·2*
0·3	·307637	·293485	·278012	·261373	·243773	·225456	·206696	·187786	·169017	*0·3*
0·4	·283853	·271717	·258319	·243773	·228243	·211935	·195086	·177957	·160820	*0·4*
0·5	·259697	·249439	·237999	·225456	·211935	·197602	·182658	·167331	·151864	*0·5*
0·6	·235531	·226988	·217360	·206696	·195086	·182658	·169576	·156035	·142246	*0·6*
0·7	·211712	·204702	·196720	·187786	·177957	·167331	·156035	·144229	·132095	*0·7*
0·8	·188570	·182909	·176391	·169017	·160820	·151864	·142246	·132095	·121559	*0·8*
0·9	·166407	·161907	·156668	·150675	·143940	·136503	·128434	·119829	·110808	*0·9*
1·0	·145478	·141958	·137812	·133018	·127570	·121489	·114819	·107630	·100017	*1·0*
1·1	·125983	·123274	·120047	·116272	·111934	·107038	·101609	·095695	·089364	*1·1*
1·2	·108067	·106016	·103546	·100621	·097223	·093343	·088993	·084201	·079016	*1·2*
1·3	·091817	·090291	·088430	·086203	·083583	·080558	·077127	·073306	·069125	*1·3*
1·4	·077268	·076151	·074774	·073104	·071118	·068798	·066137	·063138	·059820	*1·4*
1·5	·064404	·063601	·062599	·061369	·059889	·058139	·056108	·053793	·051201	*1·5*
1·6	·053172	·052604	·051887	·050997	·049912	·048614	·047090	·045332	·043341	*1·6*
1·7	·043481	·043088	·042583	·041950	·041169	·040222	·039098	·037785	·036281	*1·7*
1·8	·035221	·034952	·034604	·034161	·033608	·032930	·032114	·031150	·030033	*1·8*
1·9	·028260	·028080	·027843	·027539	·027154	·026677	·026095	·025400	·024584	*1·9*
2·0	·022461	·022343	·022185	·021980	·021717	·021386	·020979	·020486	·019901	*2·0*
2·1	·017685	·017608	·017505	·017369	·017192	·016968	·016687	·016344	·015931	*2·1*
2·2	·013793	·013745	·013679	·013590	·013474	·013324	·013134	·012899	·012613	*2·2*
2·3	·010658	·010628	·010586	·010529	·010454	·010356	·010230	·010072	·009877	*2·3*
2·4	·008159	·008140	·008114	·008079	·008031	·007967	·007885	·007781	·007650	*2·4*
2·5	·006187	·006176	·006160	·006138	·006108	·006068	·006016	·005948	·005862	*2·5*
2·6	·004648	·004642	·004632	·004619	·004601	·004576	·004543	·004500	·004444	*2·6*

k	r = ·70									k
	h = 0·9	*h = 1·0*	*h = 1·1*	*h = 1·2*	*h = 1·3*	*h = 1·4*	*h = 1·5*	*h = 1·6*	*h = 1·7*	
0·0	·166407	·145478	·125983	·108067	·091817	·077268	·064404	·053172	·043481	*0·0*
0·1	·161907	·141958	·123274	·106016	·090291	·076151	·063601	·052604	·043088	*0·1*
0·2	·156668	·137812	·120047	·103546	·088430	·074774	·062599	·051887	·042583	*0·2*
0·3	·150675	·133018	·116272	·100621	·086203	·073104	·061369	·050997	·041950	*0·3*
0·4	·143940	·127570	·111934	·097223	·083583	·071118	·059889	·049912	·041169	*0·4*
0·5	·136503	·121489	·107038	·093343	·080558	·068798	·058139	·048614	·040222	*0·5*
0·6	·128434	·114819	·101609	·088993	·077127	·066137	·056108	·047090	·039098	*0·6*
0·7	·119829	·107630	·095695	·084201	·073306	·063138	·053793	·045332	·037785	*0·7*
0·8	·110808	·100017	·089364	·079016	·069125	·059820	·051201	·043341	·036281	*0·8*
0·9	·101511	·092091	·082703	·073502	·064630	·056212	·048352	·041127	·034589	*0·9*
1·0	·092091	·083979	·075818	·067742	·059884	·052361	·045276	·038709	·032719	*1·0*
1·1	·082703	·075818	·068819	·061827	·054958	·048320	·042013	·036115	·030690	*1·1*
1·2	·073502	·067742	·061827	·055857	·049934	·044156	·038612	·033382	·028528	*1·2*
1·3	·064630	·059884	·054958	·049934	·044899	·039937	·035131	·030553	·026265	*1·3*
1·4	·056212	·052361	·048320	·044156	·039937	·035738	·031629	·027676	·023937	*1·4*
1·5	·048352	·045276	·042013	·038612	·035131	·031629	·028166	·024801	·021587	*1·5*
1·6	·041127	·038709	·036115	·033382	·030553	·027676	·024801	·021978	·019253	*1·6*
1·7	·034589	·032719	·030690	·028528	·026265	·023937	·021587	·019253	·016977	*1·7*
1·8	·028761	·027339	·025778	·024095	·022313	·020460	·018568	·016668	·014796	*1·8*
1·9	·023644	·022581	·021399	·020111	·018731	·017279	·015779	·014258	·012741	*1·9*
2·0	·019217	·018435	·017556	·016586	·015535	·014416	·013247	·012047	·010838	*2·0*
2·1	·015443	·014878	·014235	·013517	·012729	·011881	·010984	·010054	·009105	*2·1*
2·2	·012271	·011869	·011407	·010884	·010304	·009672	·008996	·008285	·007553	*2·2*
2·3	·009641	·009361	·009034	·008660	·008240	·007777	·007275	·006742	·006186	*2·3*
2·4	·007491	·007298	·007072	·006809	·006510	·006176	·005811	·005418	·005002	*2·4*
2·5	·005756	·005626	·005472	·005290	·005081	·004845	·004583	·004298	·003993	*2·5*
2·6	·004375	·004289	·004185	·004062	·003919	·003755	·003570	·003367	·003147	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	r = ·70									*k*
	h=*1·8*	*h*=*1·9*	*h*=*2·0*	*h*=*2·1*	*h*=*2·2*	*h*=*2·3*	*h*=*2·4*	*h*=*2·5*	*h*=*2·6*	
0·0	·035221	·028260	·022461	·017685	·013793	·010658	·008159	·006187	·004648	*0·0*
0·1	·034952	·028080	·022343	·017608	·013745	·010628	·008140	·006176	·004642	*0·1*
0·2	·034604	·027843	·022185	·017505	·013679	·010586	·008114	·006160	·004632	*0·2*
0·3	·034161	·027539	·021980	·017369	·013590	·010529	·008079	·006138	·004619	*0·3*
0·4	·033608	·027154	·021717	·017192	·013474	·010454	·008031	·006108	·004601	*0·4*
0·5	·032930	·026677	·021386	·016968	·013324	·010356	·007967	·006068	·004576	*0·5*
0·6	·032114	·026095	·020979	·016687	·013134	·010230	·007885	·006016	·004543	*0·6*
0·7	·031150	·025400	·020486	·016344	·012899	·010072	·007781	·005948	·004500	*0·7*
0·8	·030033	·024584	·019901	·015931	·012613	·009877	·007650	·005862	·004444	*0·8*
0·9	·028761	·023644	·019217	·015443	·012271	·009641	·007491	·005756	·004375	*0·9*
1·0	·027339	·022581	·018435	·014878	·011869	·009361	·007298	·005626	·004289	*1·0*
1·1	·025778	·021399	·017556	·014235	·011407	·009034	·007072	·005472	·004185	*1·1*
1·2	·024095	·020111	·016586	·013517	·010884	·008660	·006809	·005290	·004062	*1·2*
1·3	·022313	·018731	·015535	·012729	·010304	·008240	·006510	·005081	·003919	*1·3*
1·4	·020460	·017279	·014416	·011881	·009672	·007777	·006176	·004845	·003755	*1·4*
1·5	·018568	·015779	·013247	·010984	·008996	·007275	·005811	·004583	·003570	*1·5*
1·6	·016668	·014258	012047	·010054	·008285	·006742	·005418	·004298	·003367	*1·6*
1·7	·014796	·012741	·010838	·009105	·007553	·006186	·005002	·003993	·003147	*1·7*
1·8	·012982	·011256	·009640	·008154	·006811	·005616	·004572	·003674	·002914	*1·8*
1·9	·011256	·009826	·008475	·007219	·006072	·005042	·004133	·003344	·002670	*1·9*
2·0	·009640	·008475	·007362	·006316	·005351	·004475	·003695	·003010	·002421	*2·0*
2·1	·008154	·007219	·006316	·005458	·004658	·003925	·003264	·002679	·002170	*2·1*
2·2	·006811	·006072	·005351	·004658	·004005	·003400	·002849	·002356	·001923	*2·2*
2·3	·005616	·005042	·004475	·003925	·003400	·002908	·002456	·002046	·001683	*2·3*
2·4	·004572	·004133	·003695	·003264	·002849	·002456	·002090	·001755	·001455	*2·4*
2·5	·003674	·003344	·003010	·002679	·002356	·002046	·001755	·001486	·001241	*2·5*
2·6	·002914	·002670	·002421	·002170	·001923	·001683	·001455	·001241	·001045	*2·6*

k	r = ·75									*k*
	h=*0·0*	*h*=*0·1*	*h*=*0·2*	*h*=*0·3*	*h*=*0·4*	*h*=*0·5*	*h*=*0·6*	*h*=*0·7*	*h*=*0·8*	
0·0	·384973	·364160	·341785	·318152	·293618	·268576	·243436	·218600	·194450	*0·0*
0·1	·364160	·345745	·325735	·304380	·281991	·258925	·235563	·212292	·189486	*0·1*
0·2	·341785	·325735	·308095	·289064	·268902	·247922	·226469	·204906	·183595	*0·2*
0·3	·318152	·304380	·289064	·272350	·254447	·235619	·216170	·196431	·176743	*0·3*
0·4	·293618	·281991	·268902	·254447	·238784	·222126	·204732	·186897	·168931	*0·4*
0·5	·268576	·258925	·247922	·235619	·222126	·207607	·192274	·176381	·160203	*0·5*
0·6	·243436	·235563	·226469	·216170	·204732	·192274	·178963	·165005	·150640	*0·6*
0·7	·218600	·212292	·204906	·196431	·186897	·176381	·165005	·152934	·140366	*0·7*
0·8	·194450	·189486	·183595	·176743	·168931	·160203	·150640	·140366	·129540	*0·8*
0·9	·171321	·167488	·162875	·157434	·151146	·144026	·136123	·127523	·118347	*0·9*
1·0	·149499	·146595	·143049	·138808	·133838	·128133	·121715	·114639	·106989	*1·0*
1·1	·129205	·127047	·124373	·121129	·117273	·112784	·107665	·101944	·095677	*1·1*
1·2	·110594	·109022	·107044	·104610	·101674	·098208	·094200	·089657	·084613	*1·2*
1·3	·093759	·092635	·091201	·089410	·087218	·084592	·081511	·077970	·073983	*1·3*
1·4	·078729	·077942	·076922	·075630	·074024	·072073	·069750	·067041	·063949	*1·4*
1·5	·065481	·064941	·064231	·063316	·062164	·060742	·059024	·056992	·054637	*1·5*
1·6	·053949	·053586	·053101	·052467	·051656	·050640	·049395	·047899	·046141	*1·6*
1·7	·044031	·043792	·043467	·043037	·042478	·041766	·040881	·039802	·038514	*1·7*
1·8	·035601	·035447	·035234	·034948	·034570	·034082	·033465	·032702	·031778	*1·8*
1·9	·028517	·028420	·028284	·028097	·027847	·027519	·027098	·026569	·025919	*1·9*
2·0	·022632	·022572	·022486	·022367	·022205	·021989	·021708	·021348	·020900	*2·0*
2·1	·017796	·017760	·017707	·017633	·017530	·017390	·017206	·016967	·016664	*2·1*
2·2	·013865	·013843	·013811	·013766	·013702	·013614	·013495	·013340	·013139	*2·2*
2·3	·010702	·010690	·010671	·010644	·010605	·010551	·010476	·010377	·010247	*2·3*
2·4	·008186	·008179	·008168	·008152	·008129	·008096	·008050	·007988	·007905	*2·4*
2·5	·006203	·006199	·006193	·006184	·006171	·006151	·006124	·006086	·006034	*2·5*
2·6	·004658	·004656	·004652	·004647	·004639	·004628	·004612	·004589	·004558	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	*r* = ·75									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·171321	·149499	·129205	·110594	·093759	·078729	·065481	·053949	·044031	*0·0*
0·1	·167488	·146595	·127047	·109022	·092635	·077942	·064941	·053586	·043792	*0·1*
0·2	·162875	·143049	·124373	·107044	·091201	·076922	·064231	·053101	·043467	*0·2*
0·3	·157434	·138808	·121129	·104610	·089410	·075630	·063316	·052467	·043037	*0·3*
0·4	·151146	·133838	·117273	·101674	·087218	·074024	·062164	·051656	·042478	*0·4*
0·5	·144026	·128133	·112784	·098208	·084592	·072073	·060742	·050640	·041766	*0·5*
0·6	·136123	·121715	·107665	·094200	·081511	·069750	·059024	·049395	·040881	*0·6*
0·7	·127523	·114639	·101944	·089657	·077970	·067041	·056992	·047899	·039802	*0·7*
0·8	·118347	·106989	·095677	·084613	·073983	·063949	·054637	·046141	·038514	*0·8*
0·9	·108743	·098883	·088949	·079125	·069586	·060489	·051966	·044117	·037010	*0·9*
1·0	·098883	·090457	·081866	·073272	·064833	·056698	·048997	·041836	·035290	*1·0*
1·1	·088949	·081866	·074555	·067151	·059797	·052627	·045765	·039316	·033363	*1·1*
1·2	·079125	·073272	·067151	·060877	·054567	·048342	·042317	·036591	·031249	*1·2*
1·3	·069586	·064833	·059797	·054567	·049241	·043922	·038711	·033702	·028977	*1·3*
1·4	·060489	·056698	·052627	·048342	·043922	·039451	·035017	·030702	·026584	*1·4*
1·5	·051966	·048997	·045765	·042317	·038711	·035017	·031305	·027648	·024115	*1·5*
1·6	·044117	·041836	·039316	·036591	·033702	·030702	·027648	·024601	·021618	*1·6*
1·7	·037010	·035290	·033363	·031249	·028977	·026584	·024115	·021618	·019143	*1·7*
1·8	·030682	·029410	·027964	·026354	·024600	·022726	·020766	·018757	·016738	*1·8*
1·9	·025136	·024213	·023150	·021948	·020619	·019179	·017651	·016063	·014446	*1·9*
2·0	·020352	·019696	·018929	·018049	·017061	·015975	·014807	·013575	·012303	*2·0*
2·1	·016288	·015831	·015288	·014657	·013937	·013134	·012257	·011320	·010338	*2·1*
2·2	·012886	·012575	·012198	·011754	·011240	·010658	·010013	·009313	·008569	*2·2*
2·3	·010081	·009872	·009617	·009310	·008950	·008537	·008071	·007559	·007006	*2·3*
2·4	·007798	·007662	·007492	·007285	·007038	·006749	·006420	·006052	·005650	*2·4*
2·5	·005967	·005879	·005768	·005631	·005465	·005269	·005040	·004782	·004494	*2·5*
2·6	·004516	·004461	·004390	·004302	·004192	·004061	·003906	·003727	·003526	*2·6*

k	*r* = ·75									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·035601	·028517	·022632	·017796	·013865	·010702	·008186	·006203	·004658	*0·0*
0·1	·035447	·028420	·022572	·017760	·013843	·010690	·008179	·006199	·004656	*0·1*
0·2	·035234	·028284	·022486	·017707	·013811	·010671	·008168	·006193	·004652	*0·2*
0·3	·034948	·028097	·022367	·017633	·013766	·010644	·008152	·006184	·004647	*0·3*
0·4	·034570	·027847	·022205	·017530	·013702	·010605	·008129	·006171	·004639	*0·4*
0·5	·034082	·027519	·021989	·017390	·013614	·010551	·008096	·006151	·004628	*0·5*
0·6	·033465	·027098	·021708	·017206	·013495	·010476	·008050	·006124	·004612	*0·6*
0·7	·032702	·026569	·021348	·016967	·013340	·010377	·007988	·006086	·004589	*0·7*
0·8	·031778	·025919	·020900	·016664	·013139	·010247	·007905	·006034	·004558	*0·8*
0·9	·030682	·025136	·020352	·016288	·012886	·010081	·007798	·005967	·004516	*0·9*
1·0	·029410	·024213	·019696	·015831	·012575	·009872	·007662	·005879	·004461	*1·0*
1·1	·027964	·023150	·018929	·015288	·012198	·009617	·007492	·005768	·004390	*1·1*
1·2	·026354	·021948	·018049	·014657	·011754	·009310	·007285	·005631	·004302	*1·2*
1·3	·024600	·020619	·017061	·013937	·011240	·008950	·007038	·005465	·004192	*1·3*
1·4	·022726	·019179	·015975	·013134	·010658	·008537	·006749	·005269	·004061	*1·4*
1·5	·020766	·017651	·014807	·012257	·010013	·008071	·006420	·005040	·003906	*1·5*
1·6	·018757	·016063	·013575	·011320	·009313	·007559	·006052	·004782	·003727	*1·6*
1·7	·016738	·014446	·012303	·010338	·008569	·007006	·005650	·004494	·003526	*1·7*
1·8	·014751	·012832	·011016	·009330	·007794	·006422	·005218	·004181	·003304	*1·8*
1·9	·012832	·011253	·009740	·008317	·007005	·005818	·004765	·003847	·003063	*1·9*
2·0	·011016	·009740	·008500	·007319	·006216	·005206	·004299	·003500	·002809	*2·0*
2·1	·009330	·008317	·007319	·006356	·005445	·004599	·003831	·003145	·002545	*2·1*
2·2	·007794	·007005	·006216	·005445	·004705	·004009	·003369	·002790	·002277	*2·2*
2·3	·006422	·005818	·005206	·004599	·004009	·003447	·002922	·002442	·002011	*2·3*
2·4	·005218	·004765	·004299	·003831	·003369	·002922	·002500	·002108	·001752	*2·4*
2·5	·004181	·003847	·003500	·003145	·002790	·002442	·002108	·001795	·001506	*2·5*
2·6	·003304	·003063	·002809	·002545	·002277	·002011	·001752	·001506	·001275	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	r = ·80									k
	h = 0·0	h = 0·1	h = 0·2	h = 0·3	h = 0·4	h = 0·5	h = 0·6	h = 0·7	h = 0·8	
0·0	·397583	·376613	·353778	·329412	·303929	·277783	·251453	·225411	·200091	0·0
0·1	·376613	·358285	·338048	·316170	·293001	·268950	·244465	·220001	·195996	0·1
0·2	·353778	·338048	·320423	·301103	·280367	·258565	·236106	·213416	·190922	0·2
0·3	·329412	·316170	·301103	·284337	·266086	·246639	·226344	·205592	·184786	0·3
0·4	·303929	·293001	·280367	·266086	·250308	·233252	·215207	·196514	·177541	0·4
0·5	·277783	·268950	·258565	·246639	·233252	·218560	·202791	·186227	·169191	0·5
0·6	·251453	·244465	·236106	·226344	·215207	·202791	·189259	·174834	·159790	0·6
0·7	·225411	·220001	·213416	·205592	·196514	·186227	·174834	·162503	·149450	0·7
0·8	·200091	·195996	·190922	·184786	·177541	·169191	·159790	·149450	·138334	0·8
0·9	·175878	·172850	·169028	·164320	·158664	·152028	·144430	·135932	·126647	0·9
1·0	·153091	·150903	·148089	·144559	·140239	·135080	·129069	·122228	·114631	1·0
1·1	·131965	·130422	·128399	·125812	·122588	·118666	·114014	·108626	·102536	1·1
1·2	·112660	·111601	·110181	·108330	·105979	·103065	·099544	·095393	·090617	1·2
1·3	·095267	·094559	·093585	·092292	·090617	·088503	·085899	·082772	·079108	1·3
1·4	·079809	·079341	·078690	·077808	·076644	·075145	·073264	·070962	·068215	1·4
1·5	·066233	·065934	·065509	·064922	·064132	·063095	·061768	·060113	·058101	1·5
1·6	·054460	·054273	·054003	·053622	·053099	·052399	·051485	·050323	·048883	1·6
1·7	·044369	·044256	·044088	·043847	·043509	·043048	·042434	·041638	·040632	1·7
1·8	·035820	·035753	·035651	·035503	·035290	·034993	·034591	·034058	·033373	1·8
1·9	·028656	·028617	·028557	·028468	·028337	·028151	·027894	·027547	·027090	1·9
2·0	·022718	·022696	·022661	·022609	·022531	·022417	·022257	·022036	·021740	2·0
2·1	·017847	·017835	·017816	·017786	·017741	·017673	·017575	·017438	·017251	2·1
2·2	·013895	·013888	·013878	·013861	·013835	·013796	·013738	·013655	·013540	2·2
2·3	·010720	·010716	·010711	·010702	·010687	·010665	·010632	·010583	·010513	2·3
2·4	·008195	·008194	·008191	·008186	·008178	·008166	·008147	·008119	·008078	2·4
2·5	·006209	·006208	·006206	·006204	·006200	·006193	·006183	·006167	·006144	2·5
2·6	·004661	·004660	·004660	·004658	·004656	·004653	·004647	·004639	·004626	2·6

k	r = ·80									k
	h = 0·9	h = 1·0	h = 1·1	h = 1·2	h = 1·3	h = 1·4	h = 1·5	h = 1·6	h = 1·7	
0·0	·175878	·153091	·131965	·112660	·095267	·079809	·066233	·054460	·044369	0·0
0·1	·172850	·150903	·130422	·111601	·094559	·079341	·065934	·054273	·044256	0·1
0·2	·169028	·148089	·128399	·110181	·093585	·078690	·065509	·054003	·044088	0·2
0·3	·164320	·144559	·125812	·108330	·092292	·077808	·064922	·053622	·043847	0·3
0·4	·158664	·140239	·122588	·105979	·090617	·076644	·064132	·053099	·043509	0·4
0·5	·152028	·135080	·118666	·103065	·088503	·075145	·063095	·052399	·043048	0·5
0·6	·144430	·129069	·114014	·099544	·085899	·073264	·061768	·051485	·042434	0·6
0·7	·135932	·122228	·108626	·095393	·082772	·070962	·060113	·050323	·041638	0·7
0·8	·126647	·114631	·102536	·090617	·079108	·068215	·058101	·048883	·040632	0·8
0·9	·116733	·106383	·095813	·085253	·074919	·065017	·055714	·047143	·039393	0·9
1·0	·106383	·097637	·088568	·079372	·070247	·061385	·052953	·045091	·037904	1·0
1·1	·095813	·088568	·080933	·073072	·065156	·057357	·049835	·042733	·036160	1·1
1·2	·085253	·079372	·073072	·066480	·059739	·052997	·046402	·040087	·034167	1·2
1·3	·074919	·070247	·065156	·059739	·054109	·048390	·042709	·037191	·031946	1·3
1·4	·065017	·061385	·057357	·052997	·048390	·043632	·038832	·034098	·029531	1·4
1·5	·055714	·052953	·049835	·046402	·042709	·038832	·034856	·030870	·026966	1·5
1·6	·047143	·045091	·042733	·040087	·037191	·034098	·030870	·027582	·024309	1·6
1·7	·039393	·037904	·036160	·034167	·031946	·029531	·026966	·024309	·021620	1·7
1·8	·032511	·031456	·030195	·028729	·027064	·025220	·023227	·021125	·018960	1·8
1·9	·026506	·025776	·024887	·023833	·022613	·021237	·019721	·018095	·016390	1·9
2·0	·021353	·020860	·020248	·019508	·018635	·017631	·016506	·015275	·013962	2·0
2·1	·017001	·016676	·016265	·015758	·015148	·014434	·013617	·012707	·011718	2·1
2·2	·013382	·013174	·012904	·012565	·012149	·011653	·011074	·010416	·009689	2·2
2·3	·010417	·010286	·010114	·009893	·009616	·009279	·008879	·008415	·007892	2·3
2·4	·008021	·007941	·007833	·007693	·007513	·007290	·007020	·006701	·006333	2·4
2·5	·006110	·006063	·005997	·005910	·005797	·005652	·005474	·005260	·005008	2·5
2·6	·004607	·004579	·004540	·004488	·004417	·004327	·004212	·004072	·003904	2·6

TABLE VIII. *Positive Correlation*—(*continued*).

k	$r=\cdot80$									k
	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$	
0·0	·035820	·028656	·022718	·017847	·013895	·010720	·008195	·006209	·004661	*0·0*
0·1	·035753	·028617	·022696	·017835	·013888	·010716	·008194	·006208	·004660	*0·1*
0·2	·035651	·028557	·022661	·017816	·013878	·010711	·008191	·006206	·004660	*0·2*
0·3	·035503	·028468	·022609	·017786	·013861	·010702	·008186	·006204	·004658	*0·3*
0·4	·035290	·028337	·022531	·017741	·013835	·010687	·008178	·006200	·004656	*0·4*
0·5	·034993	·028151	·022417	·017673	·013796	·010665	·008166	·006193	·004653	*0·5*
0·6	·034591	·027894	·022257	·017575	·013738	·010632	·008147	·006183	·004647	*0·6*
0·7	·034058	·027547	·022036	·017438	·013655	·010583	·008119	·006167	·004639	*0·7*
0·8	·033373	·027090	·021740	·017251	·013540	·010513	·008078	·006144	·004626	*0·8*
0·9	·032511	·026506	·021353	·017001	·013382	·010417	·008021	·006110	·004607	*0·9*
1·0	·031456	·025776	·020860	·016676	·013174	·010286	·007941	·006063	·004579	*1·0*
1·1	·030195	·024887	·020248	·016265	·012904	·010114	·007833	·005997	·004540	*1·1*
1·2	·028729	·023833	·019508	·015758	·012565	·009893	·007693	·005910	·004488	*1·2*
1·3	·027064	·022613	·018635	·015148	·012149	·009616	·007513	·005797	·004417	*1·3*
1·4	·025220	·021237	·017631	·014434	·011653	·009279	·007290	·005652	·004327	*1·4*
1·5	·023227	·019721	·016506	·013617	·011074	·008879	·007020	·005474	·004212	*1·5*
1·6	·021125	·018095	·015275	·012707	·010416	·008415	·006701	·005260	·004072	*1·6*
1·7	·018960	·016390	·013962	·011718	·009689	·007892	·006333	·005008	·003904	*1·7*
1·8	·016784	·014646	·012594	·010669	·008902	·007316	·005921	·004720	·003707	*1·8*
1·9	·014646	·012904	·011204	·009584	·008074	·006698	·005470	·004400	·003484	*1·9*
2·0	·012594	·011204	·009825	·008488	·007222	·006050	·004990	·004051	·003237	*2·0*
2·1	·010669	·009584	·008488	·007408	·006367	·005389	·004489	·003681	·002970	*2·1*
2·2	·008902	·008074	·007222	·006367	·005530	·004730	·003981	·003298	·002688	*2·2*
2·3	·007316	·006698	·006050	·005389	·004730	·004088	·003478	·002912	·002399	*2·3*
2·4	·005921	·005470	·004990	·004489	·003981	·003478	·002992	·002533	·002109	*2·4*
2·5	·004720	·004400	·004051	·003681	·003298	·002912	·002533	·002168	·001826	*2·5*
2·6	·003707	·003484	·003237	·002970	·002688	·002399	·002109	·001826	·001555	*2·6*

k	$r=\cdot85$									k
	$h=0\cdot0$	$h=0\cdot1$	$h=0\cdot2$	$h=0\cdot3$	$h=0\cdot4$	$h=0\cdot5$	$h=0\cdot6$	$h=0\cdot7$	$h=0\cdot8$	
0·0	·411699	·390507	·367028	·341657	·314893	·287297	·259454	·231930	·205241	*0·0*
0·1	·390507	·372323	·351791	·329205	·304980	·279618	·253671	·227700	·202237	*0·1*
0·2	·367028	·351791	·334234	·314547	·293048	·270158	·246373	·222227	·198251	*0·2*
0·3	·341657	·329205	·314547	·297774	·279096	·258844	·237439	·215365	·193127	*0·3*
0·4	·314893	·304980	·293048	·279096	·263239	·245704	·226826	·207018	·186743	*0·4*
0·5	·287297	·279618	·270158	·258844	·245704	·230869	·214580	·197166	·179027	*0·5*
0·6	·259454	·253671	·246373	·237439	·226826	·214580	·200848	·185873	·169978	*0·6*
0·7	·231930	·227700	·222227	·215365	·207018	·197166	·185873	·173295	·159674	*0·7*
0·8	·205241	·202237	·198251	·193127	·186743	·179027	·169978	·159674	·148275	*0·8*
0·9	·179823	·177753	·174935	·171220	·166474	·160597	·153539	·145316	·136013	*0·9*
1·0	·156018	·154636	·152704	·150090	·146664	·142314	·136961	·130575	·123180	*1·0*
1·1	·134073	·133179	·131894	·130110	·127710	·124585	·120640	·115817	·110097	*1·1*
1·2	·114136	·113575	·112748	·111568	·109938	·107758	·104936	·101397	·097097	*1·2*
1·3	·096270	·095929	·095413	·094657	·093583	·092109	·090151	·087631	·084490	*1·3*
1·4	·080464	·080264	·079952	·079483	·078798	·077832	·076514	·074772	·072546	*1·4*
1·5	·066651	·066537	·066355	·066073	·065649	·065036	·064176	·063010	·061478	*1·5*
1·6	·054719	·054656	·054553	·054388	·054135	·053758	·053215	·052458	·051437	*1·6*
1·7	·044525	·044492	·044435	·044343	·044196	·043972	·043639	·043163	·042503	*1·7*
1·8	·035911	·035894	·035864	·035813	·035731	·035602	·035405	·035115	·034702	*1·8*
1·9	·028707	·028699	·028684	·028657	·028612	·028540	·028428	·028257	·028006	*1·9*
2·0	·022746	·022742	·022734	·022720	·022697	·022659	·022596	·022499	·022352	*2·0*
2·1	·017863	·017861	·017857	·017850	·017839	·017818	·017785	·017731	·017648	*2·1*
2·2	·013903	·013902	·013900	·013897	·013891	·013881	·013864	·013835	·013789	*2·2*
2·3	·010724	·010723	·010722	·010721	·010718	·010713	·010705	·010690	·010666	*2·3*
2 4	·008197	·008197	·008196	·008196	·008195	·008193	·008188	·008181	·008169	*2·4*
2·5	·006210	·006210	·006209	·006209	·006209	·006208	·006206	·006202	·006196	*2·5*
2 6	·004661	·004661	·004661	·004661	·004661	·004660	·004659	·004658	·004655	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	$r=\cdot85$									k
	$h=0\cdot9$	$h=1\cdot0$	$h=1\cdot1$	$h=1\cdot2$	$h=1\cdot3$	$h=1\cdot4$	$h=1\cdot5$	$h=1\cdot6$	$h=1\cdot7$	
0·0	·179823	·156018	·134073	·114136	·096270	·080464	·066651	·054719	·044525	0·0
0·1	·177753	·154636	·133179	·113575	·095929	·080264	·066537	·054656	·044492	0·1
0·2	·174935	·152704	·131894	·112748	·095413	·079952	·066355	·054553	·044435	0·2
0·3	·171220	·150090	·130110	·111568	·094657	·079483	·066073	·054388	·044343	0·3
0·4	·166474	·146664	·127710	·109938	·093583	·078798	·065649	·054135	·044196	0·4
0·5	·160597	·142314	·124585	·107758	·092109	·077832	·065036	·053758	·043972	0·5
0·6	·153539	·136961	·120640	·104936	·090151	·076514	·064176	·053215	·043639	0·6
0·7	·145316	·130575	·115817	·101397	·087631	·074772	·063010	·052458	·043163	0·7
0·8	·136013	·123180	·110097	·097097	·084490	·072546	·061478	·051437	·042503	0·8
0·9	·125791	·114870	·103518	·092030	·080696	·069787	·059532	·050104	·041619	0·9
1·0	·114870	·105798	·096173	·086238	·076254	·066476	·057135	·048420	·040472	1·0
1·1	·103518	·096173	·088208	·079814	·071209	·062623	·054275	·046359	·039031	1·1
1·2	·092030	·086238	·079814	·072894	·065650	·058276	·050969	·043917	·037278	1·2
1·3	·080696	·076254	·071209	·065650	·059701	·053516	·047262	·041110	·035213	1·3
1·4	·069787	·066476	·062623	·058276	·053516	·048456	·043230	·037982	·032855	1·4
1·5	·059532	·057135	·054275	·050969	·047262	·043230	·038971	·034602	·030244	1·5
1·6	·050104	·048420	·046359	·043917	·041110	·037982	·034602	·031055	·027441	1·6
1·7	·041619	·040472	·039031	·037278	·035213	·032855	·030244	·027441	·024518	1·7
1·8	·034133	·033376	·032398	·031178	·029703	·027976	·026016	·023860	·021559	1·8
1·9	·027652	·027167	·026525	·025701	·024679	·023451	·022022	·020411	·018648	1·9
2·0	·022138	·021838	·021428	·020890	·020203	·019356	·018345	·017174	·015863	2·0
2·1	·017523	·017343	·017090	·016749	·016302	·015735	·015041	·014216	·013269	2·1
2·2	·013719	·013614	·013463	·013254	·012972	·012605	·012142	·011579	·010914	2·2
2·3	·010627	·010568	·010481	·010357	·010184	·009954	·009656	·009283	·008831	2·3
2·4	·008148	·008116	·008068	·007996	·007894	·007754	·007568	·007328	·007030	2·4
2·5	·006185	·006169	·006142	·006102	·006044	·005962	·005849	·005700	·005510	2·5
2·6	·004650	·004641	·004627	·004606	·004574	·004527	·004461	·004371	·004253	2·6

k	$r=\cdot85$									k
	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$	
0·0	·035911	·028707	·022746	·017863	·013903	·010724	·008197	·006210	·004661	0·0
0·1	·035894	·028699	·022742	·017861	·013902	·010723	·008197	·006210	·004661	0·1
0·2	·035864	·028684	·022734	·017857	·013900	·010722	·008196	·006209	·004661	0·2
0·3	·035813	·028657	·022720	·017850	·013897	·010721	·008196	·006209	·004661	0·3
0·4	·035731	·028612	·022697	·017839	·013891	·010718	·008195	·006209	·004661	0·4
0·5	·035602	·028540	·022659	·017818	·013881	·010713	·008193	·006208	·004660	0·5
0·6	·035405	·028428	·022596	·017785	·013864	·010705	·008188	·006206	·004659	0·6
0·7	·035115	·028257	·022499	·017731	·013835	·010690	·008181	·006202	·004658	0·7
0·8	·034702	·028006	·022352	·017648	·013789	·010666	·008169	·006196	·004655	0·8
0·9	·034133	·027652	·022138	·017523	·013719	·010627	·008148	·006185	·004650	0·9
1·0	·033376	·027167	·021838	·017343	·013614	·010568	·008116	·006169	·004641	1·0
1·1	·032398	·026525	·021428	·017090	·013463	·010481	·008068	·006142	·004627	1·1
1·2	·031178	·025701	·020890	·016749	·013254	·010357	·007996	·006102	·004606	1·2
1·3	·029703	·024679	·020203	·016302	·012972	·010184	·007894	·006044	·004574	1·3
1·4	·027976	·023451	·019356	·015735	·012605	·009954	·007754	·005962	·004527	1·4
1·5	·026016	·022022	·018345	·015041	·012142	·009656	·007568	·005849	·004461	1·5
1·6	·023860	·020411	·017174	·014216	·011579	·009283	·007328	·005700	·004371	1·6
1·7	·021559	·018648	·015863	·013269	·010914	·008831	·007030	·005510	·004253	1·7
1·8	·019177	·016780	·014438	·012213	·010155	·008300	·006671	·005274	·004103	1·8
1·9	·016780	·014858	·012937	·011073	·009314	·007698	·006253	·004992	·003919	1·9
2·0	·014438	·012937	·011403	·009880	·008412	·007035	·005780	·004665	·003700	2·0
2·1	·012213	·011073	·009880	·008668	·007473	·006329	·005264	·004299	·003448	2·1
2·2	·010155	·009314	·008412	·007473	·006526	·005599	·004716	·003900	·003166	2·2
2·3	·008300	·007698	·007035	·006329	·005599	·004867	·004154	·003480	·002862	2·3
2·4	·006671	·006253	·005780	·005264	·004716	·004154	·003594	·003052	·002544	2·4
2·5	·005274	·004992	·004665	·004299	·003900	·003480	·003052	·002628	·002221	2·5
2·6	·004103	·003919	·003700	·003448	·003166	·002862	·002544	·002221	·001903	2·6

TABLE VIII. *Positive Correlation—(continued).*

k	r = ·90									k
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·428214	·406669	·382169	·355243	·326566	·296908	·267038	·237662	·209396	*0·0*
0·1	·406669	·388753	·367782	·344108	·318280	·290985	·262978	·235002	·207729	*0·1*
0·2	·382169	·367782	·350403	·330201	·307559	·283038	·257324	·231146	·205211	*0·2*
0·3	·355243	·344108	·330201	·313517	·294257	·272823	·249782	·225802	·201583	*0·3*
0·4	·326566	·318280	·307559	·294257	·278406	·260232	·240150	·218720	·196585	*0·4*
0·5	·296908	·290985	·283038	·272823	·260232	·245325	·228353	·209730	·190001	*0·5*
0·6	·267038	·262978	·257324	·249782	·240150	·228353	·214481	·198793	·181701	*0·6*
0·7	·237662	·235002	·231146	·225802	·218720	·209730	·198793	·186016	·171665	*0·7*
0·8	·209396	·207729	·205211	·201583	·196585	·190001	·181701	·171665	·160017	*0·8*
0·9	·182714	·181715	·180143	·177784	·174405	·169780	·163726	·156138	·147024	*0·9*
1·0	·157949	·157378	·156440	·154974	·152788	·149675	·145439	·139928	·133064	*1·0*
1·1	·135313	·135001	·134466	·133596	·132243	·130238	·127399	·123560	·118595	*1·1*
1·2	·114899	·114738	·114448	·113954	·113155	·111920	·110099	·107537	·104093	*1·2*
1·3	·096720	·096642	·096492	·096225	·095774	·095047	·093931	·092296	·090008	*1·3*
1·4	·080721	·080685	·080611	·080473	·080230	·079822	·079169	·078170	·076716	*1·4*
1·5	·066793	·066776	·066741	·066673	·066549	·066330	·065965	·065383	·064500	*1·5*
1·6	·054792	·054786	·054771	·054739	·054678	·054567	·054372	·054048	·053536	*1·6*
1·7	·044563	·044560	·044554	·044540	·044511	·044459	·044358	·044186	·043903	*1·7*
1·8	·035928	·035928	·035926	·035920	·035907	·035882	·035834	·035747	·035598	*1·8*
1·9	·028716	·028716	·028715	·028712	·028707	·028696	·028674	·028632	·028557	*1·9*
2·0	·022749	·022749	·022749	·022749	·022746	·022742	·022732	·022713	·022677	*2·0*
2·1	·017864	·017864	·017864	·017864	·017863	·017861	·017857	·017849	·017832	*2·1*
2·2	·013903	·013903	·013903	·013903	·013903	·013903	·013901	·013897	·013890	*2·2*
2·3	·010724	·010724	·010724	·010724	·010724	·010724	·010723	·010722	·010719	*2·3*
2·4	·008198	·008198	·008198	·008198	·008198	·008198	·008197	·008197	·008195	*2·4*
2·5	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006209	*2·5*
2·6	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	*2·6*

k	r = ·90									k
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·182714	·157949	·135313	·114899	·096720	·080721	·066793	·054792	·044563	*0·0*
0·1	·181715	·157378	·135001	·114738	·096642	·080685	·066776	·054786	·044560	*0·1*
0·2	·180143	·156440	·134466	·114448	·096492	·080611	·066741	·054771	·044554	*0·2*
0·3	·177784	·154974	·133596	·113954	·096225	·080473	·066673	·054739	·044540	*0·3*
0·4	·174405	·152788	·132243	·113155	·095774	·080230	·066549	·054678	·044511	*0·4*
0·5	·169780	·149675	·130238	·111920	·095047	·079822	·066330	·054567	·044459	*0·5*
0·6	·163726	·145439	·127399	·110099	·093931	·079169	·065965	·054372	·044358	*0·6*
0·7	·156138	·139928	·123560	·107537	·092296	·078170	·065383	·054048	·044186	*0·7*
0·8	·147024	·133064	·118595	·104093	·090008	·076716	·064500	·053536	·043903	*0·8*
0·9	·136515	·124872	·112450	·099668	·086951	·074694	·063220	·052762	·043456	*0·9*
1·0	·124872	·115490	·105164	·094224	·083047	·072009	·061453	·051649	·042786	*1·0*
1·1	·112450	·105164	·096874	·087810	·078274	·068600	·059118	·050118	·041826	*1·1*
1·2	·099668	·094224	·087810	·080559	·072686	·064459	·056173	·048110	·040515	*1·2*
1·3	·086951	·083047	·078274	·072686	·066410	·059641	·052617	·045591	·038805	*1·3*
1·4	·074694	·072009	·068600	·064459	·059641	·054265	·048506	·042569	·036674	*1·4*
1·5	·063220	·061453	·059118	·056173	·052617	·048506	·043948	·039098	·034135	*1·5*
1·6	·052762	·051649	·050118	·048110	·045591	·042569	·039098	·035274	·031231	*1·6*
1·7	·043456	·042786	·041826	·040515	·038805	·036674	·034135	·031231	·028057	*1·7*
1·8	·035351	·034966	·034391	·033573	·032462	·031021	·029236	·027121	·024722	*1·8*
1·9	·028427	·028216	·027887	·027399	·026709	·025777	·024576	·023097	·021354	*1·9*
2·0	·022612	·022502	·022322	·022044	·021635	·021058	·020285	·019293	·018080	*2·0*
2·1	·017801	·017746	·017653	·017502	·017270	·016929	·016453	·015818	·015008	*2·1*
2·2	·013876	·013850	·013803	·013725	·013600	·013408	·013128	·012738	·012222	*2·2*
2·3	·010713	·010701	·010679	·010640	·010576	·010472	·010315	·010087	·009772	*2·3*
2·4	·008193	·008188	·008178	·008160	·008128	·008075	·007991	·007864	·007680	*2·4*
2·5	·006208	·006206	·006202	·006194	·006179	·006153	·006110	·006042	·005940	*2·5*
2·6	·004661	·004660	·004658	·004655	·004648	·004636	·004615	·004581	·004526	*2·6*

TABLE VIII. *Positive Correlation*—(*continued*).

k	*r* = ·90									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·035928	·028716	·022749	·017864	·013903	·010724	·008198	·006210	·004661	*0·0*
0·1	·035928	·028716	·022749	·017864	·013903	·010724	·008198	·006210	·004661	*0·1*
0·2	·035926	·028715	·022749	·017864	·013903	·010724	·008198	·006210	·004661	*0·2*
0·3	·035920	·028712	·022749	·017864	·013903	·010724	·008198	·006210	·004661	*0·3*
0·4	·035907	·028707	·022746	·017863	·013903	·010724	·008198	·006210	·004661	*0·4*
0·5	·035882	·028696	·022742	·017861	·013903	·010724	·008198	·006210	·004661	*0·5*
0·6	·035834	·028674	·022732	·017857	·013901	·010723	·008197	·006210	·004661	*0·6*
0·7	·035747	·028632	·022713	·017849	·013897	·010722	·008197	·006210	·004661	*0·7*
0·8	·035598	·028557	·022677	·017832	·013890	·010719	·008195	·006209	·004661	*0·8*
0·9	·035351	·028427	·022612	·017801	·013876	·010713	·008193	·006208	·004661	*0·9*
1·0	·034966	·028216	·022502	·017746	·013850	·010701	·008188	·006206	·004660	*1·0*
1·1	·034391	·027887	·022322	·017653	·013803	·010679	·008178	·006202	·004658	*1·1*
1·2	·033573	·027399	·022044	·017502	·013725	·010640	·008160	·006194	·004655	*1·2*
1·3	·032462	·026709	·021635	·017270	·013600	·010576	·008128	·006179	·004648	*1·3*
1·4	·031021	·025777	·021058	·016929	·013408	·010472	·008075	·006153	·004636	*1·4*
1·5	·029236	·024576	·020285	·016453	·013128	·010315	·007991	·006110	·004615	*1·5*
1·6	·027121	·023097	·019293	·015818	·012738	·010087	·007864	·006042	·004581	*1·6*
1·7	·024722	·021354	·018080	·015008	·012222	·009772	·007680	·005940	·004526	*1·7*
1·8	·022113	·019390	·016660	·014023	·011568	·009357	·007428	·005794	·004445	*1·8*
1·9	·019390	·017269	·015069	·012878	·010777	·008834	·007097	·005594	·004330	*1·9*
2·0	·016660	·015069	·013361	·011602	·009862	·008205	·006683	·005333	·004173	*2·0*
2·1	·014023	·012878	·011602	·010242	·008850	·007482	·006188	·005009	·003970	*2·1*
2·2	·011568	·010777	·009862	·008850	·007778	·006688	·005623	·004624	·003719	*2·2*
2·3	·009357	·008834	·008205	·007482	·006688	·005851	·005006	·004187	·003422	*2·3*
2·4	·007428	·007097	·006683	·006188	·005623	·005006	·004360	·003712	·003087	*2·4*
2·5	·005794	·005594	·005333	·005009	·004624	·004187	·003712	·003218	·002726	*2·5*
2·6	·004445	·004330	·004173	·003970	·003719	·003422	·003087	·002726	·002353	*2·6*

k	*r* = ·95									*k*
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·449458	·427148	·400525	·370551	·338465	·305541	·272899	·241401	·211641	*0·0*
0·1	·427148	·409885	·388048	·362178	·333273	·302578	·271347	·240657	·211315	*0·1*
0·2	·400525	·388048	·371208	·350051	·325166	·297571	·268502	·239173	·210607	*0·2*
0·3	·370551	·362178	·350051	·333789	·313499	·289802	·263724	·236469	·209204	*0·3*
0·4	·338465	·333273	·325166	·313499	·297954	·278690	·256354	·231956	·206660	*0·4*
0·5	·305541	·302578	·297571	·289802	·278690	·263982	·245878	·225035	·202439	*0·5*
0·6	·272899	·271347	·268502	·263724	·256354	·245878	·232102	·215259	·196007	*0·6*
0·7	·241401	·240657	·239173	·236469	·231956	·225035	·215259	·202487	·186977	*0·7*
0·8	·211641	·211315	·210607	·209204	·206660	·202439	·196007	·186977	·175254	*0·8*
0·9	·183985	·183855	·183547	·182880	·181566	·179198	·175290	·169372	·161115	*0·9*
1·0	·158631	·158584	·158461	·158172	·157551	·156332	·154150	·150570	·145180	*1·0*
1·1	·135659	·135643	·135599	·135484	·135216	·134643	·133525	·131534	·128287	*1·1*
1·2	·115068	·115063	·115049	·115007	·114902	·114655	·114131	·113116	·111318	*1·2*
1·3	·096800	·096799	·096794	·096781	·096743	·096646	·096422	·095949	·095036	*1·3*
1·4	·080757	·080756	·080755	·080751	·080739	·080704	·080617	·080415	·079992	*1·4*
1·5	·066807	·066807	·066807	·066806	·066802	·066791	·066760	·066682	·066502	*1·5*
1·6	·054799	·054799	·054799	·054799	·054798	·054795	·054785	·054757	·054688	*1·6*
1·7	·044565	·044565	·044565	·044565	·044565	·044564	·044561	·044552	·044528	*1·7*
1·8	·035930	·035930	·035930	·035930	·035930	·035930	·035929	·035927	·035919	*1·8*
1·9	·028717	·028717	·028717	·028717	·028717	·028716	·028716	·028716	·028713	*1·9*
2·0	·022750	·022750	·022750	·022750	·022750	·022750	·022750	·022750	·022749	*2·0*
2·1	·017864	·017864	·017864	·017864	·017864	·017864	·017864	·017864	·017864	*2·1*
2·2	·013903	·013903	·013903	·013903	·013903	·013903	·013903	·013903	·013903	*2·2*
2·3	·010724	·010724	·010724	·010724	·010724	·010724	·010724	·010724	·010724	*2·3*
2·4	·008198	·008198	·008198	·008198	·008198	·008198	·008198	·008198	·008198	*2·4*
2·5	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	*2·5*
2·6	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	$r=\cdot95$									k
	$h=0\cdot9$	$h=1\cdot0$	$h=1\cdot1$	$h=1\cdot2$	$h=1\cdot3$	$h=1\cdot4$	$h=1\cdot5$	$h=1\cdot6$	$h=1\cdot7$	
0·0	·183985	·158631	·135659	·115068	·096800	·080757	·066807	·054799	·044565	0·0
0·1	·183855	·158584	·135643	·115063	·096799	·080756	·066807	·054799	·044565	0·1
0·2	·183547	·158461	·135599	·115049	·096794	·080755	·066807	·054799	·044565	0·2
0·3	·182880	·158172	·135484	·115007	·096781	·080751	·066806	·054799	·044565	0·3
0·4	·181566	·157551	·135216	·114902	·096743	·080739	·066802	·054798	·044565	0·4
0·5	·179198	·156332	·134643	·114655	·096646	·080704	·066791	·054795	·044564	0·5
0·6	·175290	·154150	·133525	·114131	·096422	·080617	·066760	·054785	·044561	0·6
0·7	·169372	·150570	·131534	·113116	·095949	·080415	·066682	·054757	·044552	0·7
0·8	·161115	·145180	·128287	·111318	·095036	·079992	·066502	·054688	·044528	0·8
0·9	·150466	·137707	·123428	·108404	·093429	·079179	·066127	·054529	·044467	0·9
1·0	·137707	·128130	·116733	·104068	·090839	·077758	·065411	·054200	·044329	1·0
1·1	·123428	·116733	·108208	·098130	·087009	·075480	·064166	·053577	·044044	1·1
1·2	·108404	·104068	·098130	·090618	·081797	·072131	·062183	·052497	·043505	1·2
1·3	·093429	·090839	·087009	·081797	·075245	·067601	·059285	·050787	·042579	1·3
1·4	·079179	·077758	·075480	·072131	·067601	·061945	·055389	·048305	·041121	1·4
1·5	·066127	·065411	·064166	·062183	·059285	·055389	·050554	·044989	·039016	1·5
1·6	·054529	·054200	·053577	·052497	·050787	·048305	·044989	·040898	·036221	1·6
1·7	·044467	·044329	·044044	·043505	·042579	·041121	·039016	·036221	·032796	1·7
1·8	·035898	·035845	·035725	·035480	·035020	·034234	·033003	·031236	·028904	1·8
1·9	·028707	·028688	·028643	·028541	·028332	·027944	·027282	·026253	·024785	1·9
2·0	·022747	·022742	·022726	·022687	·022600	·022425	·022100	·021550	·020695	2·0
2·1	·017864	·017862	·017857	·017844	·017811	·017739	·017593	·017323	·016870	2·1
2·2	·013903	·013903	·013901	·013897	·013886	·013859	·013799	·013678	·013457	2·2
2·3	·010724	·010724	·010723	·010722	·010719	·010710	·010687	·010638	·010540	2·3
2·4	·008198	·008198	·008197	·008197	·008196	·008193	·008186	·008167	·008127	2·4
2·5	·006210	·006210	·006210	·006210	·006209	·006208	·006206	·006200	·006185	2·5
2·6	·004661	·004661	·004661	·004661	·004661	·004661	·004660	·004658	·004653	2·6

k	$r=\cdot95$									k
	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$	
0·0	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·0
0·1	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·1
0·2	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·2
0·3	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·3
0·4	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·4
0·5	·035930	·028716	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·5
0·6	·035929	·028716	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·6
0·7	·035927	·028716	·022750	·017864	·013903	·010724	·008198	·006210	·004661	0·7
0·8	·035919	·028713	·022749	·017864	·013903	·010724	·008198	·006210	·004661	0·8
0·9	·035898	·028707	·022747	·017864	·013903	·010724	·008198	·006210	·004661	0·9
1·0	·035845	·028688	·022742	·017862	·013903	·010724	·008198	·006210	·004661	1·0
1·1	·035725	·028643	·022726	·017857	·013901	·010723	·008197	·006210	·004661	1·1
1·2	·035480	·028541	·022687	·017844	·013897	·010722	·008197	·006210	·004661	1·2
1·3	·035020	·028332	·022600	·017811	·013886	·010719	·008196	·006209	·004661	1·3
1·4	·034234	·027944	·022425	·017739	·013859	·010710	·008193	·006208	·004661	1·4
1·5	·033003	·027282	·022100	·017593	·013799	·010687	·008186	·006206	·004660	1·5
1·6	·031236	·026253	·021550	·017323	·013678	·010638	·008167	·006200	·004658	1·6
1·7	·028904	·024785	·020695	·016870	·013457	·010540	·008127	·006185	·004653	1·7
1·8	·026064	·022860	·019491	·016173	·013088	·010360	·008048	·006153	·004642	1·8
1·9	·022860	·020529	·017917	·015190	·012523	·010062	·007904	·006089	·004616	1·9
2·0	·019491	·017917	·016024	·013917	·011731	·009609	·007666	·005975	·004566	2·0
2·1	·016173	·015190	·013917	·012395	·010711	·008977	·007306	·005787	·004475	2·1
2·2	·013088	·012523	·011731	·010711	·009500	·008169	·006807	·005504	·004328	2·2
2·3	·010360	·010062	·009609	·008977	·008169	·007214	·006172	·005114	·004108	2·3
2·4	·008048	·007904	·007666	·007306	·006807	·006172	·005428	·004621	·003806	2·4
2·5	·006153	·006089	·005975	·005787	·005504	·005114	·004621	·004047	·003427	2·5
2·6	·004642	·004616	·004566	·004475	·004328	·004108	·003806	·003427	·002989	2·6

TABLE VIII. *Positive Correlation*—(*continued*).

k	$r=1\cdot0$									*k*
	$h=0\cdot0$	$h=0\cdot1$	$h=0\cdot2$	$h=0\cdot3$	$h=0\cdot4$	$h=0\cdot5$	$h=0\cdot6$	$h=0\cdot7$	$h=0\cdot8$	
0·0	·500000	·460172	·420740	·382089	·344578	·308538	·274253	·241964	·211855	*0·0*
0·1	·460172	·460172	·420740	·382089	·344578	·308538	·274253	·241964	·211855	*0·1*
0·2	·420740	·420740	·420740	·382089	·344578	·308538	·274253	·241964	·211855	*0·2*
0·3	·382089	·382089	·382089	·382089	·344578	·308538	·274253	·241964	·211855	*0·3*
0·4	·344578	·344578	·344578	·344578	·344578	·308538	·274253	·241964	·211855	*0·4*
0·5	·308538	·308538	·308538	·308538	·308538	·308538	·274253	·241964	·211855	*0·5*
0·6	·274253	·274253	·274253	·274253	·274253	·274253	·274253	·241964	·211855	*0·6*
0·7	·241964	·241964	·241964	·241964	·241964	·241964	·241964	·241964	·211855	*0·7*
0·8	·211855	·211855	·211855	·211855	·211855	·211855	·211855	·211855	·211855	*0·8*
0·9	·184060	·184060	·184060	·184060	·184060	·184060	·184060	·184060	184060	*0·9*
1·0	·158655	·158655	·158655	·158655	·158655	·158655	·158655	·158655	·158655	*1·0*
1·1	·135666	·135666	·135666	·135666	·135666	·135666	·135666	·135666	·135666	*1·1*
1·2	·115070	·115070	·115070	·115070	·115070	·115070	·115070	·115070	·115070	*1·2*
1·3	·096801	·096801	·096801	·096801	·096801	·096801	·096801	·096801	·096801	*1·3*
1·4	·080757	·080757	·080757	·080757	·080757	·080757	·080757	·080757	·080757	*1·4*
1·5	·066807	·066807	·066807	·066807	·066807	·066807	·066807	·066807	·066807	*1·5*
1·6	·054799	·054799	·054799	·054799	·054799	·054799	·054799	·054799	·054799	*1·6*
1·7	·044565	·044565	·044565	·044565	·044565	·044565	·044565	·044565	·044565	*1·7*
1·8	·035930	·035930	·035930	·035930	·035930	·035930	·035930	·035930	·035930	*1·8*
1·9	·028717	·028717	·028717	·028717	·028717	·028717	·028717	·028717	·028717	*1·9*
2·0	·022750	·022750	·022750	·022750	·022750	·022750	·022750	·022750	·022750	*2·0*
2·1	·017864	·017864	·017864	·017864	·017864	·017864	·017864	·017864	·017864	*2·1*
2·2	·013903	·013903	·013903	·013903	·013903	·013903	·013903	·013903	·013903	*2·2*
2·3	·010724	·010724	·010724	·010724	·010724	·010724	·010724	·010724	·010724	*2·3*
2·4	·008198	·008198	·008198	·008198	·008198	·008198	·008198	·008198	·008198	*2·4*
2·5	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	*2·5*
2·6	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	*2·6*

k	$r=1\cdot0$									*k*
	$h=0\cdot9$	$h=1\cdot0$	$h=1\cdot1$	$h=1\cdot2$	$h=1\cdot3$	$h=1\cdot4$	$h=1\cdot5$	$h=1\cdot6$	$h=1\cdot7$	
0·0	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·0*
0·1	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·1*
0·2	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·2*
0·3	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·3*
0·4	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·4*
0·5	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·5*
0·6	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·6*
0·7	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·7*
0·8	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·8*
0·9	·184060	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*0·9*
1·0	·158655	·158655	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*1·0*
1·1	·135666	·135666	·135666	·115070	·096801	·080757	·066807	·054799	·044565	*1·1*
1·2	·115070	·115070	·115070	·115070	·096801	·080757	·066807	·054799	·044565	*1·2*
1·3	·096801	·096801	·096801	·096801	·096801	·080757	·066807	·054799	·044565	*1·3*
1·4	·080757	·080757	·080757	·080757	·080757	·080757	·066807	·054799	·044565	*1·4*
1·5	·066807	·066807	·066807	·066807	·066807	·066807	·066807	·054799	·044565	*1·5*
1·6	·054799	·054799	·054799	·054799	·054799	·054799	·054799	·054799	·044565	*1·6*
1·7	·044565	·044565	·044565	·044565	·044565	·044565	·044565	·044565	·044565	*1·7*
1·8	·035930	·035930	·035930	·035930	·035930	·035930	·035930	·035930	·035930	*1·8*
1·9	·028717	·028717	·028717	·028717	·028717	·028717	·028717	·028717	·028717	*1·9*
2·0	·022750	·022750	·022750	·022750	·022750	·022750	·022750	·022750	·022750	*2·0*
2·1	·017864	·017864	·017864	·017864	·017864	·017864	·017864	·017864	·017864	*2·1*
2·2	·013903	·013903	·013903	·013903	·013903	·013903	·013903	·013903	·013903	*2·2*
2·3	·010724	·010724	·010724	·010724	·010724	·010724	·010724	·010724	·010724	*2·3*
2·4	·008198	·008198	·008198	·008198	·008198	·008198	·008198	·008198	·008198	*2·4*
2·5	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	*2·5*
2·6	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	*2·6*

TABLE VIII. *Positive Correlation—(continued).*

k	$r=1\cdot0$									k
	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$	
0·0	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·0*
0·1	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·1*
0·2	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·2*
0·3	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·3*
0·4	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·4*
0·5	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·5*
0·6	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·6*
0·7	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·7*
0·8	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·8*
0·9	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*0·9*
1·0	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·0*
1·1	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·1*
1·2	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·2*
1·3	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·3*
1·4	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·4*
1·5	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·5*
1·6	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·6*
1·7	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·7*
1·8	·035930	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·8*
1·9	·028717	·028717	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*1·9*
2·0	·022750	·022750	·022750	·017864	·013903	·010724	·008198	·006210	·004661	*2·0*
2·1	·017864	·017864	·017864	·017864	·013903	·010724	·008198	·006210	·004661	*2·1*
2·2	·013903	·013903	·013903	·013903	·013903	·010724	·008198	·006210	·004661	*2·2*
2·3	·010724	·010724	·010724	·010724	·010724	·010724	·008198	·006210	·004661	*2·3*
2·4	·008198	·008198	·008198	·008198	·008198	·008198	·008198	·006210	·004661	*2·4*
2·5	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·006210	·004661	*2·5*
2·6	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	·004661	*2·6*

TABLE IX. *Table for finding the Volumes of the Normal Bivariate Surface. Negative Correlation.*

k	d/N for $r = \cdot 00$									k
	$h = 0{\cdot}0$	$h = 0{\cdot}1$	$h = 0{\cdot}2$	$h = 0{\cdot}3$	$h = 0{\cdot}4$	$h = 0{\cdot}5$	$h = 0{\cdot}6$	$h = 0{\cdot}7$	$h = 0{\cdot}8$	
0·0	·2500000	·2300861	·2103702	·1910443	·1722891	·1542688	·1371266	·1209818	·1059277	*0·0*
0·1	·2300861	·2117584	·1936130	·1758265+	·1585653	·1419804	·1262037	·1113449	·0974900	*0·1*
0·2	·2103702	·1936130	·1770224	·1607601	·1449780	·1298142	·1153893	·1018039	·0891361	*0·2*
0·3	·1910443	·1758265+	·1607601	·1459917	·1316594	·1178887	·1047890	·0924515+	·0809475+	*0·3*
0·4	·1722891	·1585653	·1449780	·1316594	·1187342	·1063153	·0945017	·0833754	·0730008	*0·4*
0·5	·1542688	·1419804	·1298142	·1178887	·1063153	·0951954	·0846174	·0746549	·0653653	*0·5*
0·6	·1371266	·1262037	·1153893	·1047890	·0945017	·0846174	·0752148	·0663593	·0581020	*0·6*
0·7	·1209818	·1113449	·1018039	·0924515+	·0833754	·0746549	·0663593	·0585464	·0512613	*0·7*
0·8	·1059277	·0974900	·0891361	·0809475+	·0730008	·0653653	·0581020	·0512613	·0448827	*0·8*
0·9	·0920301	·0846993	·0774415+	·0703273	·0634231	·0567895−	·0504791	·0445359	·0389941	*0·9*
1·0	·0793276	·0730087	·0667527	·0606204	·0546692	·0489511	·0435117	·0383888	·0336120	*1·0*
1·1	·0678330	·0624297	·0570802	·0518365−	·0467476	·0418581	·0372068	·0328263	·0287416	*1·1*
1·2	·0575348	·0529519	·0484144	·0439668	·0396505+	·0355033	·0315582	·0278427	·0243781	*1·2*
1·3	·0484002	·0445449	·0407279	·0369864	·0333553	·0298666	·0265478	·0234222	·0205077	*1·3*
1·4	·0403783	·0371620	·0339776	·0308562	·0278270	·0249165−	·0221478	·0195402	·0171087	*1·4*
1·5	·0334036	·0307428	·0281085−	·0255263	·0230203	·0206125+	·0183221	·0161649	·0141535−	*1·5*
1·6	·0273996	·0252171	·0230563	·0209382	·0188826	·0169076	·0150289	·0132594	·0116095+	*1·6*
1·7	·0222827	·0205078	·0187505−	·0170280	·0153563	·0137501	·0122222	·0107832	·0094414	*1·7*
1·8	·0179652	·0165341	·0151173	·0137286	·0123808	·0110859	·0098540	·0086938	·0076120	*1·8*
1·9	·0143583	·0132146	·0120822	·0109723	·0098951	·0088601	·0078756	·0069484	·0060838	*1·9*
2·0	·0113751	·0104690	·0095719	·0086926	·0078392	·0070193	·0062393	·0055047	·0048197	*2·0*
2·1	·0089322	·0082207	·0075163	·0068258	·0061557	·0055118	·0048994	·0043225+	·0037847	*2·1*
2·2	·0069517	·0063980	·0058497	·0053123	·0047908	·0042897	·0038131	·0033641	·0029455+	*2·2*
2·3	·0053621	·0049349	·0045121	·0040976	·0036953	·0033088	·0029411	·0025948	·0022720	*2·3*
2·4	·0040988	·0037723	·0034490	·0031322	·0028247	·0025292	·0022482	·0019835+	·0017367	*2·4*
2·5	·0031048	·0028575+	·0026127	·0023726	·0021397	·0019159	·0017030	·0015025+	·0013156	*2·5*
2·6	·0023306	·0021449	·0019611	·0017810	·0016061	·0014382	·0012783	·0011278	·0009875−	*2·6*

k	d/N for $r = \cdot 00$									k
	$h = 0{\cdot}9$	$h = 1{\cdot}0$	$h = 1{\cdot}1$	$h = 1{\cdot}2$	$h = 1{\cdot}3$	$h = 1{\cdot}4$	$h = 1{\cdot}5$	$h = 1{\cdot}6$	$h = 1{\cdot}7$	
0·0	·0920301	·0793276	·0678330	·0575348	·0484002	·0403783	·0334036	·0273996	·0222827	*0·0*
0·1	·0846993	·0730087	·0624297	·0529519	·0445449	·0371620	·0307428	·0252171	·0205078	*0·1*
0·2	·0774415+	·0667527	·0570802	·0484144	·0407279	·0339776	·0281085−	·0230563	·0187505−	*0·2*
0·3	·0703273	·0606204	·0518365−	·0439668	·0369864	·0308562	·0255263	·0209382	·0170280	*0·3*
0·4	·0634231	·0546692	·0467476	·0396505+	·0333553	·0278270	·0230203	·0188826	·0153563	*0·4*
0·5	·0567895−	·0489511	·0418581	·0355033	·0298666	·0249165−	·0206125+	·0169076	·0137501	*0·5*
0·6	·0504791	·0435117	·0372068	·0315582	·0265478	·0221478	·0183221	·0150289	·0122222	*0·6*
0·7	·0445359	·0383888	·0328263	·0278427	·0234222	·0195402	·0161649	·0132594	·0107832	*0·7*
0·8	·0389941	·0336120	·0287416	·0243781	·0205077	·0171087	·0141535−	·0116095+	·0094414	*0·8*
0·9	·0338781	·0292021	·0249707	·0211797	·0178171	·0148641	·0122965+	·0100864	·0082027	*0·9*
1·0	·0292021	·0251715−	·0215241	·0182564	·0153579	·0128125−	·0105993	·0086942	·0070705+	*1·0*
1·1	·0249707	·0215241	·0184053	·0156110	·0131325+	·0109559	·0090635−	·0074344	·0060460	*1·1*
1·2	·0211797	·0182564	·0156110	·0132410	·0111388	·0092926	·0076875−	·0063057	·0051281	*1·2*
1·3	·0178171	·0153579	·0131325+	·0111388	·0093703	·0078173	·0064670	·0053046	·0043140	*1·3*
1·4	·0148641	·0128125−	·0109559	·0092926	·0078173	·0065216	·0053951	·0044254	·0035990	*1·4*
1·5	·0122965+	·0105993	·0090635−	·0076875−	·0064670	·0053951	·0044632	·0036610	·0029773	*1·5*
1·6	·0100864	·0086942	·0074344	·0063057	·0053046	·0044254	·0036610	·0030030	·0024422	*1·6*
1·7	·0082027	·0070705+	·0060460	·0051281	·0043140	·0035990	·0029773	·0024422	·0019861	*1·7*
1·8	·0066133	·0057005+	·0048745+	·0041345−	·0034781	·0029016	·0024004	·0019690	·0016013	*1·8*
1·9	·0052856	·0045560	·0038959	·0033044	·0027798	·0023191	·0019185−	·0015736	·0012798	*1·9*
2·0	·0041874	·0036094	·0030864	·0026179	·0022022	·0018372	·0015199	·0012467	·0010139	*2·0*
2·1	·0032881	·0028343	·0024236	·0020557	·0017293	·0014427	·0011935−	·0009790	·0007961	*2·1*
2·2	·0025591	·0022059	·0018862	·0015999	·0013459	·0011228	·0009288	·0007619	·0006196	*2·2*
2·3	·0019739	·0017014	·0014549	·0012340	·0010381	·0008660	·0007164	·0005877	·0004779	*2·3*
2·4	·0015088	·0013006	·0011121	·0009433	·0007935+	·0006620	·0005477	·0004492	·0003653	*2·4*
2·5	·0011430	·0009852	·0008424	·0007145+	·0006011	·0005015−	·0004149	·0003403	·0002767	*2·5*
2·6	·0008579	·0007395+	·0006324	·0005364	·0004512	·0003764	·0003114	·0002554	·0002077	*2·6*

TABLE IX. *Negative Correlation—(continued).*

k	d/N for $r = \cdot 00$									k
	$h = 1\cdot 8$	$h = 1\cdot 9$	$h = 2\cdot 0$	$h = 2\cdot 1$	$h = 2\cdot 2$	$h = 2\cdot 3$	$h = 2\cdot 4$	$h = 2\cdot 5$	$h = 2\cdot 6$	
0·0	·0179652	·0143583	·0113751	·0089322	·0069517	·0053621	·0040988	·0031048	·0023306	*0·0*
0·1	·0165341	·0132146	·0104690	·0082207	·0063980	·0049349	·0037723	·0028575+	·0021449	*0·1*
0·2	·0151173	·0120822	·0095719	·0075163	·0058497	·0045121	·0034490	·0026127	·0019611	*0·2*
0·3	·0137286	·0109723	·0086926	·0068258	·0053123	·0040976	·0031322	·0023726	·0017810	*0·3*
0·4	·0123808	·0098951	·0078392	·0061557	·0047908	·0036953	·0028247	·0021397	·0016061	*0·4*
0·5	·0110859	·0088601	·0070193	·0055118	·0042897	·0033088	·0025292	·0019159	·0014382	*0·5*
0·6	·0098540	·0078756	·0062393	·0048994	·0038131	·0029411	·0022482	·0017030	·0012783	*0·6*
0·7	·0086938	·0069484	·0055047	·0043225+	·0033641	·0025948	·0019835+	·0015025+	·0011278	*0·7*
0·8	·0076120	·0060838	·0048197	·0037847	·0029455+	·0022720	·0017367	·0013156	·0009875−	*0·8*
0·9	·0066133	·0052856	·0041874	·0032881	·0025591	·0019739	·0015088	·0011430	·0008579	*0·9*
1·0	·0057005+	·0045560	·0036094	·0028343	·0022059	·0017014	·0013006	·0009852	·0007395+	*1·0*
1·1	·0048745+	·0038959	·0030864	·0024236	·0018862	·0014549	·0011121	·0008424	·0006324	*1·1*
1·2	·0041345−	·0033044	·0026179	·0020557	·0015999	·0012340	·0009433	·0007145+	·0005364	*1·2*
1·3	·0034781	·0027798	·0022022	·0017293	·0013459	·0010381	·0007935+	·0006011	·0004512	*1·3*
1·4	·0029016	·0023191	·0018372	·0014427	·0011228	·0008660	·0006620	·0005015−	·0003764	*1·4*
1·5	·0024004	·0019185−	·0015199	·0011935−	·0009288	·0007164	·0005477	·0004149	·0003114	*1·5*
1·6	·0019690	·0015736	·0012467	·0009790	·0007619	·0005877	·0004492	·0003403	·0002554	*1·6*
1·7	·0016013	·0012798	·0010139	·0007961	·0006196	·0004779	·0003653	·0002767	·0002077	*1·7*
1·8	·0012910	·0010318	·0008174	·0006419	·0004996	·0003853	·0002945+	·0002231	·0001675−	*1·8*
1·9	·0010318	·0008246	·0006533	·0005130	·0003993	·0003080	·0002354	·0001783	·0001339	*1·9*
2·0	·0008174	·0006533	·0005176	·0004064	·0003163	·0002440	·0001865−	·0001413	·0001060	*2·0*
2·1	·0006419	·0005130	·0004064	·0003191	·0002484	·0001916	·0001464	·0001109	·0000833	*2·1*
2·2	·0004996	·0003993	·0003163	·0002484	·0001933	·0001491	·0001140	·0000863	·0000648	*2·2*
2·3	·0003853	·0003080	·0002440	·0001916	·0001491	·0001150+	·0000879	·0000666	·0000500−	*2·3*
2·4	·0002945+	·0002354	·0001865−	·0001464	·0001140	·0000879	·0000672	·0000509	·0000382	*2·4*
2·5	·0002231	·0001783	·0001413	·0001109	·0000863	·0000666	·0000509	·0000386	·0000289	*2·5*
2·6	·0001675−	·0001339	·0001060	·0000833	·0000648	·0000500−	·0000382	·0000289	·0000217	*2·6*

k	d/N for $r = - \cdot 05$									k
	$h = 0\cdot 0$	$h = 0\cdot 1$	$h = 0\cdot 2$	$h = 0\cdot 3$	$h = 0\cdot 4$	$h = 0\cdot 5$	$h = 0\cdot 6$	$h = 0\cdot 7$	$h = 0\cdot 8$	
0·0	·2420389	·2221648	·2025669	·1834338	·1649406	·1472439	·1304779	·1147519	·1001483	*0·0*
0·1	·2221648	·2038786	·1858525+	·1682597	·1512608	·1349993	·1195981	·1051570	·0917509	*0·1*
0·2	·2025669	·1858525+	·1693814	·1533116	·1377895+	·1229457	·1088920	·0957188	·0834939	*0·2*
0·3	·1834338	·1682597	·1533116	·1387327	·1246556	·1111983	·0984617	·0865272	·0754557	*0·3*
0·4	·1649406	·1512608	·1377895+	·1246556	·1119782	·0998633	·0884013	·0776650+	·0677086	*0·4*
0·5	·1472439	·1349993	·1229457	·1111983	·0998633	·0890353	·0787944	·0692055−	·0603163	*0·5*
0·6	·1304779	·1195981	·1088920	·0984617	·0884013	·0787944	·0697119	·0612108	·0533329	*0·6*
0·7	·1147519	·1051570	·0957188	·0865272	·0776650+	·0692055−	·0612108	·0537306	·0468015−	*0·7*
0·8	·1001483	·0917509	·0834939	·0754557	·0677086	·0603163	·0533329	·0468015−	·0407536	*0·8*
0·9	·0867220	·0794297	·0722620	·0652871	·0585674	·0521580	·0461055−	·0404469	·0352093	*0·9*
1·0	·0745010	·0682182	·0620453	·0560408	·0502582	·0447449	·0395407	·0346772	·0301773	*1·0*
1·1	·0634879	·0581182	·0528445+	·0477168	·0427806	·0380762	·0336373	·0294907	·0256557	*1·1*
1·2	·0536621	·0491100	·0446412	·0402978	·0361184	·0321368	·0283815+	·0248749	·0216332	*1·2*
1·3	·0449829	·0411557	·0374000	·0337512	·0302417	·0268996	·0237489	·0208080	·0180903	*1·3*
1·4	·0373929	·0342018	·0310717	·0280320	·0251095+	·0223277	·0197062	·0172603	·0150011	*1·4*
1·5	·0308214	·0281832	·0255964	·0230854	·0206723	·0183763	·0162135−	·0141964	·0123341	*1·5*
1·6	·0251885+	·0230258	·0209062	·0188496	·0168740	·0149951	·0132259	·0115767	·0100547	*1·6*
1·7	·0204082	·0186505+	·0169286	·0152586	·0136551	·0121307	·0106960	·0093591	·0081259	*1·7*
1·8	·0163918	·0149757	·0135890	·0122446	·0109544	·0097283	·0085749	·0075006	·0065100	*1·8*
1·9	·0130509	·0119198	·0108128	·0097401	·0087109	·0077334	·0068143	·0059585+	·0051699	*1·9*
2·0	·0102994	·0094041	·0085281	·0076796	·0068660	·0060935−	·0053674	·0046918	·0040693	*2·0*
2·1	·0080561	·0073535+	·0066665+	·0060013	·0053638	·0047587	·0041903	·0036616	·0031747	*2·1*
2·2	·0062452	·0056989	·0051648	·0046480	·0041528	·0036832	·0032421	·0028320	·0024546	*2·2*
2·3	·0047980	·0043769	·0039655+	·0035676	·0031865−	·0028251	·0024860	·0021708	·0018808	*2·3*
2·4	·0036529	·0033313	·0030173	·0027136	·0024229	·0021474	·0018890	·0016489	·0014281	*2·4*
2·5	·0027560	·0025125+	·0022749	·0020453	·0018256	·0016175−	·0014223	·0012411	·0010745+	*2·5*
2·6	·0020603	·0018775−	·0016996	·0015276	·0013630	·0012072	·0010612	·0009257	·0008011	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	*d/N* for *r* = − ·05									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·0867220	·0745010	·0634879	·0536621	·0449829	·0373929	·0308214	·0251885+	·0204082	*0·0*
0·1	·0794297	·0682182	·0581182	·0491100	·0411557	·0342018	·0281832	·0230258	·0186505+	*0·1*
0·2	·0722620	·0620453	·0528445+	·0446412	·0374000	·0310717	·0255964	·0209062	·0169286	*0·2*
0·3	·0652871	·0560408	·0477168	·0402978	·0337512	·0280320	·0230854	·0188496	·0152586	*0·3*
0·4	·0585674	·0502582	·0427806	·0361184	·0302417	·0251095+	·0206723	·0168740	·0136551	*0·4*
0·5	·0521580	·0447449	·0380762	·0321368	·0268996	·0223277	·0183763	·0149951	·0121307	*0·5*
0·6	·0461055−	·0395407	·0336373	·0283815+	·0237489	·0197062	·0162135−	·0132259	·0106960	*0·6*
0·7	·0404469	·0346772	·0294907	·0248749	·0208080	·0172603	·0141964	·0115767	·0093591	*0·7*
0·8	·0352093	·0301773	·0256557	·0216332	·0180903	·0150011	·0123341	·0100547	·0081259	*0·8*
0·9	·0304097	·0260554	·0221442	·0186661	·0156040	·0129350−	·0106318	·0086640	·0069995+	*0·9*
1·0	·0260554	·0223172	·0189610	·0159776	·0133520	·0110644	·0090911	·0074059	·0059810	*1·0*
1·1	·0221442	·0189610	·0161041	·0135656	·0113325+	·0093877	·0077107	·0062792	·0050693	*1·1*
1·2	·0186661	·0159776	·0135656	·0114234	·0095396	·0078997	·0064863	·0052802	·0042612	*1·2*
1·3	·0156040	·0133520	·0113325+	·0095396	·0079637	·0065924	·0054109	·0044032	·0035522	*1·3*
1·4	·0129350−	·0110644	·0093877	·0078997	·0065924	·0054552	·0044759	·0036410	·0029362	*1·4*
1·5	·0106318	·0090911	·0077107	·0064863	·0054109	·0044759	·0036711	·0029852	·0024065−	*1·5*
1·6	·0086640	·0074059	·0062792	·0052802	·0044032	·0036410	·0029852	·0024265+	·0019554	*1·6*
1·7	·0069995+	·0059810	·0050693	·0042612	·0035522	·0029362	·0024065−	·0019554	·0015751	*1·7*
1·8	·0056057	·0047883	·0040569	·0034090	·0028407	·0023473	·0019230	·0015620	·0012578	*1·8*
1·9	·0044501	·0037999	·0032183	·0027033	·0022518	·0018600	·0015232	·0012368	·0009955+	*1·9*
2·0	·0035016	·0029889	·0025305−	·0021248	·0017693	·0014608	·0011959	·0009706	·0007810	*2·0*
2·1	·0027307	·0023301	·0019720	·0016552	·0013778	·0011371	·0009305+	·0007550−	·0006072	*2·1*
2·2	·0021106	·0018003	·0015230	·0012779	·0010633	·0008773	·0007176	·0005820	·0004679	*2·2*
2·3	·0016166	·0013784	·0011657	·0009777	·0008132	·0006707	·0005484	·0004446	·0003573	*2·3*
2·4	·0012271	·0010459	·0008842	·0007413	·0006163	·0005081	·0004153	·0003366	·0002704	*2·4*
2·5	·0009229	·0007864	·0006645+	·0005569	·0004629	·0003814	·0003117	·0002525−	·0002027	*2·5*
2·6	·0006879	·0005859	·0004949	·0004146	·0003445−	·0002837	·0002317	·0001876	·0001506	*2·6*

k	*d/N* for *r* = − ·05									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·0163918	·0130509	·0102994	·0080561	·0062452	·0047980	·0036529	·0027560	·0020603	*0·0*
0·1	·0149757	·0119198	·0094041	·0073535+	·0056989	·0043769	·0033313	·0025125+	·0018775−	*0·1*
0·2	·0135890	·0108128	·0085281	·0066665+	·0051648	·0039655+	·0030173	·0022749	·0016996	*0·2*
0·3	·0122446	·0097401	·0076796	·0060013	·0046480	·0035676	·0027136	·0020453	·0015276	*0·3*
0·4	·0109544	·0087109	·0068660	·0053638	·0041528	·0031865−	·0024229	·0018256	·0013630	*0·4*
0·5	·0097283	·0077334	·0060935−	·0047587	·0036832	·0028251	·0021474	·0016175−	·0012072	*0·5*
0·6	·0085749	·0068143	·0053674	·0041903	·0032421	·0024860	·0018890	·0014223	·0010612	*0·6*
0·7	·0075006	·0059585+	·0046918	·0036616	·0028320	·0021708	·0016489	·0012411	·0009257	*0·7*
0·8	·0065100	·0051699	·0040693	·0031747	·0024546	·0018808	·0014281	·0010745+	·0008011	*0·8*
0·9	·0056057	·0044501	·0035016	·0027307	·0021106	·0016166	·0012271	·0009229	·0006879	*0·9*
1·0	·0047883	·0037999	·0029889	·0023301	·0018003	·0013784	·0010459	·0007864	·0005859	*1·0*
1·1	·0040569	·0032183	·0025305−	·0019720	·0015230	·0011657	·0008842	·0006645+	·0004949	*1·1*
1·2	·0034090	·0027033	·0021248	·0016552	·0012779	·0009777	·0007413	·0005569	·0004146	*1·2*
1·3	·0028407	·0022518	·0017693	·0013778	·0010633	·0008132	·0006163	·0004629	·0003445−	*1·3*
1·4	·0023473	·0018600	·0014608	·0011371	·0008773	·0006707	·0005081	·0003814	·0002837	*1·4*
1·5	·0019230	·0015232	·0011959	·0009305+	·0007176	·0005484	·0004153	·0003117	·0002317	*1·5*
1·6	·0015620	·0012368	·0009706	·0007550−	·0005820	·0004446	·0003366	·0002525−	·0001876	*1·6*
1·7	·0012578	·0009955+	·0007810	·0006072	·0004679	·0003573	·0002704	·0002027	·0001506	*1·7*
1·8	·0010039	·0007943	·0006229	·0004841	·0003729	·0002846	·0002153	·0001614	·0001198	*1·8*
1·9	·0007943	·0006282	·0004924	·0003826	·0002946	·0002247	·0001699	·0001273	·0000945+	*1·9*
2·0	·0006229	·0004924	·0003858	·0002996	·0002306	·0001759	·0001329	·0000996	·0000739	*2·0*
2·1	·0004841	·0003826	·0002996	·0002326	·0001790	·0001364	·0001031	·0000772	·0000572	*2·1*
2·2	·0003729	·0002946	·0002306	·0001790	·0001376	·0001049	·0000792	·0000593	·0000439	*2·2*
2·3	·0002846	·0002247	·0001759	·0001364	·0001049	·0000799	·0000603	·0000451	·0000334	*2·3*
2·4	·0002153	·0001699	·0001329	·0001031	·0000792	·0000603	·0000455+	·0000340	·0000252	*2·4*
2·5	·0001614	·0001273	·0000996	·0000772	·0000593	·0000451	·0000340	·0000254	·0000188	*2·5*
2·6	·0001198	·0000945+	·0000739	·0000572	·0000439	·0000334	·0000252	·0000188	·0000139	*2·6*

TABLE IX. *Negative Correlation—(continued).*

k	d/N for $r = -\cdot 10$									k
	$h = 0\cdot 0$	$h = 0\cdot 1$	$h = 0\cdot 2$	$h = 0\cdot 3$	$h = 0\cdot 4$	$h = 0\cdot 5$	$h = 0\cdot 6$	$h = 0\cdot 7$	$h = 0\cdot 8$	
0·0	·2340579	·2142237	·1947447	·1758059	·1575766	·1402058	·1238186	·1085141	·0943638	0·0
0·1	·2142237	·1959834	·1780814	·1606873	·1439559	·1280229	·1130022	·0989832	·0860300	0·1
0·2	·1947447	·1780814	·1617382	·1458694	·1306156	·1160997	·1024242	·0896694	·0778926	0·2
0·3	·1758059	·1606873	·1458694	·1314918	·1176809	·1045474	·0921830	·0806592	·0700264	0·3
0·4	·1575766	·1439559	·1306156	·1176809	·1052651	·0934667	·0823672	·0720298	·0624986	0·4
0·5	·1402058	·1280229	·1160997	·1045474	·0934667	·0829447	·0730533	·0638480	·0553668	0·5
0·6	·1238186	·1130022	·1024242	·0921830	·0823672	·0730533	·0643044	·0561683	·0486780	0·6
0·7	·1085141	·0989832	·0896694	·0806592	·0720298	·0638480	·0561683	·0490321	·0424673	0·7
0·8	·0943638	·0860300	·0778926	·0700264	·0624986	·0553668	·0486780	·0424673	·0367586	0·8
0·9	·0814115+	·0741815+	·0671275−	·0603139	·0537987	·0476312	·0418512	·0364888	·0315637	0·9
1·0	·0696744	·0634520	·0573857	·0515310	·0459372	·0406461	·0356916	·0310987	·0268838	1·0
1·1	·0591451	·0538329	·0486583	·0436682	·0389044	·0344021	·0301896	·0262878	·0227100	1·1
1·2	·0497937	·0452957	·0409178	·0366996	·0326759	·0288763	·0253243	·0220369	·0190251	1·2
1·3	·0415716	·0377945+	·0341215+	·0305853	·0272151	·0240352	·0210650−	·0183184	·0158042	1·3
1·4	·0344147	·0312697	·0282138	·0252744	·0224752	·0198364	·0173736	·0150983	·0130171	1·4
1·5	·0282474	·0256509	·0231301	·0207074	·0184023	·0162311	·0142065+	·0123376	·0106297	1·5
1·6	·0229861	·0208607	·0187992	·0168195−	·0149376	·0131665+	·0115165−	·0099946	·0086051	1·6
1·7	·0185426	·0168179	·0151465−	·0135429	·0120197	·0105876	·0092545−	·0080260	·0069053	1·7
1·8	·0148273	·0134400	·0120967	·0108090	·0095871	·0084391	·0073715−	·0063885+	·0054926	1·8
1·9	·0117520	·0106459	·0095758	·0085509	·0075792	·0066672	·0058197	·0050401	·0043302	1·9
2·0	·0092319	·0083578	·0075129	·0067044	·0059386	·0052204	·0045537	·0039409	·0033834	2·0
2·1	·0071875+	·0065029	·0058417	·0052097	·0046115−	·0040510−	·0035311	·0030538	·0026198	2·1
2·2	·0055456	·0050142	·0045014	·0040117	·0035487	·0031152	·0027135+	·0023450−	·0020103	2·2
2·3	·0042401	·0038313	·0034373	·0030613	·0027061	·0023739	·0020663	·0017844	·0015286	2·3
2·4	·0032124	·0029009	·0026009	·0023148	·0020448	·0017925+	·0015591	·0013455−	·0011517	2·4
2·5	·0024117	·0021764	·0019500−	·0017343	·0015310	·0013411	·0011657	·0010052	·0008598	2·5
2·6	·0017939	·0016178	·0014486	·0012875−	·0011357	·0009942	·0008635+	·0007441	·0006360	2·6

k	d/N for $r = -\cdot 10$									k
	$h = 0\cdot 9$	$h = 1\cdot 0$	$h = 1\cdot 1$	$h = 1\cdot 2$	$h = 1\cdot 3$	$h = 1\cdot 4$	$h = 1\cdot 5$	$h = 1\cdot 6$	$h = 1\cdot 7$	
0·0	·0814115+	·0696744	·0591451	·0497937	·0415716	·0344147	·0282474	·0229861	·0185426	0·0
0·1	·0741815+	·0634520	·0538329	·0452957	·0377945+	·0312697	·0256509	·0208607	·0168179	0·1
0·2	·0671275−	·0573857	·0486583	·0409178	·0341215+	·0282138	·0231301	·0187992	·0151465−	0·2
0·3	·0603139	·0515310	·0436682	·0366996	·0305853	·0252744	·0207074	·0168195−	·0135429	0·3
0·4	·0537987	·0459372	·0389044	·0326759	·0272151	·0224752	·0184023	·0149376	·0120197	0·4
0·5	·0476312	·0406461	·0344021	·0288763	·0240352	·0198364	·0162311	·0131665+	·0105876	0·5
0·6	·0418512	·0356916	·0301896	·0253243	·0210650−	·0173736	·0142065+	·0115165−	·0092545−	0·6
0·7	·0364888	·0310987	·0262878	·0220369	·0183184	·0150983	·0123376	·0099946	·0080260	0·7
0·8	·0315637	·0268838	·0227100	·0190251	·0158042	·0130171	·0106297	·0086051	·0069053	0·8
0·9	·0270855−	·0230544	·0194622	·0162932	·0135256	·0111327	·0090846	·0073490	·0058932	0·9
1·0	·0230544	·0196102	·0165435+	·0138403	·0114814	·0094435+	·0077007	·0062251	·0049883	1·0
1·1	·0194622	·0165435+	·0139468	·0116598	·0096658	·0079445+	·0064737	·0052294	·0041874	1·1
1·2	·0162932	·0138403	·0116598	·0097410	·0080693	·0066276	·0053967	·0043562	·0034856	1·2
1·3	·0135256	·0114814	·0096658	·0080693	·0066797	·0054823	·0044608	·0035981	·0028768	1·3
1·4	·0111327	·0094435+	·0079445+	·0066276	·0054823	·0044962	·0036557	·0029465+	·0023541	1·4
1·5	·0090846	·0077007	·0064737	·0053967	·0044608	·0036557	·0029701	·0023921	·0019097	1·5
1·6	·0073490	·0062251	·0052294	·0043562	·0035981	·0029465+	·0023921	·0019251	·0015357	1·6
1·7	·0058932	·0049883	·0041874	·0034856	·0028768	·0023541	·0019097	·0015357	·0012241	1·7
1·8	·0046842	·0039620	·0033234	·0027644	·0022799	·0018642	·0015111	·0012142	·0009671	1·8
1·9	·0036902	·0031190	·0026143	·0021729	·0017907	·0014631	·0011850+	·0009515−	·0007572	1·9
2·0	·0028812	·0024334	·0020382	·0016927	·0013939	·0011380	·0009210	·0007389	·0005876	2·0
2·1	·0022294	·0018815−	·0015747	·0013068	·0010753	·0008772	·0007094	·0005687	·0004519	2·1
2·2	·0017094	·0014416	·0012056	·0009998	·0008220	·0006700	·0005414	·0004337	·0003443	2·2
2·3	·0012988	·0010945+	·0009147	·0007579	·0006227	·0005071	·0004095−	·0003277	·0002600	2·3
2·4	·0009779	·0008234	·0006876	·0005693	·0004673	·0003803	·0003069	·0002454	·0001945+	2·4
2·5	·0007295+	·0006138	·0005121	·0004237	·0003475+	·0002826	·0002278	·0001820	·0001442	2·5
2·6	·0005392	·0004533	·0003779	·0003124	·0002561	·0002081	·0001676	·0001338	·0001059	2·6

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for $r = -\cdot 10$									k
	$h = 1\cdot 8$	$h = 1\cdot 9$	$h = 2\cdot 0$	$h = 2\cdot 1$	$h = 2\cdot 2$	$h = 2\cdot 3$	$h = 2\cdot 4$	$h = 2\cdot 5$	$h = 2\cdot 6$	
0·0	·0148273	·0117520	·0092319	·0071875+	·0055456	·0042401	·0032124	·0024117	·0017939	0·0
0·1	·0134400	·0106459	·0083578	·0065029	·0050142	·0038313	·0029009	·0021764	·0016178	0·1
0·2	·0120967	·0095758	·0075129	·0058417	·0045014	·0034373	·0026009	·0019500−	·0014486	0·2
0·3	·0108090	·0085509	·0067044	·0052097	·0040117	·0030613	·0023148	·0017343	·0012875−	0·3
0·4	·0095871	·0075792	·0059386	·0046115−	·0035487	·0027061	·0020448	·0015310	·0011357	0·4
0·5	·0084391	·0066672	·0052204	·0040510	·0031152	·0023739	·0017925+	·0013411	·0009942	0·5
0·6	·0073715−	·0058197	·0045537	·0035311	·0027135+	·0020663	·0015591	·0011657	·0008635+	0·6
0·7	·0063885+	·0050401	·0039409	·0030538	·0023450−	·0017844	·0013455−	·0010052	·0007441	0·7
0·8	·0054926	·0043302	·0033834	·0026198	·0020103	·0015286	·0011517	·0008598	·0006360	0·8
0·9	·0046842	·0036902	·0028812	·0022294	·0017094	·0012988	·0009779	·0007295+	·0005392	0·9
1·0	·0039620	·0031190	·0024334	·0018815−	·0014416	·0010945+	·0008234	·0006138	·0004533	1·0
1·1	·0033234	·0026143	·0020382	·0015747	·0012056	·0009147	·0006876	·0005121	·0003779	1·1
1·2	·0027644	·0021729	·0016927	·0013068	·0009998	·0007579	·0005693	·0004237	·0003124	1·2
1·3	·0022799	·0017907	·0013939	·0010753	·0008220	·0006227	·0004673	·0003475+	·0002561	1·3
1·4	·0018642	·0014631	·0011380	·0008772	·0006700	·0005071	·0003803	·0002826	·0002081	1·4
1·5	·0015111	·0011850+	·0009210	·0007094	·0005414	·0004095−	·0003069	·0002278	·0001676	1·5
1·6	·0012142	·0009515−	·0007389	·0005687	·0004337	·0003277	·0002454	·0001820	·0001338	1·6
1·7	·0009671	·0007572	·0005876	·0004519	·0003443	·0002600	·0001945+	·0001442	·0001059	1·7
1·8	·0007634	·0005973	·0004631	·0003558	·0002709	·0002044	·0001528	·0001132	·0000831	1·8
1·9	·0005973	·0004669	·0003618	·0002777	·0002113	·0001593	·0001190	·0000880	·0000646	1·9
2·0	·0004631	·0003618	·0002800	·0002148	·0001633	·0001230	·0000918	·0000679	·0000497	2·0
2·1	·0003558	·0002777	·0002148	·0001647	·0001251	·0000941	·0000702	·0000519	·0000379	2·1
2·2	·0002709	·0002113	·0001633	·0001251	·0000949	·0000714	·0000532	·0000393	·0000287	2·2
2·3	·0002044	·0001593	·0001230	·0000941	·0000714	·0000536	·0000399	·0000294	·0000215+	2·3
2·4	·0001528	·0001190	·0000918	·0000702	·0000532	·0000399	·0000297	·0000219	·0000160	2·4
2·5	·0001132	·0000880	·0000679	·0000519	·0000393	·0000294	·0000219	·0000161	·0000118	2·5
2·6	·0000831	·0000646	·0000497	·0000379	·0000287	·0000215+	·0000160	·0000118	·0000086	2·6

k	d/N for $r = -\cdot 15$									k
	$h = 0\cdot 0$	$h = 0\cdot 1$	$h = 0\cdot 2$	$h = 0\cdot 3$	$h = 0\cdot 4$	$h = 0\cdot 5$	$h = 0\cdot 6$	$h = 0\cdot 7$	$h = 0\cdot 8$	
0·0	·2260363	·2062428	·1868846	·1681429	·1501813	·1331410	·1171378	·1022603	·0885689	0·0
0·1	·2062428	·1880530	·1702809	·1530921	·1366354	·1210385−	·1064057	·0928162	·0803228	0·1
0·2	·1868846	·1702809	·1540752	·1384176	·1234424	·1092644	·0959769	·0836495+	·0723285+	0·2
0·3	·1681429	·1530921	·1384176	·1242545+	·1107231	·0979258	·0859451	·0748422	·0646567	0·3
0·4	·1501813	·1366354	·1234424	·1107231	·0985844	·0871169	·0763930	·0664657	·0573689	0·4
0·5	·1331410	·1210385−	·1092644	·0979258	·0871169	·0769171	·0673895−	·0585797	·0505160	0·5
0·6	·1171378	·1064057	·0959769	·0859451	·0763930	·0673895−	·0589890	·0512304	·0441371	0·6
0·7	·1022603	·0928162	·0836495+	·0748422	·0664657	·0585797	·0512304	·0444507	·0382597	0·7
0·8	·0885689	·0803228	·0723285+	·0646567	·0573689	·0505160	·0441371	·0382597	·0328990	0·8
0·9	·0760961	·0689532	·0620368	·0554073	·0491173	·0432098	·0377177	·0326634	·0280592	0·9
1·0	·0648481	·0587107	·0527752	·0470928	·0417081	·0366570	·0319669	·0276560	·0237339	1·0
1·1	·0548072	·0495769	·0445248	·0396943	·0351225+	·0308393	·0268672	·0232209	·0199075+	1·1
1·2	·0459342	·0415138	·0372495+	·0331774	·0293282	·0257265+	·0223907	·0193323	·0165567	1·2
1·3	·0381724	·0344680	·0308989	·0274950+	·0242816	·0212786	·0185009	·0159575−	·0136522	1·3
1·4	·0314513	·0283732	·0254115−	·0225904	·0199306	·0174483	·0151551	·0130581	·0111599	1·4
1·5	·0256900	·0231544	·0207178	·0183999	·0162174	·0141832	·0123065−	·0105925−	·0090431	1·5
1·6	·0208013	·0187307	·0167436	·0148557	·0130805+	·0114281	·0099056	·0085169	·0072633	1·6
1·7	·0166950+	·0150190	·0134126	·0118885+	·0104573	·0091268	·0079025+	·0067874	·0057821	1·7
1·8	·0132807	·0119360	·0106489	·0094294	·0082857	·0072240	·0062483	·0053608	·0045618	1·8
1·9	·0104705−	·0094012	·0083791	·0074121	·0065063	·0056666	·0048960	·0041961	·0035667	1·9
2·0	·0081807	·0073381	·0065338	·0057738	·0050630	·0044049	·0038018	·0032546	·0027634	2·0
2·1	·0063340	·0056760	·0050488	·0044569	·0039041	·0033930	·0029252	·0025015−	·0021215−	2·1
2·2	·0048595+	·0043504	·0038657	·0034090	·0029830	·0025897	·0022302	·0019050−	·0016138	2·2
2·3	·0036942	·0033039	·0029328	·0025836	·0022583	·0019584	·0016847	·0014374	·0012163	2·3
2·4	·0027826	·0024860	·0022045−	·0019399	·0016939	·0014673	·0012608	·0010746	·0009082	2·4
2·5	·0020765+	·0018533	·0016417	·0014432	·0012588	·0010892	·0009349	·0007959	·0006719	2·5
2·6	·0015352	·0013690	·0012113	·0010637	·0009267	·0008010	·0006867	·0005839	·0004924	2·6

TABLE IX. *Negative Correlation*—(*continued*).

k	*d/N* for *r* = − ·15									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·0760961	·0648481	·0548072	·0459342	·0381724	·0314513	·0256900	·0208013	·0166950+	*0·0*
0·1	·0689532	·0587107	·0495769	·0415138	·0344680	·0283732	·0231544	·0187307	·0150190	*0·1*
0·2	·0620368	·0527752	·0445248	·0372495+	·0308989	·0254115−	·0207178	·0167436	·0134126	*0·2*
0·3	·0554073	·0470928	·0396943	·0331774	·0274950+	·0225904	·0183999	·0148557	·0118885+	*0·3*
0·4	·0491173	·0417081	·0351225+	·0293282	·0242816	·0199306	·0162174	·0130805+	·0104573	*0·4*
0·5	·0432098	·0366570	·0308393	·0257265+	·0212786	·0174483	·0141832	·0114281	·0091268	*0·5*
0·6	·0377177	·0319669	·0268672	·0223907	·0185009	·0151551	·0123065−	·0099056	·0079025+	*0·6*
0·7	·0326634	·0276560	·0232209	·0193323	·0159575−	·0130581	·0105925−	·0085169	·0067874	*0·7*
0·8	·0280592	·0237339	·0199075+	·0165567	·0136522	·0111599	·0090431	·0072633	·0057821	*0·8*
0·9	·0239075−	·0202016	·0169272	·0140633	·0115839	·0094591	·0076566	·0061430	·0048848	*0·9*
1·0	·0202016	·0170525+	·0142736	·0118461	·0097472	·0079506	·0064285+	·0051520	·0040922	*1·0*
1·1	·0169272	·0142736	·0119349	·0098945+	·0081325−	·0066263	·0053517	·0042842	·0033991	*1·1*
1·2	·0140633	·0118461	·0098945+	·0081940	·0067274	·0054754	·0044172	·0035321	·0027992	*1·2*
1·3	·0115839	·0097472	·0081325−	·0067274	·0055172	·0044853	·0036144	·0028868	·0022851	*1·3*
1·4	·0094591	·0079506	·0066263	·0054754	·0044853	·0036422	·0029317	·0023388	·0018492	*1·4*
1·5	·0076566	·0064285+	·0053517	·0044172	·0036144	·0029317	·0023570	·0018781	·0014832	*1·5*
1·6	·0061430	·0051520	·0042842	·0035321	·0028868	·0023388	·0018781	·0014948	·0011791	*1·6*
1·7	·0048848	·0040922	·0033991	·0027992	·0022851	·0018492	·0014832	·0011791	·0009289	*1·7*
1·8	·0038496	·0032213	·0026727	·0021984	·0017926	·0014489	·0011608	·0009217	·0007252	*1·8*
1·9	·0030065−	·0025129	·0020825+	·0017110	·0013935+	·0011250+	·0009002	·0007139	·0005611	*1·9*
2·0	·0023267	·0019425+	·0016080	·0013195+	·0010734	·0008656	·0006918	·0005479	·0004301	*2·0*
2·1	·0017842	·0014879	·0012302	·0010083	·0008193	·0006599	·0005267	·0004167	·0003267	*2·1*
2·2	·0013557	·0011292	·0009325+	·0007635−	·0006196	·0004984	·0003973	·0003140	·0002458	*2·2*
2·3	·0010206	·0008491	·0007004	·0005727	·0004642	·0003730	·0002970	·0002344	·0001833	*2·3*
2·4	·0007612	·0006326	·0005211	·0004256	·0003446	·0002765+	·0002199	·0001733	·0001354	*2·4*
2·5	·0005625−	·0004668	·0003842	·0003134	·0002534	·0002031	·0001613	·0001270	·0000991	*2·5*
2·6	·0004117	·0003413	·0002805+	·0002286	·0001846	·0001478	·0001172	·0000922	·0000718	*2·6*

k	*d/N* for *r* = − ·15									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·0132807	·0104705−	·0081807	·0063340	·0048595+	·0036942	·0027826	·0020765+	·0015352	*0·0*
0·1	·0119360	·0094012	·0073381	·0056760	·0043504	·0033039	·0024860	·0018533	·0013690	*0·1*
0·2	·0106489	·0083791	·0065338	·0050488	·0038657	·0029328	·0022045−	·0016417	·0012113	*0·2*
0·3	·0094294	·0074121	·0057738	·0044569	·0034090	·0025836	·0019399	·0014432	·0010637	*0·3*
0·4	·0082857	·0065063	·0050630	·0039041	·0029830	·0022583	·0016939	·0012588	·0009267	*0·4*
0·5	·0072240	·0056666	·0044049	·0033930	·0025897	·0019584	·0014673	·0010892	·0008010	*0·5*
0·6	·0062483	·0048960	·0038018	·0029252	·0022302	·0016847	·0012608	·0009349	·0006867	*0·6*
0·7	·0053608	·0041961	·0032546	·0025015−	·0019050−	·0014374	·0010746	·0007959	·0005839	*0·7*
0·8	·0045618	·0035667	·0027634	·0021215−	·0016138	·0012163	·0009082	·0006719	·0004924	*0·8*
0·9	·0038496	·0030065−	·0023267	·0017842	·0013557	·0010206	·0007612	·0005625−	·0004117	*0·9*
1·0	·0032213	·0025129	·0019425+	·0014879	·0011292	·0008491	·0006326	·0004668	·0003413	*1·0*
1·1	·0026727	·0020825+	·0016080	·0012302	·0009325+	·0007004	·0005211	·0003842	·0002805+	*1·1*
1·2	·0021984	·0017110	·0013195+	·0010083	·0007635−	·0005727	·0004256	·0003134	·0002286	*1·2*
1·3	·0017926	·0013935+	·0010734	·0008193	·0006196	·0004642	·0003446	·0002534	·0001846	*1·3*
1·4	·0014489	·0011250+	·0008656	·0006599	·0004984	·0003730	·0002765+	·0002031	·0001478	*1·4*
1·5	·0011608	·0009002	·0006918	·0005267	·0003973	·0002970	·0002199	·0001613	·0001172	*1·5*
1·6	·0009217	·0007139	·0005479	·0004167	·0003140	·0002344	·0001733	·0001270	·0000922	*1·6*
1·7	·0007252	·0005611	·0004301	·0003267	·0002458	·0001833	·0001354	·0000991	·0000718	*1·7*
1·8	·0005655+	·0004370	·0003346	·0002538	·0001908	·0001420	·0001048	·0000766	·0000554	*1·8*
1·9	·0004370	·0003372	·0002579	·0001954	·0001467	·0001091	·0000804	·0000586	·0000424	*1·9*
2·0	·0003346	·0002579	·0001969	·0001490	·0001117	·0000830	·0000611	·0000445+	·0000321	*2·0*
2·1	·0002538	·0001954	·0001490	·0001126	·0000843	·0000626	·0000460	·0000335−	·0000241	*2·1*
2·2	·0001908	·0001467	·0001117	·0000843	·0000631	·0000467	·0000343	·0000249	·0000179	*2·2*
2·3	·0001420	·0001091	·0000830	·0000626	·0000467	·0000346	·0000253	·0000184	·0000132	*2·3*
2·4	·0001048	·0000804	·0000611	·0000460	·0000343	·0000253	·0000185+	·0000134	·0000097	*2·4*
2·5	·0000766	·0000586	·0000445+	·0000335−	·0000249	·0000184	·0000134	·0000097	·0000070	*2·5*
2·6	·0000554	·0000424	·0000321	·0000241	·0000179	·0000132	·0000097	·0000070	·0000050+	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for $r = -\cdot20$									k
	$h = 0{\cdot}0$	$h = 0{\cdot}1$	$h = 0{\cdot}2$	$h = 0{\cdot}3$	$h = 0{\cdot}4$	$h = 0{\cdot}5$	$h = 0{\cdot}6$	$h = 0{\cdot}7$	$h = 0{\cdot}8$	
0·0	·2179529	·1982010	·1789662	·1604263	·1427384	·1260358	·1104246	·0959826	·0827586	*0·0*
0·1	·1982010	·1800670	·1624318	·1454567	·1292840	·1140334	·0997991	·0866492	·0746254	*0·1*
0·2	·1789662	·1624318	·1463745-	·1309401	·1162561	·1024289	·0895418	·0776536	·0667991	*0·2*
0·3	·1604263	·1454567	·1309401	·1170068	·1037703	·0913243	·0797415-	·0690724	·0593454	*0·3*
0·4	·1427384	·1292840	·1162561	·1037703	·0919265-	·0808068	·0704739	·0609705-	·0523195-	*0·4*
0·5	·1260358	·1140334	·1024289	·0913243	·0808068	·0709475-	·0617999	·0533996	·0457647	*0·5*
0·6	·1104246	·0997991	·0895418	·0797415-	·0704739	·0617999	·0537647	·0463976	·0397124	*0·6*
0·7	·0959826	·0866492	·0776536	·0690724	·0609705-	·0533996	·0463976	·0399881	·0341813	*0·7*
0·8	·0827586	·0746254	·0667991	·0593454	·0523195-	·0457647	·0397124	·0341813	·0291784	*0·8*
0·9	·0707737	·0637436	·0569899	·0505683	·0445252	·0388967	·0337082	·0289744	·0246999	*0·9*
1·0	·0600228	·0539961	·0482160	·0427293	·0375747	·0327817	·0283709	·0243534	·0207319	*1·0*
1·1	·0504773	·0453540	·0404485+	·0358000	·0314402	·0273932	·0236752	·0202946	·0172523	*1·1*
1·2	·0420888	·0377702	·0336424	·0297375-	·0260814	·0226934	·0195863	·0167660	·0142324	*1·2*
1·3	·0347923	·0311833	·0277397	·0244877	·0214482	·0186365-	·0160624	·0137300	·0116383	*1·3*
1·4	·0285107	·0255208	·0226730	·0199882	·0174834	·0151704	·0130565+	·0111446	·0094330	*1·4*
1·5	·0231580	·0207028	·0183683	·0161714	·0141254	·0122394	·0105189	·0089655+	·0075774	*1·5*
1·6	·0186436	·0166452	·0147485+	·0129669	·0113105-	·0097864	·0083986	·0071478	·0060321	*1·6*
1·7	·0148751	·0132631	·0117359	·0103039	·0089750+	·0077545+	·0066451	·0056471	·0047585-	*1·7*
1·8	·0117614	·0104729	·0092543	·0081138	·0070573	·0060887	·0052099	·0044208	·0037195-	*1·8*
1·9	·0092152	·0081945-	·0072310	·0063309	·0054986	·0047370	·0040473	·0034291	·0028807	*1·9*
2·0	·0071542	·0063531	·0055983	·0048944	·0042448	·0036515+	·0031151	·0026353	·0022104	*2·0*
2·1	·0055032	·0048802	·0042943	·0037490	·0032467	·0027887	·0023755-	·0020065+	·0016803	*2·1*
2·2	·0041940	·0037141	·0032635+	·0028450-	·0024601	·0021099	·0017945+	·0015134	·0012655-	*2·2*
2·3	·0031666	·0028003	·0024571	·0021388	·0018467	·0015814	·0013430	·0011308	·0009441	*2·3*
2·4	·0023685+	·0020916	·0018326	·0015928	·0013732	·0011742	·0009956	·0008370	·0006977	*2·4*
2·5	·0017550-	·0015475+	·0013539	·0011751	·0010115+	·0008636	·0007311	·0006137	·0005107	*2·5*
2·6	·0012881	·0011342	·0009908	·0008587	·0007380	·0006291	·0005318	·0004456	·0003703	*2·6*

k	d/N for $r = -\cdot20$									k
	$h = 0{\cdot}9$	$h = 1{\cdot}0$	$h = 1{\cdot}1$	$h = 1{\cdot}2$	$h = 1{\cdot}3$	$h = 1{\cdot}4$	$h = 1{\cdot}5$	$h = 1{\cdot}6$	$h = 1{\cdot}7$	
0·0	·0707737	·0600228	·0504773	·0420888	·0347923	·0285107	·0231580	·0186436	·0148751	*0·0*
0·1	·0637436	·0539961	·0453540	·0377702	·0311833	·0255208	·0207028	·0166452	·0132631	*0·1*
0·2	·0569899	·0482160	·0404485+	·0336424	·0277397	·0226730	·0183683	·0147485+	·0117359	*0·2*
0·3	·0505683	·0427293	·0358000	·0297375-	·0244877	·0199882	·0161714	·0129669	·0103039	*0·3*
0·4	·0445252	·0375747	·0314402	·0260814	·0214482	·0174834	·0141254	·0113105-	·0089750+	*0·4*
0·5	·0388967	·0327817	·0273932	·0226934	·0186365-	·0151704	·0122394	·0097864	·0077545+	*0·5*
0·6	·0337082	·0283709	·0236752	·0195863	·0160624	·0130565+	·0105189	·0083986	·0066451	*0·6*
0·7	·0289744	·0243534	·0202946	·0167660	·0137300	·0111446	·0089655+	·0071478	·0056471	*0·7*
0·8	·0246999	·0207319	·0172523	·0142324	·0116383	·0094330	·0075774	·0060321	·0047585-	*0·8*
0·9	·0208798	·0175008	·0145427	·0119797	·0097819	·0079166	·0063498	·0050472	·0039754	*0·9*
1·0	·0175008	·0146477	·0121542	·0099975+	·0081512	·0065870	·0052753	·0041867	·0032926	*1·0*
1·1	·0145427	·0121542	·0100704	·0082712	·0067336	·0054331	·0043445+	·0034427	·0027032	*1·1*
1·2	·0119797	·0099975+	·0082712	·0067832	·0055138	·0044421	·0035465+	·0028059	·0021997	*1·2*
1·3	·0097819	·0081512	·0067336	·0055138	·0044751	·0035996	·0028694	·0022666	·0017741	*1·3*
1·4	·0079166	·0065870	·0054331	·0044421	·0035996	·0028909	·0023008	·0018146	·0014180	*1·4*
1·5	·0063498	·0052753	·0043445+	·0035465+	·0028694	·0023008	·0018283	·0014395+	·0011231	*1·5*
1·6	·0050472	·0041867	·0034427	·0028059	·0022666	·0018146	·0014395+	·0011316	·0008814	*1·6*
1·7	·0039754	·0032926	·0027032	·0021997	·0017741	·0014180	·0011231	·0008814	·0006854	*1·7*
1·8	·0031026	·0025657	·0021031	·0017087	·0013759	·0010979	·0008681	·0006802	·0005281	*1·8*
1·9	·0023992	·0019809	·0016212	·0013150+	·0010571	·0008422	·0006648	·0005201	·0004030	*1·9*
2·0	·0018381	·0015152	·0012381	·0010026	·0008047	·0006400	·0005044	·0003939	·0003048	*2·0*
2·1	·0013951	·0011482	·0009367	·0007573	·0006068	·0004818	·0003791	·0002955+	·0002283	*2·1*
2·2	·0010490	·0008619	·0007020	·0005667	·0004533	·0003593	·0002822	·0002197	·0001694	*2·2*
2·3	·0007813	·0006410	·0005212	·0004200	·0003354	·0002654	·0002081	·0001617	·0001245-	*2·3*
2·4	·0005765-	·0004721	·0003833	·0003083	·0002458	·0001942	·0001520	·0001179	·0000906	*2·4*
2·5	·0004213	·0003445-	·0002792	·0002242	·0001785-	·0001408	·0001100	·0000852	·0000653	*2·5*
2·6	·0003049	·0002489	·0002014	·0001615-	·0001283	·0001010	·0000788	·0000609	·0000467	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for $r = -\cdot20$									*k*
	$h = 1\cdot8$	$h = 1\cdot9$	$h = 2\cdot0$	$h = 2\cdot1$	$h = 2\cdot2$	$h = 2\cdot3$	$h = 2\cdot4$	$h = 2\cdot5$	$h = 2\cdot6$	
0·0	·0117614	·0092152	·0071542	·0055032	·0041940	·0031666	·0023685+	·0017550−	·0012881	*0·0*
0·1	·0104729	·0081945−	·0063531	·0048802	·0037141	·0028003	·0020916	·0015475+	·0011342	*0·1*
0·2	·0092543	·0072310	·0055983	·0042943	·0032635+	·0024571	·0018326	·0013539	·0009908	*0·2*
0·3	·0081138	·0063309	·0048944	·0037490	·0028450−	·0021388	·0015928	·0011751	·0008587	*0·3*
0·4	·0070573	·0054986	·0042448	·0032467	·0024601	·0018467	·0013732	·0010115+	·0007380	*0·4*
0·5	·0060887	·0047370	·0036515+	·0027887	·0021099	·0015814	·0011742	·0008636	·0006291	*0·5*
0·6	·0052099	·0040473	·0031151	·0023755−	·0017945+	·0013430	·0009956	·0007311	·0005318	*0·6*
0·7	·0044208	·0034291	·0026353	·0020065+	·0015134	·0011308	·0008370	·0006137	·0004456	*0·7*
0·8	·0037195−	·0028807	·0022104	·0016803	·0012655−	·0009441	·0006977	·0005107	·0003703	*0·8*
0·9	·0031026	·0023992	·0018381	·0013951	·0010490	·0007813	·0005765−	·0004213	·0003049	*0·9*
1·0	·0025657	·0019809	·0015152	·0011482	·0008619	·0006410	·0004721	·0003445−	·0002489	*1·0*
1·1	·0021031	·0016212	·0012381	·0009367	·0007020	·0005212	·0003833	·0002792	·0002014	*1·1*
1·2	·0017087	·0013150+	·0010026	·0007573	·0005667	·0004200	·0003083	·0002242	·0001615−	*1·2*
1·3	·0013759	·0010571	·0008047	·0006068	·0004533	·0003354	·0002458	·0001785−	·0001283	*1·3*
1·4	·0010979	·0008422	·0006400	·0004818	·0003593	·0002654	·0001942	·0001408	·0001010	*1·4*
1·5	·0008681	·0006648	·0005044	·0003791	·0002822	·0002081	·0001520	·0001100	·0000788	*1·5*
1·6	·0006802	·0005201	·0003939	·0002955+	·0002197	·0001617	·0001179	·0000852	·0000609	*1·6*
1·7	·0005281	·0004030	·0003048	·0002283	·0001694	·0001245−	·0000906	·0000653	·0000467	*1·7*
1·8	·0004061	·0003095−	·0002336	·0001747	·0001294	·0000949	·0000690	·0000496	·0000354	*1·8*
1·9	·0003095−	·0002354	·0001774	·0001324	·0000979	·0000717	·0000520	·0000374	·0000266	*1·9*
2·0	·0002336	·0001774	·0001335−	·0000994	·0000734	·0000537	·0000389	·0000279	·0000198	*2·0*
2·1	·0001747	·0001324	·0000994	·0000740	·0000545+	·0000398	·0000288	·0000206	·0000146	*2·1*
2·2	·0001294	·0000979	·0000734	·0000545+	·0000401	·0000292	·0000211	·0000151	·0000107	*2·2*
2·3	·0000949	·0000717	·0000537	·0000398	·0000292	·0000212	·0000153	·0000109	·0000077	*2·3*
2·4	·0000690	·0000520	·0000389	·0000288	·0000211	·0000153	·0000110	·0000078	·0000055+	*2·4*
2·5	·0000496	·0000374	·0000279	·0000206	·0000151	·0000109	·0000078	·0000056	·0000039	*2·5*
2·6	·0000354	·0000266	·0000198	·0000146	·0000107	·0000077	·0000055+	·0000039	·0000028	*2·6*

k	d/N for $r = -\cdot25$									*k*
	$h = 0\cdot0$	$h = 0\cdot1$	$h = 0\cdot2$	$h = 0\cdot3$	$h = 0\cdot4$	$h = 0\cdot5$	$h = 0\cdot6$	$h = 0\cdot7$	$h = 0\cdot8$	
0·0	·2097847	·1900757	·1709684	·1526363	·1352305−	·1188755+	·1036675−	·0896727	·0769282	*0·0*
0·1	·1900757	·1720036	·1545135+	·1377626	·1218861	·1069947	·0931724	·0804759	·0689346	*0·1*
0·2	·1709684	·1545135+	·1386173	·1234203	·1090429	·0955823	·0831112	·0716771	·0613028	*0·2*
0·3	·1526363	·1377626	·1234203	·1097345−	·0968110	·0847343	·0735666	·0633471	·0540926	*0·3*
0·4	·1352305−	·1218861	·1090429	·0968110	·0852824	·0745302	·0646066	·0555433	·0473520	*0·4*
0·5	·1188755+	·1069947	·0955823	·0847343	·0745302	·0650321	·0562833	·0483089	·0411162	*0·5*
0·6	·1036675−	·0931724	·0831112	·0735666	·0646066	·0562833	·0486322	·0416726	·0354080	*0·6*
0·7	·0896727	·0804759	·0716771	·0633471	·0555433	·0483089	·0416726	·0356484	·0302373	*0·7*
0·8	·0769282	·0689346	·0613028	·0540926	·0473520	·0411162	·0354080	·0302373	·0256025+	*0·8*
0·9	·0654427	·0585527	·0519882	·0457995−	·0400260	·0346964	·0298281	·0254276	·0214917	*0·9*
1·0	·0551995+	·0493107	·0437121	·0384453	·0335425−	·0290263	·0249099	·0211972	·0178837	*1·0*
1·1	·0461592	·0411692	·0364354	·0319918	·0278643	·0240706	·0206204	·0175153	·0147502	*1·1*
1·2	·0382634	·0340717	·0301040	·0263877	·0229434	·0197847	·0169182	·0143444	·0120574	*1·2*
1·3	·0314390	·0279489	·0246526	·0215721	·0187233	·0161167	·0137565+	·0116420	·0097675−	*1·3*
1·4	·0256019	·0227218	·0200078	·0174771	·0151421	·0130103	·0110846	·0093632	·0078406	*1·4*
1·5	·0206614	·0183060	·0160915−	·0140313	·0121347	·0104072	·0088502	·0074616	·0062362	*1·5*
1·6	·0165231	·0146144	·0128239	·0111620	·0096357	·0082486	·0070012	·0058914	·0049143	*1·6*
1·7	·0130929	·0115604	·0101260	·0087978	·0075807	·0064772	·0054873	·0046085+	·0038365+	*1·7*
1·8	·0102794	·0090602	·0079218	·0068701	·0059086	·0050390	·0042606	·0035713	·0029672	*1·8*
1·9	·0079956	·0070347	·0061396	·0053147	·0045623	·0038833	·0032771	·0027414	·0022732	*1·9*
2·0	·0061611	·0054110	·0047138	·0040729	·0034896	·0029645+	·0024968	·0020845+	·0017250+	*2·0*
2·1	·0047029	·0041228	·0035850+	·0030916	·0026438	·0022416	·0018842	·0015700	·0012965+	*2·1*
2·2	·0035560	·0031116	·0027006	·0023245+	·0019840	·0016789	·0014084	·0011711	·0009652	*2·2*
2·3	·0026632	·0023261	·0020151	·0017311	·0014746	·0012453	·0010426	·0008652	·0007116	*2·3*
2·4	·0019755+	·0017222	·0014891	·0012768	·0010855−	·0009149	·0007644	·0006330	·0005195+	*2·4*
2·5	·0014514	·0012629	·0010898	·0009326	·0007913	·0006656	·0005550−	·0004586	·0003756	*2·5*
2·6	·0010560	·0009171	·0007899	·0006746	·0005713	·0004795+	·0003990	·0003291	·0002690	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	*d/N* for *r* = − ·25									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·0654427	·0551995+	·0461592	·0382634	·0314390	·0256019	·0206614	·0165231	·0130929	*0·0*
0·1	·0585527	·0493107	·0411692	·0340717	·0279489	·0227218	·0183060	·0146144	·0115604	*0·1*
0·2	·0519882	·0437121	·0364354	·0301040	·0246526	·0200078	·0160915−	·0128239	·0101260	*0·2*
0·3	·0457995−	·0384453	·0319918	·0263877	·0215721	·0174771	·0140313	·0111620	·0087978	*0·3*
0·4	·0400260	·0335425−	·0278643	·0229434	·0187233	·0151421	·0121347	·0096357	·0075807	*0·4*
0·5	·0346964	·0290263	·0240706	·0197847	·0161167	·0130103	·0104072	·0082486	·0064772	*0·5*
0·6	·0298281	·0249099	·0206204	·0169182	·0137565+	·0110846	·0088502	·0070012	·0054873	*0·6*
0·7	·0254276	·0211972	·0175153	·0143444	·0116420	·0093632	·0074616	·0058914	·0046085+	*0·7*
0·8	·0214917	·0178837	·0147502	·0120574	·0097675−	·0078406	·0062362	·0049143	·0038365+	*0·8*
0·9	·0180082	·0149575+	·0123138	·0100468	·0081232	·0065081	·0051662	·0040631	·0031658	*0·9*
1·0	·0149575+	·0124005−	·0101894	·0082976	·0066959	·0053541	·0042418	·0033294	·0025889	*1·0*
1·1	·0123138	·0101894	·0083566	·0067919	·0054701	·0043653	·0034515−	·0027036	·0020980	*1·1*
1·2	·0100468	·0082976	·0067919	·0055093	·0044284	·0035269	·0027830	·0021755+	·0016847	*1·2*
1·3	·0081232	·0066959	·0054701	·0044284	·0035524	·0028235−	·0022234	·0017345−	·0013404	*1·3*
1·4	·0065081	·0053541	·0043653	·0035269	·0028235−	·0022396	·0017599	·0013701	·0010566	*1·4*
1·5	·0051662	·0042418	·0034515−	·0027830	·0022234	·0017599	·0013801	·0010722	·0008251	*1·5*
1·6	·0040631	·0033294	·0027036	·0021755+	·0017345−	·0013701	·0010722	·0008312	·0006383	*1·6*
1·7	·0031658	·0025889	·0020980	·0016847	·0013404	·0010566	·0008251	·0006383	·0004891	*1·7*
1·8	·0024435−	·0019942	·0016127	·0012923	·0010261	·0008071	·0006289	·0004855−	·0003712	*1·8*
1·9	·0018682	·0015215+	·0012279	·0009819	·0007780	·0006106	·0004748	·0003657	·0002790	*1·9*
2·0	·0014148	·0011499	·0009261	·0007390	·0005842	·0004576	·0003550+	·0002729	·0002077	*2·0*
2·1	·0010612	·0008607	·0006917	·0005508	·0004345+	·0003396	·0002629	·0002016	·0001532	*2·1*
2·2	·0007883	·0006380	·0005117	·0004066	·0003201	·0002496	·0001928	·0001475+	·0001118	*2·2*
2·3	·0005800	·0004684	·0003749	·0002972	·0002335−	·0001817	·0001400	·0001069	·0000809	*2·3*
2·4	·0004226	·0003406	·0002720	·0002152	·0001687	·0001309	·0001007	·0000767	·0000579	*2·4*
2·5	·0003049	·0002452	·0001954	·0001542	·0001206	·0000935−	·0000717	·0000545+	·0000410	*2·5*
2·6	·0002178	·0001748	·0001390	·0001095−	·0000854	·0000660	·0000506	·0000383	·0000288	*2·6*

k	*d/N* for *r* = − ·25									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·0102794	·0079956	·0061611	·0047029	·0035560	·0026632	·0019755+	·0014514	·0010560	*0·0*
0·1	·0090602	·0070347	·0054110	·0041228	·0031116	·0023261	·0017222	·0012629	·0009171	*0·1*
0·2	·0079218	·0061396	·0047138	·0035850+	·0027006	·0020151	·0014891	·0010898	·0007899	*0·2*
0·3	·0068701	·0053147	·0040729	·0030916	·0023245+	·0017311	·0012768	·0009326	·0006746	*0·3*
0·4	·0059086	·0045623	·0034896	·0026438	·0019840	·0014746	·0010855−	·0007913	·0005713	*0·4*
0·5	·0050390	·0038833	·0029645+	·0022416	·0016789	·0012453	·0009149	·0006656	·0004795+	*0·5*
0·6	·0042606	·0032771	·0024968	·0018842	·0014084	·0010426	·0007644	·0005550−	·0003990	*0·6*
0·7	·0035713	·0027414	·0020845+	·0015700	·0011711	·0008652	·0006330	·0004586	·0003291	*0·7*
0·8	·0029672	·0022732	·0017250+	·0012965+	·0009652	·0007116	·0005195+	·0003756	·0002690	*0·8*
0·9	·0024435−	·0018682	·0014148	·0010612	·0007883	·0005800	·0004226	·0003049	·0002178	*0·9*
1·0	·0019942	·0015215+	·0011499	·0008607	·0006380	·0004684	·0003406	·0002452	·0001748	*1·0*
1·1	·0016127	·0012279	·0009261	·0006917	·0005117	·0003749	·0002720	·0001954	·0001390	*1·1*
1·2	·0012923	·0009819	·0007390	·0005508	·0004066	·0002972	·0002152	·0001542	·0001095−	*1·2*
1·3	·0010261	·0007780	·0005842	·0004345+	·0003201	·0002335−	·0001687	·0001206	·0000854	*1·3*
1·4	·0008071	·0006106	·0004576	·0003396	·0002496	·0001817	·0001309	·0000935−	·0000660	*1·4*
1·5	·0006289	·0004748	·0003550+	·0002629	·0001928	·0001400	·0001007	·0000717	·0000506	*1·5*
1·6	·0004855−	·0003657	·0002729	·0002016	·0001475+	·0001069	·0000767	·0000545+	·0000383	*1·6*
1·7	·0003712	·0002790	·0002077	·0001532	·0001118	·0000809	·0000579	·0000410	·0000288	*1·7*
1·8	·0002811	·0002108	·0001566	·0001152	·0000839	·0000606	·0000433	·0000306	·0000214	*1·8*
1·9	·0002108	·0001578	·0001170	·0000859	·0000624	·0000449	·0000320	·0000226	·0000158	*1·9*
2·0	·0001566	·0001170	·0000865−	·0000633	·0000459	·0000330	·0000235−	·0000165+	·0000115+	*2·0*
2·1	·0001152	·0000859	·0000633	·0000463	·0000335−	·0000240	·0000170	·0000120	·0000083	*2·1*
2·2	·0000839	·0000624	·0000459	·0000335−	·0000242	·0000173	·0000122	·0000086	·0000060	*2·2*
2·3	·0000606	·0000449	·0000330	·0000240	·0000173	·0000123	·0000087	·0000061	·0000042	*2·3*
2·4	·0000433	·0000320	·0000235−	·0000170	·0000122	·0000087	·0000061	·0000043	·0000030	*2·4*
2·5	·0000306	·0000226	·0000165+	·0000120	·0000086	·0000061	·0000043	·0000030	·0000021	*2·5*
2·6	·0000214	·0000158	·0000115+	·0000083	·0000060	·0000042	·0000030	·0000021	·0000014	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for r = − ·30 *h* = 0·0	*h* = 0·1	*h* = 0·2	*h* = 0·3	*h* = 0·4	*h* = 0·5	*h* = 0·6	*h* = 0·7	*h* = 0·8	*k*
0·0	·2015067	·1818424	·1628676	·1447517	·1276390	·1116448	·0968546	·0833226	·0710731	0·0
0·1	·1818424	·1638633	·1465053	·1299903	·1144249	·0999093	·0865163	·0742903	·0632482	0·1
0·2	·1628676	·1465053	·1307846	·1158412	·1017888	·0887140	·0766782	·0657166	·0558396	0·2
0·3	·1447517	·1299903	·1158412	·1024233	·0898340	·0781481	·0674161	·0576653	·0489003	0·3
0·4	·1276390	·1144249	·1017888	·0898340	·0786444	·0682825+	·0587896	·0501855+	·0424703	0·4
0·5	·1116448	·0999093	·0887140	·0781481	·0682825+	·0591692	·0508408	·0433110	·0365760	0·5
0·6	·0968546	·0865163	·0766782	·0674161	·0587896	·0508408	·0435950−	·0370605+	·0312307	0·6
0·7	·0833226	·0742903	·0657166	·0576653	·0501855+	·0433110	·0370605+	·0314383	·0264353	0·7
0·8	·0710731	·0632482	·0558396	·0489003	·0424703	·0365760	·0312307	·0264353	·0221793	0·8
0·9	·0601022	·0533813	·0470347	·0411056	·0356261	·0306163	·0260852	·0220311	·0184427	0·9
1·0	·0503807	·0446585−	·0392691	·0342476	·0296193	·0253991	·0215924	·0181957	·0151972	1·0
1·1	·0418580	·0370290	·0324931	·0282782	·0244039	·0208808	·0177116	·0148913	·0124087	1·1
1·2	·0344655−	·0304268	·0266436	·0231378	·0199240	·0170096	·0143952	·0120751	·0100384	1·2
1·3	·0281215+	·0247746	·0216479	·0187585+	·0161171	·0137285−	·0115916	·0097007	·0080453	1·3
1·4	·0227354	·0199871	·0174269	·0150675+	·0129167	·0109772	·0092470	·0077202	·0063874	1·4
1·5	·0182110	·0159753	·0138984	·0119899	·0102550−	·0086949	·0073071	·0060861	·0050232	1·5
1·6	·0144511	·0126494	·0109805+	·0094512	·0080649	·0068220	·0057195−	·0047522	·0039127	1·6
1·7	·0113598	·0099216	·0085931	·0073794	·0062823	·0053015−	·0044340	·0036751	·0030183	1·7
1·8	·0088452	·0077081	·0066608	·0057067	·0048469	·0040804	·0034044	·0028148	·0023060	1·8
1·9	·0068216	·0059312	·0051136	·0043708	·0037034	·0031102	·0025886	·0021349	·0017446	1·9
2·0	·0052104	·0045200	·0038878	·0033153	·0028023	·0023476	·0019491	·0016035−	·0013069	2·0
2·1	·0039414	·0034112	·0029272	·0024902	·0020997	·0017547	·0014532	·0011925−	·0009695+	2·1
2·2	·0029525−	·0025494	·0021825−	·0018521	·0015579	·0012987	·0010728	·0008781	·0007121	2·2
2·3	·0021901	·0018866	·0016113	·0013641	·0011445+	·0009517	·0007842	·0006402	·0005178	2·3
2·4	·0016086	·0013825−	·0011778	·0009946	·0008325−	·0006905−	·0005675−	·0004621	·0003728	2·4
2·5	·0011699	·0010030	·0008524	·0007181	·0005995+	·0004960	·0004066	·0003302	·0002657	2·5
2·6	·0008424	·0007205−	·0006108	·0005133	·0004274	·0003527	·0002884	·0002336	·0001875−	2·6

k	d/N for r = − ·30 *h* = 0·9	*h* = 1·0	*h* = 1·1	*h* = 1·2	*h* = 1·3	*h* = 1·4	*h* = 1·5	*h* = 1·6	*h* = 1·7	*k*
0·0	·0601022	·0503807	·0418580	·0344655−	·0281215+	·0227354	·0182110	·0144511	·0113598	0·0
0·1	·0533813	·0446585−	·0370290	·0304268	·0247746	·0199871	·0159753	·0126494	·0099216	0·1
0·2	·0470347	·0392691	·0324931	·0266436	·0216479	·0174269	·0138984	·0109805+	·0085931	0·2
0·3	·0411056	·0342476	·0282782	·0231378	·0187585+	·0150675+	·0119899	·0094512	·0073794	0·3
0·4	·0356261	·0296193	·0244039	·0199240	·0161171	·0129167	·0102550−	·0080649	·0062823	0·4
0·5	·0306163	·0253991	·0208808	·0170096	·0137285−	·0109772	·0086949	·0068220	·0053015−	0·5
0·6	·0260852	·0215924	·0177116	·0143952	·0115916	·0092470	·0073071	·0057195−	·0044340	0·6
0·7	·0220311	·0181957	·0148913	·0120751	·0097007	·0077202	·0060861	·0047522	·0036751	0·7
0·8	·0184427	·0151972	·0124087	·0100384	·0080453	·0063874	·0050232	·0039127	·0030183	0·8
0·9	·0153006	·0125788	·0102467	·0082697	·0066118	·0052366	·0041080	·0031919	·0024562	0·9
1·0	·0125788	·0103171	·0083842	·0067503	·0053839	·0042535+	·0033285+	·0025797	·0019801	1·0
1·1	·0102467	·0083842	·0067970	·0054591	·0043433	·0034229	·0026718	·0020655−	·0015813	1·1
1·2	·0082697	·0067503	·0054591	·0043737	·0034711	·0027286	·0021241	·0016381	·0012509	1·2
1·3	·0066118	·0053839	·0043433	·0034711	·0027478	·0021546	·0016732	·0012869	·0009801	1·3
1·4	·0052366	·0042535+	·0034229	·0027286	·0021546	·0016851	·0013052	·0010012	·0007605+	1·4
1·5	·0041080	·0033285+	·0026718	·0021241	·0016732	·0013052	·0010084	·0007714	·0005845−	1·5
1·6	·0031919	·0025797	·0020655−	·0016381	·0012869	·0010012	·0007714	·0005886	·0004448	1·6
1·7	·0024562	·0019801	·0015813	·0012509	·0009801	·0007605+	·0005845−	·0004448	·0003352	1·7
1·8	·0018717	·0015051	·0011989	·0009459	·0007392	·0005721	·0004384	·0003328	·0002501	1·8
1·9	·0014125−	·0011329	·0009000	·0007083	·0005520	·0004261	·0003257	·0002465−	·0001847	1·9
2·0	·0010554	·0008443	·0006690	·0005251	·0004081	·0003142	·0002395−	·0001808	·0001351	2·0
2·1	·0007808	·0006231	·0004924	·0003854	·0002988	·0002294	·0001744	·0001313	·0000978	2·1
2·2	·0005720	·0004552	·0003588	·0002801	·0002166	·0001658	·0001257	·0000944	·0000701	2·2
2·3	·0004149	·0003293	·0002588	·0002015+	·0001554	·0001186	·0000897	·0000671	·0000498	2·3
2·4	·0002979	·0002358	·0001849	·0001435+	·0001104	·0000840	·0000634	·0000473	·0000350−	2·4
2·5	·0002118	·0001672	·0001307	·0001012	·0000776	·0000589	·0000443	·0000330	·0000243	2·5
2·6	·0001490	·0001173	·0000915−	·0000706	·0000540	·0000409	·0000307	·0000228	·0000167	2·6

TABLE IX. *Negative Correlation*—(*continued*).

k	*d/N* for $r = -\cdot 30$									*k*
	$h = 1{\cdot}8$	$h = 1{\cdot}9$	$h = 2{\cdot}0$	$h = 2{\cdot}1$	$h = 2{\cdot}2$	$h = 2{\cdot}3$	$h = 2{\cdot}4$	$h = 2{\cdot}5$	$h = 2{\cdot}6$	
0·0	·0088452	·0068216	·0052104	·0039414	·0029525−	·0021901	·0016086	·0011699	·0008424	*0·0*
0·1	·0077081	·0059312	·0045200	·0034112	·0025494	·0018866	·0013825−	·0010030	·0007205−	*0·1*
0·2	·0066608	·0051136	·0038878	·0029272	·0021825−	·0016113	·0011778	·0008524	·0006108	*0·2*
0·3	·0057067	·0043708	·0033153	·0024902	·0018521	·0013641	·0009946	·0007181	·0005133	*0·3*
0·4	·0048469	·0037034	·0028023	·0020997	·0015579	·0011445+	·0008325−	·0005995+	·0004274	*0·4*
0·5	·0040804	·0031102	·0023476	·0017547	·0012987	·0009517	·0006905−	·0004960	·0003527	*0·5*
0·6	·0034044	·0025886	·0019491	·0014532	·0010728	·0007842	·0005675−	·0004066	·0002884	*0·6*
0·7	·0028148	·0021349	·0016035−	·0011925−	·0008781	·0006402	·0004621	·0003302	·0002336	*0·7*
0·8	·0023060	·0017446	·0013069	·0009695+	·0007121	·0005178	·0003728	·0002657	·0001875−	*0·8*
0·9	·0018717	·0014125−	·0010554	·0007808	·0005720	·0004149	·0002979	·0002118	·0001490	*0·9*
1·0	·0015051	·0011329	·0008443	·0006231	·0004552	·0003293	·0002358	·0001672	·0001173	*1·0*
1·1	·0011989	·0009000	·0006690	·0004924	·0003588	·0002588	·0001849	·0001307	·0000915−	*1·1*
1·2	·0009459	·0007083	·0005251	·0003854	·0002801	·0002015+	·0001435+	·0001012	·0000706	*1·2*
1·3	·0007392	·0005520	·0004081	·0002988	·0002166	·0001554	·0001104	·0000776	·0000540	*1·3*
1·4	·0005721	·0004261	·0003142	·0002294	·0001658	·0001186	·0000840	·0000589	·0000409	*1·4*
1·5	·0004384	·0003257	·0002395−	·0001744	·0001257	·0000897	·0000634	·0000443	·0000307	*1·5*
1·6	·0003328	·0002465−	·0001808	·0001313	·0000944	·0000671	·0000473	·0000330	·0000228	*1·6*
1·7	·0002501	·0001847	·0001351	·0000978	·0000701	·0000498	·0000350−	·0000243	·0000167	*1·7*
1·8	·0001861	·0001371	·0001000	·0000722	·0000516	·0000365+	·0000256	·0000177	·0000122	*1·8*
1·9	·0001371	·0001007	·0000733	·0000527	·0000376	·0000266	·0000185+	·0000128	·0000088	*1·9*
2·0	·0001000	·0000733	·0000531	·0000382	·0000271	·0000191	·0000133	·0000092	·0000063	*2·0*
2·1	·0000722	·0000527	·0000382	·0000273	·0000194	·0000136	·0000094	·0000065−	·0000044	*2·1*
2·2	·0000516	·0000376	·0000271	·0000194	·0000137	·0000096	·0000066	·0000045+	·0000031	*2·2*
2·3	·0000365+	·0000266	·0000191	·0000136	·0000096	·0000067	·0000046	·0000032	·0000021	*2·3*
2·4	·0000256	·0000185+	·0000133	·0000094	·0000066	·0000046	·0000032	·0000022	·0000015−	*2·4*
2·5	·0000177	·0000128	·0000092	·0000065−	·0000045+	·0000032	·0000022	·0000015−	·0000010	*2·5*
2·6	·0000122	·0000088	·0000063	·0000044	·0000031	·0000021	·0000015−	·0000010	·00000066	*2·6*

k	*d/N* for $r = -\cdot 35$									*k*
	$h = 0{\cdot}0$	$h = 0{\cdot}1$	$h = 0{\cdot}2$	$h = 0{\cdot}3$	$h = 0{\cdot}4$	$h = 0{\cdot}5$	$h = 0{\cdot}6$	$h = 0{\cdot}7$	$h = 0{\cdot}8$	
0·0	·1930908	·1734734	·1546379	·1367490	·1199435−	·1043271	·0899735−	·0769240	·0651894	*0·0*
0·1	·1734734	·1555469	·1383798	·1221186	·1068829	·0927635+	·0798213	·0680873	·0575650+	*0·1*
0·2	·1546379	·1383798	·1228525−	·1081845−	·0944794	·0818138	·0702367	·0597702	·0504113	*0·2*
0·3	·1367490	·1221186	·1081845−	·0950584	·0828288	·0715590	·0612874	·0520282	·0437730	*0·3*
0·4	·1199435−	·1068829	·0944794	·0828288	·0720054	·0620606	·0530233	·0449010	·0376812	*0·4*
0·5	·1043271	·0927635+	·0818138	·0715590	·0620606	·0533593	·0454760	·0384122	·0321524	*0·5*
0·6	·0899735−	·0798213	·0702367	·0612874	·0530233	·0454760	·0386590	·0325697	·0271903	*0·6*
0·7	·0769240	·0680873	·0597702	·0520282	·0449010	·0384122	·0325697	·0273672	·0227858	*0·7*
0·8	·0651894	·0575650+	·0504113	·0437730	·0376812	·0321524	·0271903	·0227858	·0189196	*0·8*
0·9	·0547521	·0482324	·0421344	·0364938	·0313341	·0266664	·0224905−	·0187959	·0155635−	*0·9*
1·0	·0455699	·0400453	·0348946	·0301457	·0258156	·0219113	·0184297	·0153596	·0126824	*1·0*
1·1	·0375802	·0329419	·0286315+	·0246704	·0210705−	·0178352	·0149599	·0124328	·0102364	*1·1*
1·2	·0307040	·0268460	·0232727	·0199998	·0170352	·0143798	·0120277	·0099675+	·0081830	*1·2*
1·3	·0248509	·0216723	·0187380	·0160594	·0136414	·0114829	·0095774	·0079140	·0064781	*1·3*
1·4	·0199230	·0173292	·0149429	·0127718	·0108186	·0090810	·0075523	·0062224	·0050784	*1·4*
1·5	·0158197	·0137235+	·0118016	·0100765−	·0084967	·0071115+	·0058972	·0048444	·0039419	*1·5*
1·6	·0124404	·0107629	·0092301	·0078451	·0066078	·0055145+	·0045595−	·0037343	·0030295−	*1·6*
1·7	·0096879	·0083586	·0071482	·0060584	·0050881	·0042339	·0034902	·0028500−	·0023049	*1·7*
1·8	·0074704	·0064276	·0054813	·0046323	·0038791	·0032183	·0026450+	·0021533	·0017364	*1·8*
1·9	·0057037	·0048938	·0041614	·0035067	·0029278	·0024218	·0019844	·0016105−	·0012945−	*1·9*
2·0	·0043116	·0036888	·0031278	·0026279	·0021876	·0018040	·0014737	·0011923	·0009554	*2·0*
2·1	·0032267	·0027527	·0023272	·0019495+	·0016180	·0013303	·0010833	·0008735−	·0006979	*2·1*
2·2	·0023905+	·0020334	·0017141	·0014316	·0011846	·0009709	·0007882	·0006337	·0005046	*2·2*
2·3	·0017532	·0014870	·0012497	·0010406	·0008584	·0007014	·0005676	·0004549	·0003611	*2·3*
2·4	·0012727	·0010762	·0009018	·0007486	·0006156	·0005015−	·0004046	·0003232	·0002557	*2·4*
2·5	·0009144	·0007710	·0006441	·0005331	·0004370	·0003548	·0002854	·0002272	·0001792	*2·5*
2·6	·0006503	·0005467	·0004553	·0003756	·0003070	·0002485−	·0001992	·0001581	·0001243	*2·6*

TABLE IX. *Negative Correlation—(continued).*

k	d/N for r = − ·35									k
	h = 0·9	*h* = 1·0	*h* = 1·1	*h* = 1·2	*h* = 1·3	*h* = 1·4	*h* = 1·5	*h* = 1·6	*h* = 1·7	
0·0	·0547521	·0455699	·0375802	·0307040	·0248509	·0199230	·0158197	·0124404	·0096879	*0·0*
0·1	·0482324	·0400453	·0329419	·0268460	·0216723	·0173292	·0137235+	·0107629	·0083586	*0·1*
0·2	·0421344	·0348946	·0286315+	·0232727	·0187380	·0149429	·0118016	·0092301	·0071482	*0·2*
0·3	·0364938	·0301457	·0246704	·0199998	·0160594	·0127718	·0100765−	·0078451	·0060584	*0·3*
0·4	·0313341	·0258156	·0210705−	·0170352	·0136414	·0108186	·0084967	·0066078	·0050881	*0·4*
0·5	·0266664	·0219113	·0178352	·0143798	·0114829	·0090810	·0071115+	·0055145+	·0042339	*0·5*
0·6	·0224905−	·0184297	·0149599	·0120277	·0095774	·0075523	·0058972	·0045595−	·0034902	*0·6*
0·7	·0187959	·0153596	·0124328	·0099675+	·0079140	·0062224	·0048444	·0037343	·0028500−	*0·7*
0·8	·0155635−	·0126824	·0102364	·0081830	·0064781	·0050784	·0039419	·0030295−	·0023049	*0·8*
0·9	·0127667	·0103736	·0083488	·0066544	·0052524	·0041052	·0031768	·0024340	·0018462	*0·9*
1·0	·0103736	·0084048	·0067444	·0053597	·0042178	·0032866	·0025356	·0019367	·0014644	*1·0*
1·1	·0083488	·0067444	·0053960	·0042753	·0033542	·0026056	·0020040	·0015259	·0011502	*1·1*
1·2	·0066544	·0053597	·0042753	·0033771	·0026414	·0020455+	·0015683	·0011904	·0008944	*1·2*
1·3	·0052524	·0042178	·0033542	·0026414	·0020596	·0015900	·0012152	·0009194	·0006886	*1·3*
1·4	·0041052	·0032866	·0026056	·0020455+	·0015900	·0012236	·0009322	·0007031	·0005249	*1·4*
1·5	·0031768	·0025356	·0020040	·0015683	·0012152	·0009322	·0007079	·0005322	·0003960	*1·5*
1·6	·0024340	·0019367	·0015259	·0011904	·0009194	·0007031	·0005322	·0003988	·0002958	*1·6*
1·7	·0018462	·0014644	·0011502	·0008944	·0006886	·0005249	·0003960	·0002958	·0002186	*1·7*
1·8	·0013863	·0010961	·0008582	·0006652	·0005105+	·0003878	·0002916	·0002171	·0001600	*1·8*
1·9	·0010304	·0008121	·0006338	·0004897	·0003746	·0002836	·0002126	·0001577	·0001158	*1·9*
2·0	·0007581	·0005956	·0004633	·0003568	·0002720	·0002053	·0001534	·0001134	·0000830	*2·0*
2·1	·0005520	·0004323	·0003352	·0002573	·0001955+	·0001471	·0001095+	·0000807	·0000589	*2·1*
2·2	·0003978	·0003105+	·0002400	·0001836	·0001391	·0001043	·0000774	·0000568	·0000413	*2·2*
2·3	·0002838	·0002208	·0001701	·0001297	·0000979	·0000731	·0000541	·0000396	·0000287	*2·3*
2·4	·0002003	·0001553	·0001193	·0000906	·0000682	·0000508	·0000374	·0000273	·0000197	*2·4*
2·5	·0001399	·0001081	·0000828	·0000627	·0000470	·0000349	·0000257	·0000186	·0000134	*2·5*
2·6	·0000967	·0000745+	·0000568	·0000429	·0000321	·0000237	·0000174	·0000126	·0000090	*2·6*

k	d/N for r = − ·35									k
	h = 1·8	*h* = 1·9	*h* = 2·0	*h* = 2·1	*h* = 2·2	*h* = 2·3	*h* = 2·4	*h* = 2·5	*h* = 2·6	
0·0	·0074704	·0057037	·0043116	·0032267	·0023905+	·0017532	·0012727	·0009144	·0006503	*0·0*
0·1	·0064276	·0048938	·0036888	·0027527	·0020334	·0014870	·0010762	·0007710	·0005467	*0·1*
0·2	·0054813	·0041614	·0031278	·0023272	·0017141	·0012497	·0009018	·0006441	·0004553	*0·2*
0·3	·0046323	·0035067	·0026279	·0019495+	·0014316	·0010406	·0007486	·0005331	·0003756	*0·3*
0·4	·0038791	·0029278	·0021876	·0016180	·0011846	·0008584	·0006156	·0004370	·0003070	*0·4*
0·5	·0032183	·0024218	·0018040	·0013303	·0009709	·0007014	·0005015−	·0003548	·0002485−	*0·5*
0·6	·0026450+	·0019844	·0014737	·0010833	·0007882	·0005676	·0004046	·0002854	·0001992	*0·6*
0·7	·0021533	·0016105−	·0011923	·0008735−	·0006337	·0004549	·0003232	·0002272	·0001581	*0·7*
0·8	·0017364	·0012945−	·0009554	·0006979	·0005046	·0003611	·0002557	·0001792	·0001243	*0·8*
0·9	·0013863	·0010304	·0007581	·0005520	·0003978	·0002838	·0002003	·0001399	·0000967	*0·9*
1·0	·0010961	·0008121	·0005956	·0004323	·0003105+	·0002208	·0001553	·0001081	·0000745+	*1·0*
1·1	·0008582	·0006338	·0004633	·0003352	·0002400	·0001701	·0001193	·0000828	·0000568	*1·1*
1·2	·0006652	·0004897	·0003568	·0002573	·0001836	·0001297	·0000906	·0000627	·0000429	*1·2*
1·3	·0005105+	·0003746	·0002720	·0001955+	·0001391	·0000979	·0000682	·0000470	·0000321	*1·3*
1·4	·0003878	·0002836	·0002053	·0001471	·0001043	·0000731	·0000508	·0000349	·0000237	*1·4*
1·5	·0002916	·0002126	·0001534	·0001095+	·0000774	·0000541	·0000374	·0000257	·0000174	*1·5*
1·6	·0002171	·0001577	·0001134	·0000807	·0000568	·0000396	·0000273	·0000186	·0000126	*1·6*
1·7	·0001600	·0001158	·0000830	·0000589	·0000413	·0000287	·0000197	·0000134	·0000090	*1·7*
1·8	·0001166	·0000842	·0000601	·0000425−	·0000297	·0000206	·0000141	·0000095+	·0000064	*1·8*
1·9	·0000842	·0000605+	·0000431	·0000303	·0000212	·0000146	·0000100	·0000067	·0000045−	*1·9*
2·0	·0000601	·0000431	·0000306	·0000215−	·0000149	·0000102	·0000070	·0000047	·0000031	*2·0*
2·1	·0000425−	·0000303	·0000215−	·0000150−	·0000104	·0000071	·0000048	·0000032	·0000021	*2·1*
2·2	·0000297	·0000212	·0000149	·0000104	·0000072	·0000049	·0000033	·0000022	·0000015−	*2·2*
2·3	·0000206	·0000146	·0000102	·0000071	·0000049	·0000033	·0000022	·0000015−	·0000010	*2·3*
2·4	·0000141	·0000100	·0000070	·0000048	·0000033	·0000022	·0000015+	·0000010	·00000065+	*2·4*
2·5	·0000095+	·0000067	·0000047	·0000032	·0000022	·0000015−	·0000010	·00000066	·00000043	*2·5*
2·6	·0000064	·0000045−	·0000031	·0000021	·0000015−	·0000010	·00000065+	·00000043	·00000028	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for r = − ·40									k
	h = 0·0	h = 0·1	h = 0·2	h = 0·3	h = 0·4	h = 0·5	h = 0·6	h = 0·7	h = 0·8	
0·0	·1845051	·1649375+	·1462498	·1286015−	·1121213	·0969041	·0830109	·0704688	·0592739	0·0
0·1	·1649375+	·1470976	·1301130	·1141238	·0992408	·0855431	·0730781	·0618629	·0518859	0·1
0·2	·1462498	·1301130	·1147993	·1004304	·0870997	·0748716	·0637817	·0538376	·0450220	0·2
0·3	·1286015−	·1141238	·1004304	·0876248	·0757849	·0649617	·0551797	·0464393	·0387180	0·3
0·4	·1121213	·0992408	·0870997	·0757849	·0653598	·0558634	·0473112	·0396968	·0329946	0·4
0·5	·0969041	·0855431	·0748716	·0649617	·0558634	·0476054	·0401955+	·0336222	·0278577	0·5
0·6	·0830109	·0730781	·0637817	·0551797	·0473112	·0401955+	·0338341	·0282120	·0233001	0·6
0·7	·0704688	·0618629	·0538376	·0464393	·0396968	·0336222	·0282120	·0234486	·0193028	0·7
0·8	·0592739	·0518859	·0450220	·0387180	·0329946	·0278577	·0233001	·0193028	·0158373	0·8
0·9	·0493939	·0431106	·0372953	·0319746	·0271625−	·0228601	·0190578	·0157359	·0128673	0·9
1·0	·0407727	·0354798	·0305998	·0261523	·0221454	·0185770	·0154358	·0127023	·0103511	1·0
1·1	·0333350−	·0289192	·0248638	·0211823	·0178787	·0149482	·0123788	·0101519	·0082441	1·1
1·2	·0269907	·0233427	·0200057	·0169884	·0142916	·0119090	·0098283	·0080323	·0065000−	1·2
1·3	·0216403	·0186565−	·0159379	·0134897	·0113103	·0093927	·0077249	·0062911	·0050728	1·3
1·4	·0171794	·0147632	·0125707	·0106043	·0088609	·0073332	·0060100	·0048771	·0039185+	1·4
1·5	·0135022	·0115654	·0098152	·0082518	·0068715+	·0056670	·0046280	·0037422	·0029957	1·5
1·6	·0105054	·0089689	·0075860	·0063559	·0052743	·0043344	·0035270	·0028416	·0022664	1·6
1·7	·0080910	·0068845−	·0058032	·0048453	·0040067	·0032809	·0026601	·0021353	·0016967	1·7
1·8	·0061678	·0052303	·0043936	·0036556	·0030121	·0024576	·0019853	·0015878	·0012570	1·8
1·9	·0046534	·0039326	·0032920	·0027293	·0022408	·0018217	·0014662	·0011682	·0009213	1·9
2·0	·0034746	·0029262	·0024409	·0020164	·0016495+	·0013360	·0010713	·0008504	·0006681	2·0
2·1	·0025673	·0021545+	·0017908	·0014741	·0012014	·0009695+	·0007745−	·0006124	·0004793	2·1
2·2	·0018771	·0015697	·0013000	·0010662	·0008658	·0006960	·0005539	·0004364	·0003402	2·2
2·3	·0013580	·0011316	·0009338	·0007630	·0006173	·0004944	·0003919	·0003076	·0002389	2·3
2·4	·0009720	·0008070	·0006635+	·0005401	·0004354	·0003474	·0002743	·0002144	·0001659	2·4
2·5	·0006884	·0005695−	·0004665−	·0003783	·0003038	·0002414	·0001899	·0001479	·0001140	2·5
2·6	·0004823	·0003975+	·0003244	·0002621	·0002097	·0001660	·0001301	·0001009	·0000774	2·6

k	d/N for r = − ·40									k
	h = 0·9	h = 1·0	h = 1·1	h = 1·2	h = 1·3	h = 1·4	h = 1·5	h = 1·6	h = 1·7	
0·0	·0493939	·0407727	·0333350−	·0269907	·0216403	·0171794	·0135022	·0105054	·0080910	0·0
0·1	·0431106	·0354798	·0289192	·0233427	·0186565−	·0147632	·0115654	·0089689	·0068845−	0·1
0·2	·0372953	·0305998	·0248638	·0200057	·0159379	·0125707	·0098152	·0075860	·0058032	0·2
0·3	·0319746	·0261523	·0211823	·0169884	·0134897	·0106043	·0082518	·0063559	·0048453	0·3
0·4	·0271625−	·0221454	·0178787	·0142916	·0113103	·0088609	·0068715+	·0052743	·0040067	0·4
0·5	·0228601	·0185770	·0149482	·0119090	·0093927	·0073332	·0056670	·0043344	·0032809	0·5
0·6	·0190578	·0154358	·0123788	·0098283	·0077249	·0060100	·0046280	·0035270	·0026601	0·6
0·7	·0157359	·0127023	·0101519	·0080323	·0062911	·0048771	·0037422	·0028416	·0021353	0·7
0·8	·0128673	·0103511	·0082441	·0065000−	·0050728	·0039185+	·0029957	·0022664	·0016967	0·8
0·9	·0104184	·0083521	·0062286	·0052076	·0040496	·0031168	·0023740	·0017894	·0013347	0·9
1·0	·0083521	·0066720	·0052764	·0041303	·0032002	·0024539	·0018622	·0013984	·0010390	1·0
1·1	·0062286	·0052764	·0041576	·0032427	·0025032	·0019123	·0014457	·0010815+	·0008005+	1·1
1·2	·0052076	·0041303	·0032427	·0025198	·0019379	·0014749	·0011108	·0008278	·0006104	1·2
1·3	·0040496	·0032002	·0025032	·0019379	·0014848	·0011258	·0008446	·0006270	·0004605+	1·3
1·4	·0031168	·0024539	·0019123	·0014749	·0011258	·0008503	·0006355−	·0004699	·0003438	1·4
1·5	·0023740	·0018622	·0014457	·0011108	·0008446	·0006355−	·0004731	·0003485−	·0002539	1·5
1·6	·0017894	·0013984	·0010815+	·0008278	·0006270	·0004699	·0003485−	·0002557	·0001856	1·6
1·7	·0013347	·0010390	·0008005+	·0006104	·0004605+	·0003438	·0002539	·0001856	·0001342	1·7
1·8	·0009850−	·0007639	·0005863	·0004453	·0003347	·0002488	·0001831	·0001332	·0000959	1·8
1·9	·0007192	·0005556	·0004248	·0003214	·0002406	·0001782	·0001305+	·0000946	·0000679	1·9
2·0	·0005196	·0003998	·0003045−	·0002295−	·0001711	·0001262	·0000921	·0000665−	·0000475−	2·0
2·1	·0003713	·0002846	·0002159	·0001621	·0001203	·0000884	·0000643	·0000462	·0000329	2·1
2·2	·0002625+	·0002004	·0001514	·0001132	·0000837	·0000613	·0000443	·0000318	·0000225+	2·2
2·3	·0001836	·0001396	·0001051	·0000782	·0000576	·0000420	·0000303	·0000216	·0000152	2·3
2·4	·0001270	·0000962	·0000721	·0000535−	·0000392	·0000280	·0000204	·0000145+	·0000102	2·4
2·5	·0000869	·0000656	·0000489	·0000361	·0000264	·0000191	·0000137	·0000097	·0000068	2·5
2·6	·0000588	·0000442	·0000329	·0000242	·0000176	·0000127	·0000090	·0000063	·0000044	2·6

TABLE IX. *Negative Correlation—(continued).*

k	d/N for r = − ·40									k
	h = 1·8	*h = 1·9*	*h = 2·0*	*h = 2·1*	*h = 2·2*	*h = 2·3*	*h = 2·4*	*h = 2·5*	*h = 2·6*	
0·0	·0061678	·0046534	·0034746	·0025673	·0018771	·0013580	·0009720	·0006884	·0004823	*0·0*
0·1	·0052303	·0039326	·0029262	·0021545+	·0015697	·0011316	·0008070	·0005695−	·0003975+	*0·1*
0·2	·0043936	·0032920	·0024409	·0017908	·0013000	·0009338	·0006635+	·0004665−	·0003244	*0·2*
0·3	·0036556	·0027293	·0020164	·0014741	·0010662	·0007630	·0005401	·0003783	·0002621	*0·3*
0·4	·0030121	·0022408	·0016495+	·0012014	·0008658	·0006173	·0004354	·0003038	·0002097	*0·4*
0·5	·0024576	·0018217	·0013360	·0009695+	·0006960	·0004944	·0003474	·0002414	·0001660	*0·5*
0·6	·0019853	·0014662	·0010713	·0007745−	·0005539	·0003919	·0002743	·0001899	·0001301	*0·6*
0·7	·0015878	·0011682	·0008504	·0006124	·0004364	·0003076	·0002144	·0001479	·0001009	*0·7*
0·8	·0012570	·0009213	·0006681	·0004793	·0003402	·0002389	·0001659	·0001140	·0000774	*0·8*
0·9	·0009850−	·0007192	·0005196	·0003713	·0002625+	·0001836	·0001270	·0000869	·0000588	*0·9*
1·0	·0007639	·0005556	·0003998	·0002846	·0002004	·0001396	·0000962	·0000656	·0000442	*1·0*
1·1	·0005863	·0004248	·0003045−	·0002159	·0001514	·0001051	·0000721	·0000489	·0000329	*1·1*
1·2	·0004453	·0003214	·0002295−	·0001621	·0001132	·0000782	·0000535−	·0000361	·0000242	*1·2*
1·3	·0003347	·0002406	·0001711	·0001203	·0000837	·0000576	·0000392	·0000264	·0000176	*1·3*
1·4	·0002488	·0001782	·0001262	·0000884	·0000613	·0000420	·0000280	·0000191	·0000127	*1·4*
1·5	·0001831	·0001305+	·0000921	·0000643	·0000443	·0000303	·0000204	·0000137	·0000090	*1·5*
1·6	·0001332	·0000946	·0000665−	·0000462	·0000318	·0000216	·0000145+	·0000097	·0000063	*1·6*
1·7	·0000959	·0000679	·0000475−	·0000329	·0000225+	·0000152	·0000102	·0000068	·0000044	*1·7*
1·8	·0000683	·0000481	·0000336	·0000231	·0000158	·0000106	·0000071	·0000047	·0000030	*1·8*
1·9	·0000481	·0000338	·0000234	·0000161	·0000109	·0000073	·0000049	·0000032	·0000021	*1·9*
2·0	·0000336	·0000234	·0000162	·0000111	·0000075−	·0000050+	·0000033	·0000022	·0000014	*2·0*
2·1	·0000231	·0000161	·0000111	·0000075+	·0000051	·0000034	·0000022	·0000014	·00000093	*2·1*
2·2	·0000158	·0000109	·0000075−	·0000051	·0000034	·0000023	·0000015−	·00000096	·00000061	*2·2*
2·3	·0000106	·0000073	·0000050+	·0000034	·0000023	·0000015−	·00000097	·00000063	·00000040	*2·3*
2·4	·0000071	·0000049	·0000033	·0000022	·0000015−	·00000097	·00000063	·00000041	·00000026	*2·4*
2·5	·0000047	·0000032	·0000022	·0000014	·00000096	·00000063	·00000041	·00000026	·00000016	*2·5*
2·6	·0000030	·0000021	·0000014	·00000093	·00000061	·00000040	·00000026	·00000016	·00000010	*2·6*

k	d/N for r = − ·45									k
	h = 0·0	*h = 0·1*	*h = 0·2*	*h = 0·3*	*h = 0·4*	*h = 0·5*	*h = 0·6*	*h = 0·7*	*h = 0·8*	
0·0	·1757120	·1561980	·1376688	·1202786	·1041466	·0893558	·0759529	·0639494	·0533250−	*0·0*
0·1	·1561980	·1384562	·1216724	·1059795−	·0914776	·0782330	·0662783	·0556144	·0462137	*0·1*
0·2	·1376688	·1216724	·1065976	·0925575−	·0796341	·0678782	·0573101	·0479215−	·0396794	*0·2*
0·3	·1202786	·1059795−	·0925575−	·0801067	·0686927	·0583523	·0490952	·0409059	·0337468	*0·3*
0·4	·1041466	·0914776	·0796341	·0686927	·0587040	·0496929	·0416600	·0345840	·0284250+	*0·4*
0·5	·0893558	·0782330	·0678782	·0583523	·0496929	·0419144	·0350104	·0289554	·0237083	*0·5*
0·6	·0759529	·0662783	·0573101	·0490952	·0416600	·0350104	·0291344	·0240040	·0195779	*0·6*
0·7	·0639494	·0556144	·0479215−	·0409059	·0345840	·0289554	·0240040	·0197002	·0160044	*0·7*
0·8	·0533250−	·0462137	·0396794	·0337468	·0284250+	·0237083	·0195779	·0160044	·0129498	*0·8*
0·9	·0440315−	·0380241	·0325291	·0275627	·0231280	·0192155+	·0158053	·0128686	·0103701	*0·9*
1·0	·0359976	·0309738	·0263994	·0222842	·0186265−	·0154146	·0126282	·0102400	·0082177	*1·0*
1·1	·0291344	·0249759	·0212069	·0178322	·0148467	·0122375−	·0099846	·0080629	·0064436	*1·1*
1·2	·0233403	·0199337	·0168606	·0141220	·0117108	·0096136	·0078114	·0062816	·0049987	*1·2*
1·3	·0185067	·0157451	·0132658	·0110669	·0091402	·0074725−	·0060464	·0048417	·0038363	*1·3*
1·4	·0145219	·0123069	·0103280	·0085813	·0070583	·0057464	·0046300	·0036916	·0029124	*1·4*
1·5	·0112758	·0095183	·0079557	·0065832	·0053923	·0043715+	·0035072	·0027843	·0021870	*1·5*
1·6	·0086629	·0072834	·0060629	·0049962	·0040752	·0032896	·0026278	·0020770	·0016242	*1·6*
1·7	·0065845+	·0055136	·0045707	·0037508	·0030463	·0024485+	·0019474	·0015324	·0011929	*1·7*
1·8	·0049511	·0041288	·0034084	·0027852	·0022524	·0018025−	·0014273	·0011181	·0008665+	*1·8*
1·9	·0036827	·0030583	·0025139	·0020455+	·0016470	·0013123	·0010345−	·0008068	·0006224	*1·9*
2·0	·0027094	·0022406	·0018340	·0014857	·0011911	·0009448	·0007414	·0005756	·0004420	*2·0*
2·1	·0019715+	·0016235−	·0013231	·0010672	·0008518	·0006726	·0005254	·0004061	·0003104	*2·1*
2·2	·0014188	·0011633	·0009440	·00075[illegible]	·0006023	·0004735−	·0003682	·0002832	·0002155−	*2·2*
2·3	·0010097	·0008243	·0006660	·0005324	·0004211	·0003295+	·0002551	·0001953	·0001479	*2·3*
2·4	·0007106	·0005776	·0004646	·0003697	·0002911	·0002268	·0001747	·0001332	·0001004	*2·4*
2·5	·0004945+	·0004002	·0003204	·0002539	·0001990	·0001543	·0001183	·0000897	·0000674	*2·5*
2·6	·0003403	·0002741	·0002185+	·0001723	·0001344	·0001038	·0000792	·0000598	·0000446	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for $r = -\cdot45$									k
	$h = 0\cdot9$	$h = 1\cdot0$	$h = 1\cdot1$	$h = 1\cdot2$	$h = 1\cdot3$	$h = 1\cdot4$	$h = 1\cdot5$	$h = 1\cdot6$	$h = 1\cdot7$	
0·0	·0440315^{-}	·0359976	·0291344	·0233403	·0185067	·0145219	·0112758	·0086629	·0065845^{+}	0·0
0·1	·0380241	·0309738	·0249759	·0199337	·0157451	·0123069	·0095183	·0072834	·0055136	0·1
0·2	·0325291	·0263994	·0212069	·0168606	·0132658	·0103280	·0079557	·0060629	·0045707	0·2
0·3	·0275627	·0222842	·0178322	·0141220	·0110669	·0085813	·0065832	·0049962	·0037508	0·3
0·4	·0231280	·0186265^{-}	·0148467	·0117108	·0091402	·0070583	·0053923	·0040752	·0030463	0·4
0·5	·0192155^{+}	·0154146	·0122375^{-}	·0096136	·0074725^{-}	·0057464	·0043715^{+}	·0032896	·0024485^{+}	0·5
0·6	·0158053	·0126282	·0099846	·0078114	·0060464	·0046300	·0035072	·0026278	·0019474	0·6
0·7	·0128686	·0102400	·0080629	·0062816	·0048417	·0036916	·0027843	·0020770	·0015324	0·7
0·8	·0103701	·0082177	·0064436	·0049987	·0038363	·0029124	·0021870	·0016242	·0011929	0·8
0·9	·0082700	·0065261	·0050954	·0039359	·0030075^{+}	·0022732	·0016994	·0012565^{-}	·0009187	0·9
1·0	·0065261	·0051281	·0039867	·0030661	·0023326	·0017552	·0013063	·0009615^{-}	·0006998	1·0
1·1	·0050954	·0039867	·0030859	·0023629	·0017896	·0013406	·0009932	·0007277	·0005272	1·1
1·2	·0039359	·0030661	·0023629	·0018012	·0013581	·0010128	·0007469	·0005447	·0003928	1·2
1·3	·0030075^{+}	·0023326	·0017896	·0013581	·0010194	·0007567	·0005555^{+}	·0004032	·0002894	1·3
1·4	·0022732	·0017552	·0013406	·0010128	·0007567	·0005591	·0004086	·0002952	·0002109	1·4
1·5	·0016994	·0013063	·0009932	·0007469	·0005555^{+}	·0004086	·0002971	·0002137	·0001519	1·5
1·6	·0012565^{-}	·0009615^{-}	·0007277	·0005447	·0004032	·0002952	·0002137	·0001529	·0001082	1·6
1·7	·0009187	·0006998	·0005272	·0003928	·0002894	·0002109	·0001519	·0001082	·0000761	1·7
1·8	·0006643	·0005037	·0003777	·0002801	·0002054	·0001490	·0001068	·0000757	·0000531	1·8
1·9	·0004749	·0003584	·0002675^{+}	·0001975^{-}	·0001441	·0001040	·0000742	·0000524	·0000365^{+}	1·9
2·0	·0003357	·0002522	·0001874	·0001376	·0001000	·0000718	·0000510	·0000358	·0000248	2·0
2·1	·0002347	·0001754	·0001297	·0000948	·0000686	·0000490	·0000346	·0000242	·0000167	2·1
2·2	·0001622	·0001207	·0000888	·0000646	·0000465^{-}	·0000331	·0000232	·0000162	·0000111	2·2
2·3	·0001108	·0000820	·0000601	·0000435^{+}	·0000311	·0000220	·0000154	·0000107	·0000073	2·3
2·4	·0000748	·0000551	·0000402	·0000290	·0000206	·0000145^{+}	·0000101	·0000070	·0000047	2·4
2·5	·0000499	·0000366	·0000266	·0000191	·0000135^{+}	·0000095^{-}	·0000066	·0000045^{-}	·0000030	2·5
2·6	·0000330	·0000234	·0000174	·0000124	·0000087	·0000061	·0000042	·0000029	·0000019	2·6

k	d/N for $r = -\cdot45$									k
	$h = 1\cdot8$	$h = 1\cdot9$	$h = 2\cdot0$	$h = 2\cdot1$	$h = 2\cdot2$	$h = 2\cdot3$	$h = 2\cdot4$	$h = 2\cdot5$	$h = 2\cdot6$	
0·0	·0049511	·0036827	·0027094	·0019715^{+}	·0014188	·0010097	·0007106	·0004945^{+}	·0003403	0·0
0·1	·0041288	·0030583	·0022406	·0016235^{-}	·0011633	·0008243	·0005776	·0004002	·0002741	0·1
0·2	·0034084	·0025139	·0018340	·0013231	·0009440	·0006660	·0004646	·0003204	·0002185^{+}	0·2
0·3	·0027852	·0020455^{+}	·0014857	·0010672	·0007580	·0005324	·0003697	·0002539	·0001723	0·3
0·4	·0022524	·0016470	·0011911	·0008518	·0006023	·0004211	·0002911	·0001990	·0001344	0·4
0·5	·0018025^{-}	·0013123	·0009448	·0006726	·0004735^{-}	·0003295^{+}	·0002268	·0001543	·0001038	0·5
0·6	·0014273	·0010345^{-}	·0007414	·0005254	·0003682	·0002551	·0001747	·0001183	·0000792	0·6
0·7	·0011181	·0008068	·0005756	·0004061	·0002832	·0001953	·0001332	·0000897	·0000598	0·7
0·8	·0008665^{+}	·0006224	·0004420	·0003104	·0002155^{-}	·0001479	·0001004	·0000674	·0000446	0·8
0·9	·0006643	·0004749	·0003357	·0002347	·0001622	·0001108	·0000748	·0000499	·0000330	0·9
1·0	·0005037	·0003584	·0002522	·0001754	·0001207	·0000820	·0000551	·0000366	·0000234	1·0
1·1	·0003777	·0002675^{+}	·0001874	·0001297	·0000888	·0000601	·0000402	·0000266	·0000174	1·1
1·2	·0002801	·0001975^{-}	·0001376	·0000948	·0000646	·0000435^{+}	·0000290	·0000191	·0000124	1·2
1·3	·0002054	·0001441	·0001000	·0000686	·0000465^{-}	·0000311	·0000206	·0000135^{+}	·0000087	1·3
1·4	·0001490	·0001040	·0000718	·0000490	·0000331	·0000220	·0000145^{+}	·0000095^{-}	·0000061	1·4
1·5	·0001068	·0000742	·0000510	·0000346	·0000232	·0000154	·0000101	·0000066	·0000042	1·5
1·6	·0000757	·0000524	·0000358	·0000242	·0000162	·0000107	·0000070	·0000045^{-}	·0000029	1·6
1·7	·0000531	·0000365^{+}	·0000248	·0000167	·0000111	·0000073	·0000047	·0000030	·0000019	1·7
1·8	·0000368	·0000252	·0000170	·0000114	·0000075^{+}	·0000049	·0000032	·0000020	·0000013	1·8
1·9	·0000252	·0000172	·0000116	·0000077	·0000051	·0000033	·0000021	·0000013	·00000085^{-}	1·9
2·0	·0000170	·0000116	·0000078	·0000051	·0000034	·0000022	·0000014	·00000088	·00000055^{+}	2·0
2·1	·0000114	·0000077	·0000051	·0000034	·0000022	·0000014	·00000090	·00000057	·00000037	2·1
2·2	·0000075^{+}	·0000051	·0000034	·0000022	·0000014	·00000092	·00000058	·00000036	·00000022	2·2
2·3	·0000049	·0000033	·0000022	·0000014	·00000092	·00000059	·00000037	·00000023	·00000014	2·3
2·4	·0000032	·0000021	·0000014	·00000090	·00000058	·00000037	·00000023	·00000014	·00000009	2·4
2·5	·0000020	·0000013	·00000088	·00000057	·00000036	·00000023	·00000014	·00000009	·00000005^{+}	2·5
2·6	·0000013	·00000085^{-}	·00000055^{+}	·00000037	·00000022	·00000014	·00000009	·00000005^{+}	·00000002	2·6

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for r = − ·50									*k*
	h = *0·0*	*h* = *0·1*	*h* = *0·2*	*h* = *0·3*	*h* = *0·4*	*h* = *0·5*	*h* = *0·6*	*h* = *0·7*	*h* = *0·8*	
0·0	·1666667	·1472109	·1288543	·1117443	·0959897	·0816598	·0687848	·0573588	·0473431	*0·0*
0·1	·1472109	·1295818	·1130216	·0976550+	·0835700	·0708178	·0594141	·0493418	·0405553	*0·1*
0·2	·1288543	·1130216	·0982164	·0845419	·0720665−	·0608253	·0508211	·0420282	·0343956	*0·2*
0·3	·1117443	·0976550+	·0845419	·0724876	·0615434	·0517301	·0430398	·0354399	·0288762	*0·3*
0·4	·0959897	·0835700	·0720665−	·0615434	·0520367	·0435548	·0360817	·0295794	·0239929	*0·4*
0·5	·0816598	·0708178	·0608253	·0517301	·0435548	·0362982	·0299375+	·0244321	·0197268	*0·5*
0·6	·0687848	·0594141	·0508211	·0430398	·0360817	·0299375+	·0245803	·0199680	·0160471	*0·6*
0·7	·0573588	·0493418	·0420282	·0354399	·0295794	·0244321	·0199680	·0161454	·0129134	*0·7*
0·8	·0473431	·0405553	·0343956	·0288762	·0239929	·0197268	·0160471	·0129134	·0102785+	*0·8*
0·9	·0386718	·0329853	·0278526	·0232782	·0192530	·0157559	·0127561	·0102154	·0080912	*0·9*
1·0	·0312570	·0265442	·0223135+	·0185637	·0152821	·0124469	·0100285−	·0079918	·0062984	*1·0*
1·1	·0249952	·0211319	·0176829	·0146428	·0119973	·0097244	·0077966	·0061823	·0048478	*1·1*
1·2	·0197727	·0166407	·0138601	·0114231	·0093142	·0075127	·0059935−	·0047286	·0036890	*1·2*
1·3	·0154710	·0129603	·0107439	·0088123	·0071504	·0057388	·0045553	·0035756	·0027751	*1·3*
1·4	·0119721	·0099821	·0082354	·0067219	·0054273	·0043340	·0034227	·0026728	·0020636	*1·4*
1·5	·0091615+	·0076023	·0062416	·0050694	·0040726	·0032357	·0025422	·0019748	·0015167	*1·5*
1·6	·0069322	·0057246	·0046769	·0037796	·0030210	·0023879	·0018663	·0014421	·0011017	*1·6*
1·7	·0051861	·0042617	·0034644	·0027856	·0022150−	·0017417	·0013541	·0010408	·0007909	*1·7*
1·8	·0038356	·0031363	·0025367	·0020292	·0016052	·0012556	·0009710	·0007424	·0005610	*1·8*
1·9	·0028042	·0022814	·0018359	·0014610	·0011497	·0008945+	·0006881	·0005232	·0003932	*1·9*
2·0	·0020265−	·0016403	·0013132	·0010396	·0008138	·0006298	·0004818	·0003644	·0002723	*2·0*
2·1	·0014474	·0011656	·0009283	·0007310	·0005692	·0004381	·0003334	·0002507	·0001864	*2·1*
2·2	·0010217	·0008185+	·0006484	·0005079	·0003934	·0003011	·0002279	·0001704	·0001260	*2·2*
2·3	·0007128	·0005680	·0004476	·0003487	·0002686	·0002045+	·0001539	·0001144	·0000841	*2·3*
2·4	·0004913	·0003895−	·0003053	·0002365+	·0001812	·0001372	·0001027	·0000759	·0000555+	*2·4*
2·5	·0003347	·0002639	·0002058	·0001586	·0001208	·0000909	·0000677	·0000498	·0000362	*2·5*
2·6	·0002253	·0001767	·0001370	·0001050−	·0000795−	·0000596	·0000441	·0000323	·0000233	*2·6*

k	d/N for r = − ·50									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·0386718	·0312570	·0249952	·0197727	·0154710	·0119721	·0091615+	·0069322	·0051861	*0·0*
0·1	·0329853	·0265442	·0211319	·0166407	·0129603	·0099821	·0076023	·0057246	·0042617	*0·1*
0·2	·0278526	·0223135+	·0176829	·0138601	·0107439	·0082354	·0062416	·0046769	·0034644	*0·2*
0·3	·0232782	·0185637	·0146428	·0114231	·0088123	·0067219	·0050694	·0037796	·0027856	*0·3*
0·4	·0192530	·0152821	·0119973	·0093142	·0071504	·0054273	·0040726	·0030210	·0022150−	*0·4*
0·5	·0157559	·0124469	·0097244	·0075127	·0057388	·0043340	·0032357	·0023879	·0017417	*0·5*
0·6	·0127561	·0100285−	·0077966	·0059935−	·0045553	·0034227	·0025422	·0018663	·0013541	*0·6*
0·7	·0102154	·0079918	·0061823	·0047286	·0035756	·0026728	·0019748	·0014421	·0010408	*0·7*
0·8	·0080912	·0062984	·0048478	·0036890	·0027751	·0020636	·0015167	·0011017	·0007909	*0·8*
0·9	·0063376	·0049085+	·0037587	·0028455−	·0021294	·0015751	·0011515−	·0008319	·0005940	*0·9*
1·0	·0049085+	·0037823	·0028814	·0021699	·0016152	·0011884	·0008641	·0006209	·0004409	*1·0*
1·1	·0037587	·0028814	·0021836	·0016357	·0012111	·0008863	·0006409	·0004580	·0003234	*1·1*
1·2	·0028455−	·0021699	·0016357	·0012188	·0008975−	·0006532	·0004698	·0003339	·0002345−	*1·2*
1·3	·0021294	·0016152	·0012111	·0008975−	·0006574	·0004758	·0003403	·0002405+	·0001680	*1·3*
1·4	·0015751	·0011884	·0008863	·0006532	·0004758	·0003425+	·0002436	·0001712	·0001189	*1·4*
1·5	·0011515−	·0008641	·0006409	·0004698	·0003403	·0002436	·0001723	·0001204	·0000831	*1·5*
1·6	·0008319	·0006209	·0004580	·0003339	·0002405+	·0001712	·0001204	·0000837	·0000574	*1·6*
1·7	·0005940	·0004409	·0003234	·0002345−	·0001680	·0001189	·0000831	·0000574	·0000392	*1·7*
1·8	·0004190	·0003093	·0002257	·0001627	·0001159	·0000815+	·0000567	·0000389	·0000264	*1·8*
1·9	·0002921	·0002144	·0001556	·0001115+	·0000790	·0000553	·0000383	·0000261	·0000176	*1·9*
2·0	·0002012	·0001469	·0001059	·0000755−	·0000532	·0000370	·0000254	·0000173	·0000116	*2·0*
2·1	·0001369	·0000994	·0000713	·0000505+	·0000354	·0000245−	·0000167	·0000113	·0000075+	*2·1*
2·2	·0000920	·0000664	·0000474	·0000334	·0000232	·0000160	·0000108	·0000073	·0000048	*2·2*
2·3	·0000611	·0000439	·0000311	·0000218	·0000151	·0000103	·0000070	·0000046	·0000031	*2·3*
2·4	·0000401	·0000286	·0000201	·0000140	·0000097	·0000066	·0000044	·0000029	·0000019	*2·4*
2·5	·0000260	·0000184	·0000129	·0000089	·0000061	·0000042	·0000028	·0000018	·0000012	*2·5*
2·6	·0000166	·0000117	·0000082	·0000056	·0000039	·0000026	·0000017	·0000011	·00000072	*2·6*

TABLE IX. *Negative Correlation—(continued).*

k	d/N for $r = -\cdot 50$									*k*
	h = 1·8	*h = 1·9*	*h = 2·0*	*h = 2·1*	*h = 2·2*	*h = 2·3*	*h = 2·4*	*h = 2·5*	*h = 2·6*	
0·0	·0038356	·0028042	·0020265−	·0014474	·0010217	·0007128	·0004913	·0003347	·0002253	*0·0*
0·1	·0031363	·0022814	·0016403	·0011656	·0008185+	·0005680	·0003895−	·0002639	·0001767	*0·1*
0·2	·0025367	·0018359	·0013132	·0009283	·0006484	·0004476	·0003053	·0002058	·0001370	*0·2*
0·3	·0020292	·0014610	·0010396	·0007310	·0005079	·0003487	·0002365+	·0001586	·0001050−	*0·3*
0·4	·0016052	·0011497	·0008138	·0005692	·0003934	·0002686	·0001812	·0001208	·0000795−	*0·4*
0·5	·0012556	·0008945+	·0006298	·0004381	·0003011	·0002045+	·0001372	·0000909	·0000596	*0·5*
0·6	·0009710	·0006881	·0004818	·0003334	·0002279	·0001539	·0001027	·0000677	·0000441	*0·6*
0·7	·0007424	·0005232	·0003644	·0002507	·0001704	·0001144	·0000759	·0000498	·0000323	*0·7*
0·8	·0005610	·0003932	·0002723	·0001864	·0001260	·0000841	·0000555+	·0000362	·0000233	*0·8*
0·9	·0004190	·0002921	·0002012	·0001369	·0000920	·0000611	·0000401	·0000260	·0000166	*0·9*
1·0	·0003093	·0002144	·0001469	·0000994	·0000664	·0000439	·0000286	·0000184	·0000117	*1·0*
1·1	·0002257	·0001556	·0001059	·0000713	·0000474	·0000311	·0000201	·0000129	·0000082	*1·1*
1·2	·0001627	·0001115+	·0000755−	·0000505+	·0000334	·0000218	·0000140	·0000089	·0000056	*1·2*
1·3	·0001159	·0000790	·0000532	·0000354	·0000232	·0000151	·0000097	·0000061	·0000039	*1·3*
1·4	·0000815+	·0000553	·0000370	·0000245−	·0000160	·0000103	·0000066	·0000042	·0000026	*1·4*
1·5	·0000567	·0000383	·0000254	·0000167	·0000108	·0000070	·0000044	·0000028	·0000017	*1·5*
1·6	·0000389	·0000261	·0000173	·0000113	·0000073	·0000046	·0000029	·0000018	·0000011	*1·6*
1·7	·0000264	·0000176	·0000116	·0000075+	·0000048	·0000031	·0000019	·0000012	·00000072	*1·7*
1·8	·0000177	·0000117	·0000077	·0000050−	·0000032	·0000020	·0000012	·00000076	·00000046	*1·8*
1·9	·0000117	·0000077	·0000050+	·0000032	·0000020	·0000013	·00000079	·00000048	·00000025−	*1·9*
2·0	·0000077	·0000050+	·0000032	·0000021	·0000013	·00000081	·00000050+	·00000029	·00000018	*2·0*
2·1	·0000050−	·0000032	·0000021	·0000013	·00000082	·00000051	·00000031	·00000019	·00000011	*2·1*
2·2	·0000032	·0000020	·0000013	·00000082	·00000051	·00000031	·00000019	·00000011	·00000007	*2·2*
2·3	·0000020	·0000013	·00000081	·00000051	·00000031	·00000020	·00000012	·00000007	·00000004	*2·3*
2·4	·0000012	·00000079	·00000050+	·00000031	·00000019	·00000012	·00000007	·00000004	·00000002	*2·4*
2·5	·00000076	·00000048	·00000029	·00000019	·00000011	·00000007	·00000004	·00000002	·00000001	*2·5*
2·6	·00000046	·00000025−	·00000018	·00000011	·00000007	·00000004	·00000002	·00000001	·00000000	*2·6*

k	d/N for $r = -\cdot 55$									*k*
	h = 0·0	*h = 0·1*	*h = 0·2*	*h = 0·3*	*h = 0·4*	*h = 0·5*	*h = 0·6*	*h = 0·7*	*h = 0·8*	
0·0	·1573139	·1379225+	·1197565−	·1029553	·0876156	·0737906	·0614915−	·0506918	·0413324	*0·0*
0·1	·1379225+	·1204240	·1041166	·0891146	·0754916	·0632813	·0524796	·0430487	·0349227	*0·1*
0·2	·1197565−	·1041166	·0896199	·0763569	·0643803	·0537065−	·0443183	·0361695+	·0291896	*0·2*
0·3	·1029553	·0891146	·0763569	·0647508	·0543306	·0450980	·0370254	·0300603	·0241304	*0·3*
0·4	·0876156	·0754916	·0643803	·0543306	·0453610	·0374610	·0305953	·0247076	·0197260	*0·4*
0·5	·0737906	·0632813	·0537065−	·0450980	·0374610	·0307756	·0250014	·0200805+	·0159430	*0·5*
0·6	·0614915−	·0524796	·0443183	·0370254	·0305953	·0250014	·0202001	·0161344	·0127378	*0·6*
0·7	·0506918	·0430487	·0361695+	·0300603	·0247076	·0200805+	·0161344	·0128143	·0100586	*0·7*
0·8	·0413324	·0349227	·0291896	·0241304	·0197260	·0159430	·0127378	·0100586	·0078495+	*0·8*
0·9	·0333271	·0280128	·0232900	·0191491	·0155672	·0125110	·0099384	·0078024	·0060528	*0·9*
1·0	·0265696	·0222148	·0183697	·0150202	·0121420	·0097023	·0076624	·0059799	·0046112	*1·0*
1·1	·0209407	·0174141	·0143206	·0116436	·0093586	·0074347	·0058368	·0045280	·0034704	*1·1*
1·2	·0163136	·0134918	·0110328	·0089192	·0071273	·0056287	·0043925+	·0033869	·0025798	*1·2*
1·3	·0125604	·0103298	·0083991	·0067507	·0053626	·0042098	·0032653	·0025022	·0018942	*1·3*
1·4	·0095566	·0078148	·0063174	·0050477	·0039859	·0031101	·0023975+	·0018258	·0013734	*1·4*
1·5	·0071843	·0058410	·0046942	·0037284	·0029263	·0022693	·0017386	·0013157	·0009834	*1·5*
1·6	·0053359	·0043129	·0034455−	·0027201	·0021218	·0016353	·0012450−	·0009362	·0006953	*1·6*
1·7	·0039150−	·0031456	·0024979	·0019600	·0015195−	·0011637	·0008803	·0006577	·0004853	*1·7*
1·8	·0028373	·0022660	·0017884	·0013947	·0010744	·0008176	·0006146	·0004563	·0003345−	*1·8*
1·9	·0020309	·0016122	·0012645+	·0009800	·0007502	·0005673	·0004237	·0003125−	·0002276	*1·9*
2·0	·0014357	·0011327	·0008829	·0006799	·0005172	·0003886	·0002883	·0002112	·0001528	*2·0*
2·1	·0010022	·0007858	·0006087	·0004657	·0003520	·0002627	·0001937	·0001409	·0001013	*2·1*
2·2	·0006908	·0005382	·0004142	·0003150−	·0002365−	·0001754	·0001284	·0000928	·0000663	*2·2*
2·3	·0004702	·0003639	·0002784	·0002103	·0001569	·0001156	·0000841	·0000603	·0000428	*2·3*
2·4	·0003159	·0002429	·0001845+	·0001386	·0001027	·0000752	·0000543	·0000387	·0000273	*2·4*
2·5	·0002092	·0001602	·0001209	·0000902	·0000663	·0000482	·0000346	·0000245+	·0000172	*2·5*
2·6	·0001372	·0001042	·0000781	·0000579	·0000423	·0000306	·0000218	·0000149	·0000106	*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for $r = -\cdot 55$									*k*
	h = *0·9*	*h* = *1·0*	*h* = *1·1*	*h* = *1·2*	*h* = *1·3*	*h* = *1·4*	*h* = *1·5*	*h* = *1·6*	*h* = *1·7*	
0·0	·0333271	·0265696	·0209407	·0163136	·0125604	·0095566	·0071843	·0053359	·0039150−	*0·0*
0·1	·0280128	·0222148	·0174141	·0134918	·0103298	·0078148	·0058410	·0043129	·0031456	*0·1*
0·2	·0232900	·0183697	·0143206	·0110328	·0083991	·0063174	·0046942	·0034455−	·0024979	*0·2*
0·3	·0191491	·0150202	·0116436	·0089192	·0067507	·0050477	·0037284	·0027201	·0019600	*0·3*
0·4	·0155672	·0121420	·0093586	·0071273	·0053626	·0039859	·0029263	·0021218	·0015195−	*0·4*
0·5	·0125110	·0097023	·0074347	·0056287	·0042098	·0031101	·0022693	·0016353	·0011637	*0·5*
0·6	·0099384	·0076624	·0058368	·0043925+	·0032653	·0023975+	·0017386	·0012450−	·0008803	*0·6*
0·7	·0078024	·0059799	·0045280	·0033869	·0025022	·0018258	·0013157	·0009362	·0006577	*0·7*
0·8	·0060528	·0046112	·0034704	·0025798	·0018942	·0013734	·0009834	·0006953	·0004853	*0·8*
0·9	·0046393	·0035129	·0026275+	·0019411	·0014163	·0010205−	·0007260	·0005099	·0003536	*0·9*
1·0	·0035129	·0026436	·0019651	·0014426	·0010458	·0007487	·0005292	·0003693	·0002544	*1·0*
1·1	·0026275+	·0019651	·0014515−	·0010588	·0007627	·0005424	·0003809	·0002641	·0001807	*1·1*
1·2	·0019411	·0014426	·0010588	·0007674	·0005492	·0003881	·0002707	·0001864	·0001267	*1·2*
1·3	·0014163	·0010458	·0007627	·0005492	·0003905−	·0002741	·0001899	·0001299	·0000877	*1·3*
1·4	·0010205−	·0007487	·0005424	·0003881	·0002741	·0001911	·0001316	·0000894	·0000600	*1·4*
1·5	·0007260	·0005292	·0003809	·0002707	·0001899	·0001316	·0000900	·0000607	·0000404	*1·5*
1·6	·0005099	·0003693	·0002641	·0001864	·0001299	·0000894	·0000607	·0000407	·0000269	*1·6*
1·7	·0003536	·0002544	·0001807	·0001267	·0000877	·0000600	·0000404	·0000269	·0000177	*1·7*
1·8	·0002421	·0001730	·0001221	·0000850+	·0000585−	·0000397	·0000266	·0000176	·0000115−	*1·8*
1·9	·0001636	·0001162	·0000814	·0000563	·0000385−	·0000259	·0000172	·0000113	·0000073	*1·9*
2·0	·0001091	·0000770	·0000536	·0000368	·0000250−	·0000167	·0000110	·0000072	·0000046	*2·0*
2·1	·0000719	·0000503	·0000348	·0000238	·0000160	·0000106	·0000070	·0000045+	·0000029	*2·1*
2·2	·0000467	·0000325−	·0000223	·0000151	·0000101	·0000066	·0000043	·0000028	·0000018	*2·2*
2·3	·0000300	·0000207	·0000141	·0000095−	·0000063	·0000041	·0000027	·0000017	·0000011	*2·3*
2·4	·0000191	·0000130	·0000088	·0000059	·0000039	·0000025+	·0000016	·0000010	·00000065−	*2·4*
2·5	·0000118	·0000081	·0000054	·0000036	·0000024	·0000015+	·00000097	·00000061	·00000038	*2·5*
2·6	·0000073	·0000049	·0000033	·0000022	·0000014	·00000091	·00000058	·00000036	·00000022	*2·6*

k	d/N for $r = -\cdot 55$									*k*
	h = *1·8*	*h* = *1·9*	*h* = *2·0*	*h* = *2·1*	*h* = *2·2*	*h* = *2·3*	*h* = *2·4*	*h* = *2·5*	*h* = *2·6*	
0·0	·0028373	·0020309	·0014357	·0010022	·0006908	·0004702	·0003159	·0002092	·0001372	*0·0*
0·1	·0022660	·0016122	·0011327	·0007858	·0005382	·0003639	·0002429	·0001602	·0001042	*0·1*
0·2	·0017884	·0012645+	·0008829	·0006087	·0004142	·0002784	·0001845+	·0001209	·0000781	*0·2*
0·3	·0013947	·0009800	·0006799	·0004657	·0003150−	·0002103	·0001386	·0000902	·0000579	*0·3*
0·4	·0010744	·0007502	·0005172	·0003520	·0002365−	·0001569	·0001027	·0000663	·0000423	*0·4*
0·5	·0008176	·0005673	·0003886	·0002627	·0001754	·0001156	·0000752	·0000482	·0000306	*0·5*
0·6	·0006146	·0004237	·0002883	·0001937	·0001284	·0000841	·0000543	·0000346	·0000218	*0·6*
0·7	·0004563	·0003125−	·0002112	·0001409	·0000928	·0000603	·0000387	·0000245+	·0000149	*0·7*
0·8	·0003345−	·0002276	·0001528	·0001013	·0000663	·0000428	·0000273	·0000172	·0000106	*0·8*
0·9	·0002421	·0001636	·0001091	·0000719	·0000467	·0000300	·0000191	·0000118	·0000073	*0·9*
1·0	·0001730	·0001162	·0000770	·0000503	·0000325−	·0000207	·0000130	·0000081	·0000049	*1·0*
1·1	·0001221	·0000814	·0000536	·0000348	·0000223	·0000141	·0000088	·0000054	·0000033	*1·1*
1·2	·0000850+	·0000563	·0000368	·0000238	·0000151	·0000095−	·0000059	·0000036	·0000022	*1·2*
1·3	·0000585−	·0000385−	·0000250−	·0000160	·0000101	·0000063	·0000039	·0000024	·0000014	*1·3*
1·4	·0000397	·0000259	·0000167	·0000106	·0000066	·0000041	·0000025+	·0000015+	·00000091	*1·4*
1·5	·0000266	·0000172	·0000110	·0000070	·0000043	·0000027	·0000016	·00000097	·00000058	*1·5*
1·6	·0000176	·0000113	·0000072	·0000045+	·0000028	·0000017	·0000010	·00000061	·00000036	*1·6*
1·7	·0000115−	·0000073	·0000046	·0000029	·0000018	·0000011	·00000065−	·00000038	·00000022	*1·7*
1·8	·0000074	·0000047	·0000029	·0000018	·0000011	·00000067	·00000040	·00000023	·00000013	*1·8*
1·9	·0000047	·0000030	·0000018	·0000011	·00000069	·00000041	·00000024	·00000015−	·00000008	*1·9*
2·0	·0000029	·0000018	·0000011	·00000070	·00000042	·00000025+	·00000015−	·00000008	·00000005−	*2·0*
2·1	·0000018	·0000011	·00000070	·00000042	·00000025+	·00000015−	·00000009	·00000005−	·00000003	*2·1*
2·2	·0000011	·00000069	·00000042	·00000025+	·00000015−	·00000009	·00000005−	·00000003	·00000002	*2·2*
2·3	·00000067	·00000041	·00000025+	·00000015−	·00000009	·00000005+	·00000003	·00000002	·00000001	*2·3*
2·4	·00000040	·00000024	·00000015−	·00000009	·00000005−	·00000003	·00000002	·00000001	·00000001	*2·4*
2·5	·00000023	·00000015−	·00000008	·00000005−	·00000003	·00000002	·00000001	·00000001	·00000000	*2·5*
2·6	·00000013	·00000008	·00000005−	·00000003	·00000002	·00000001	·00000001	·00000000		*2·6*

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for r = − ·60									k
	h = 0·0	h = 0·1	h = 0·2	h = 0·3	h = 0·4	h = 0·5	h = 0·6	h = 0·7	h = 0·8	
0·0	·1475836	·1282648	·1103130	·0938584	·0789827	·0657195+	·0540578	·0439466	·0353029	0·0
0·1	·1282648	·1109204	·0949035−	·0803157	·0672130	·0556079	·0454726	·0367452	·0293361	0·1
0·2	·1103130	·0949035−	·0807649	·0679724	·0565592	·0465192	·0378115−	·0303662	·0240902	0·2
0·3	·0938584	·0803157	·0679724	·0568800	·0470515+	·0384660	·0310726	·0247964	·0195447	0·3
0·4	·0789827	·0672130	·0565592	·0470515+	·0386867	·0314321	·0252301	·0200039	·0156633	0·4
0·5	·0657195+	·0556079	·0465192	·0384660	·0314321	·0253763	·0202375+	·0159396	·0123970	0·5
0·6	·0540578	·0454726	·0378115−	·0310726	·0252301	·0202375+	·0160328	·0125430	·0096885+	0·6
0·7	·0439466	·0367452	·0303662	·0247964	·0200039	·0159396	·0125430	·0097456	·0074754	0·7
0·8	·0353029	·0293361	·0240902	·0195447	·0156633	·0123970	·0096885+	·0074754	·0056935−	0·8
0·9	·0280172	·0231352	·0188757	·0152133	·0121102	·0095193	·0073878	·0056599	·0042798	0·9
1·0	·0219629	·0180192	·0146050+	·0116923	·0092438	·0072156	·0055604	·0042294	·0031749	1·0
1·1	·0170032	·0138586	·0111576	·0088714	·0069649	·0053984	·0041302	·0031188	·0023239	1·1
1·2	·0129980	·0105234	·0084147	·0066442	·0051795−	·0039859	·0030274	·0022692	·0016783	1·2
1·3	·0098099	·0078883	·0062640	·0049112	·0038012	·0029040	·0021894	·0016288	·0011956	1·3
1·4	·0073086	·0058363	·0046020	·0035824	·0027526	·0020875−	·0015621	·0011534	·0008402	1·4
1·5	·0053743	·0042616	·0033364	·0025784	·0019667	·0014803	·0010995−	·0008057	·0005824	1·5
1·6	·0039001	·0030706	·0023866	·0018309	·0013862	·0010356	·0007633	·0005550+	·0003981	1·6
1·7	·0027928	·0021830	·0016843	·0012826	·0009638	·0007145+	·0005226	·0003771	·0002684	1·7
1·8	·0019732	·0015312	·0011726	·0008863	·0006609	·0004862	·0003529	·0002527	·0001784	1·8
1·9	·0013754	·0010594	·0008053	·0006040	·0004470	·0003263	·0002350−	·0001669	·0001169	1·9
2·0	·0009458	·0007230	·0005455−	·0004060	·0002981	·0002160	·0001543	·0001087	·0000755+	2·0
2·1	·0006415−	·0004867	·0003644	·0002691	·0001961	·0001410	·0000999	·0000698	·0000481	2·1
2·2	·0004291	·0003231	·0002400	·0001759	·0001272	·0000907	·0000638	·0000442	·0000302	2·2
2·3	·0002831	·0002115+	·0001559	·0001134	·0000813	·0000575+	·0000401	·0000276	·0000187	2·3
2·4	·0001842	·0001365+	·0000999	·0000720	·0000513	·0000360	·0000249	·0000170	·0000114	2·4
2·5	·0001181	·0000869	·0000631	·0000451	·0000319	·0000222	·0000152	·0000103	·0000069	2·5
2·6	·0000747	·0000545+	·0000393	·0000279	·0000195+	·0000135−	·0000092	·0000062	·0000041	2·6

k	d/N for r = − ·60									k
	h = 0·9	h = 1·0	h = 1·1	h = 1·2	h = 1·3	h = 1·4	h = 1·5	h = 1·6	h = 1·7	
0·0	·0280172	·0219629	·0170032	·0129980	·0098099	·0073086	·0053743	·0039001	·0027928	0·0
0·1	·0231352	·0180192	·0138586	·0105234	·0078883	·0058363	·0042616	·0030706	·0021830	0·1
0·2	·0188757	·0146050+	·0111576	·0084147	·0062640	·0046020	·0033364	·0023866	·0016843	0·2
0·3	·0152133	·0116923	·0088714	·0066442	·0049112	·0035824	·0025784	·0018309	·0012826	0·3
0·4	·0121102	·0092438	·0069649	·0051795−	·0038012	·0027526	·0019667	·0013862	·0009638	0·4
0·5	·0095193	·0072156	·0053984	·0039859	·0029040	·0020875−	·0014803	·0010356	·0007145+	0·5
0·6	·0073878	·0055604	·0041302	·0030274	·0021894	·0015621	·0010995−	·0007633	·0005226	0·6
0·7	·0056599	·0042294	·0031188	·0022692	·0016288	·0011534	·0008057	·0005550+	·0003771	0·7
0·8	·0042798	·0031749	·0023239	·0016783	·0011956	·0008402	·0005824	·0003981	·0002684	0·8
0·9	·0031938	·0023518	·0017086	·0012246	·0008658	·0006038	·0004153	·0002816	·0001884	0·9
1·0	·0023518	·0017189	·0012394	·0008816	·0006185−	·0004280	·0002920	·0001965+	·0001304	1·0
1·1	·0017086	·0012394	·0008869	·0006260	·0004358	·0002992	·0002025+	·0001352	·0000890	1·1
1·2	·0012246	·0008816	·0006260	·0004384	·0003028	·0002062	·0001385+	·0000917	·0000599	1·2
1·3	·0008658	·0006185−	·0004358	·0003028	·0002075−	·0001402	·0000934	·0000614	·0000397	1·3
1·4	·0006038	·0004280	·0002992	·0002062	·0001402	·0000940	·0000621	·0000405−	·0000260	1·4
1·5	·0004153	·0002920	·0002025+	·0001385+	·0000934	·0000621	·0000407	·0000263	·0000168	1·5
1·6	·0002816	·0001965+	·0001352	·0000917	·0000614	·0000405−	·0000263	·0000169	·0000107	1·6
1·7	·0001884	·0001304	·0000890	·0000599	·0000397	·0000260	·0000168	·0000107	·0000067	1·7
1·8	·0001242	·0000853	·0000577	·0000385+	·0000254	·0000164	·0000105+	·0000066	·0000041	1·8
1·9	·0000807	·0000550+	·0000369	·0000245+	·0000160	·0000103	·0000065−	·0000041	·0000025+	1·9
2·0	·0000516	·0000350−	·0000233	·0000153	·0000099	·0000063	·0000040	·0000025−	·0000015+	2·0
2·1	·0000327	·0000219	·0000145−	·0000094	·0000060	·0000038	·0000024	·0000015−	·00000089	2·1
2·2	·0000204	·0000135+	·0000090	·0000057	·0000036	·0000023	·0000014	·00000086	·00000052	2·2
2·3	·0000125+	·0000082	·0000054	·0000034	·0000022	·0000013	·00000082	·00000050+	·00000030	2·3
2·4	·0000076	·0000050−	·0000032	·0000020	·0000013	·00000078	·00000048	·00000029	·00000017	2·4
2·5	·0000045+	·0000029	·0000019	·0000012	·00000073	·00000045−	·00000027	·00000016	·00000010	2·5
2·6	·0000027	·0000017	·0000011	·00000067	·00000042	·00000025+	·00000015+	·00000009	·00000005+	2·6

TABLE IX. *Negative Correlation—(continued).*

k	d/N for $r = -\cdot60$									k
	$h = 1{\cdot}8$	$h = 1{\cdot}9$	$h = 2{\cdot}0$	$h = 2{\cdot}1$	$h = 2{\cdot}2$	$h = 2{\cdot}3$	$h = 2{\cdot}4$	$h = 2{\cdot}5$	$h = 2{\cdot}6$	
0·0	·0019732	·0013754	·0009458	·0006415−	·0004291	·0002831	·0001842	·0001181	·0000747	0·0
0·1	·0015312	·0010594	·0007230	·0004867	·0003231	·0002115+	·0001365+	·0000869	·0000545+	0·1
0·2	·0011726	·0008053	·0005455−	·0003644	·0002400	·0001559	·0000999	·0000631	·0000393	0·2
0·3	·0008863	·0006040	·0004060	·0002691	·0001759	·0001134	·0000720	·0000451	·0000279	0·3
0·4	·0006609	·0004470	·0002981	·0001961	·0001272	·0000813	·0000513	·0000319	·0000195+	0·4
0·5	·0004862	·0003263	·0002160	·0001410	·0000907	·0000575+	·0000360	·0000222	·0000135−	0·5
0·6	·0003529	·0002350−	·0001543	·0000999	·0000638	·0000401	·0000249	·0000152	·0000092	0·6
0·7	·0002527	·0001669	·0001087	·0000698	·0000442	·0000276	·0000170	·0000103	·0000062	0·7
0·8	·0001784	·0001169	·0000755+	·0000481	·0000302	·0000187	·0000114	·0000069	·0000041	0·8
0·9	·0001242	·0000807	·0000516	·0000327	·0000204	·0000125+	·0000076	·0000045+	·0000027	0·9
1·0	·0000853	·0000550+	·0000350−	·0000219	·0000135+	·0000082	·0000049	·0000029	·0000017	1·0
1·1	·0000577	·0000369	·0000233	·0000145−	·0000090	·0000054	·0000032	·0000019	·0000011	1·1
1·2	·0000385+	·0000245+	·0000153	·0000094	·0000057	·0000034	·0000020	·0000012	·00000067	1·2
1·3	·0000254	·0000160	·0000099	·0000060	·0000036	·0000022	·0000013	·00000073	·00000042	1·3
1·4	·0000164	·0000103	·0000063	·0000038	·0000023	·0000013	·00000078	·00000045−	·00000025+	1·4
1·5	·0000105+	·0000065−	·0000040	·0000024	·0000014	·00000082	·00000048	·00000027	·00000015+	1·5
1·6	·0000066	·0000041	·0000025−	·0000015−	·00000086	·00000050+	·00000029	·00000016	·00000009	1·6
1·7	·0000041	·0000025+	·0000015+	·00000089	·00000052	·00000030	·00000017	·00000010	·00000005+	1·7
1·8	·0000025+	·0000015+	·00000091	·00000053	·00000031	·00000018	·00000010	·00000005+	·00000002	1·8
1·9	·0000015+	·00000091	·00000054	·00000031	·00000018	·00000010	·00000006	·00000003	·00000002	1·9
2·0	·00000091	·00000054	·00000032	·00000018	·00000010	·00000006	·00000003	·00000002	·00000001	2·0
2·1	·00000053	·00000031	·00000018	·00000011	·00000006	·00000003	·00000002	·00000001	·00000000	2·1
2·2	·00000031	·00000018	·00000010	·00000006	·00000003	·00000002	·00000001	·00000001		2·2
2·3	·00000018	·00000010	·00000006	·00000003	·00000002	·00000001	·00000001	·00000000		2·3
2·4	·00000010	·00000006	·00000003	·00000002	·00000001	·00000001	·00000000			2·4
2·5	·00000005+	·00000003	·00000002	·00000001	·00000000	·00000000				2·5
2·6	·00000002	·00000002	·00000001	·00000000						2·6

k	d/N for $r = -\cdot65$									k
	$h = 0{\cdot}0$	$h = 0{\cdot}1$	$h = 0{\cdot}2$	$h = 0{\cdot}3$	$h = 0{\cdot}4$	$h = 0{\cdot}5$	$h = 0{\cdot}6$	$h = 0{\cdot}7$	$h = 0{\cdot}8$	
0·0	·13738444	·11814907	·10044363	·08438644	·07004026	·05741457	·04647053	·03712815−	·02927486	0·0
0·1	·11814907	·10099015+	·08531418	·07120653	·05870105+	·04778352	·03839747	·03045178	·02382912	0·1
0·2	·10044363	·08531418	·07159960	·05935509	·04858909	·03926776	·03132135−	·02465184	·01914109	0·2
0·3	·08438644	·07120653	·05935509	·04886063	·03971028	·03185499	·02521607	·01969265+	·01516933	0·3
0·4	·07004026	·05870105+	·04858909	·03971028	·03203489	·02550301	·02003120	·01551943	·01185795+	0·4
0·5	·05741457	·04778352	·03926776	·03185499	·02550301	·02014534	·01569751	·01206339	·00914128	0·5
0·6	·04647053	·03839747	·03132135−	·02521607	·02003120	·01569751	·01213266	·00924691	·00694822	0·6
0·7	·03712815−	·03045178	·02465184	·01969265+	·01551943	·01206339	·00924691	·00698838	·00520632	0·7
0·8	·02927486	·02382912	·01914109	·01516933	·01185795+	·00914128	·00694822	·00520632	·00384510	0·8
0·9	·02277480	·01839480	·01465894	·01152332	·00893361	·00682912	·00514649	·00382288	·00279856	0·9
1·0	·01747795−	·01400509	·01107066	·00863094	·00663515+	·00502887	·00375699	·00276623	·00200701	1·0
1·1	·01322869	·01051473	·00824328	·00637283	·00485747	·00364969	·00270268	·00197225+	·00141806	1·1
1·2	·00987308	·00778314	·00605076	·00463800	·00350460	·00261009	·00191565+	·00138534	·00098699	1·2
1·3	·00726479	·00567916	·00437757	·00332650+	·00249156	·00183913	·00133767	·00095855−	·00067663	1·3
1·4	·00526934	·00408430	·00312109	·00235094	·00174523	·00127665+	·00092010	·00065326	·00045685−	1·4
1·5	·00376692	·00289463	·00219265−	·00163695+	·00120428	·00087293	·00062335−	·00043846	·00030375+	1·5
1·6	·00265370	·00202140	·00151762	·00112284	·00081855+	·00058788	·00041590	·00028980	·00019886	1·6
1·7	·00184202	·00139071	·00103476	·00075864	·00054797	·00038990	·00027325+	·00018860	·00012819	1·7
1·8	·00125967	·00094254	·00069494	·00050483	·00036126	·00025464	·00017677	·00012085−	·00008135−	1·8
1·9	·00084858	·00062919	·00045966	·00033082	·00023453	·00016375−	·00011259	·00007623	·00005082	1·9
2·0	·00056305+	·00041367	·00029941	·00021348	·00014991	·00010367	·00007060	·00004734	·00003125−	2·0
2·1	·00036794	·00026783	·00019205−	·00013563	·00009434	·00006462	·00004358	·00002894	·00001891	2·1
2·2	·00023678	·00017075−	·00012128	·00008484	·00005845−	·00003965−	·00002648	·00001741	·00001127	2·2
2·3	·00015004	·00010718	·00007541	·00005225−	·00003565−	·00002394	·00001583	·00001031	·00000661	2·3
2·4	·00009361	·00006624	·00004616	·00003167	·00002140	·00001423	·00000932	·00000601	·00000381	2·4
2·5	·00005750+	·00004030	·00002784	·00001890	·00001264	·00000833	·00000540	·00000345−	·00000216	2·5
2·6	·00003477	·00002413	·00001649	·00001110	·00000735+	·00000479	·00000308	·00000194	·00000121	2·6

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for r = − ·65									k
	h = 0·9	*h = 1·0*	*h = 1·1*	*h = 1·2*	*h = 1·3*	*h = 1·4*	*h = 1·5*	*h = 1·6*	*h = 1·7*	
0·0	·02277480	·01747795−	·01322869	·00987308	·00726479	·00526934	·00376692	·00265370	·00184202	*0·0*
0·1	·01839480	·01400509	·01051473	·00778314	·00567916	·00408430	·00289463	·00202140	·00139071	*0·1*
0·2	·01465894	·01107066	·00824328	·00605076	·00437757	·00312109	·00219265−	·00151762	·00103476	*0·2*
0·3	·01152332	·00863094	·00637283	·00463800	·00332650+	·00235094	·00163695+	·00112284	·00075864	*0·3*
0·4	·00893361	·00663515+	·00485747	·00350460	·00249156	·00174523	·00120428	·00081855+	·00054797	*0·4*
0·5	·00682912	·00502887	·00364969	·00261009	·00183913	·00127665+	·00087293	·00058788	·00038990	*0·5*
0·6	·00514649	·00375699	·00270268	·00191565+	·00133767	·00092010	·00062335−	·00041590	·00027325+	*0·6*
0·7	·00382288	·00276623	·00197225+	·00138534	·00095855−	·00065326	·00043846	·00028980	·00018860	*0·7*
0·8	·00279856	·00200701	·00141806	·00098699	·00067663	·00045685−	·00030375+	·00019886	·00012819	*0·8*
0·9	·00201873	·00143471	·00100446	·00069268	·00047045+	·00031466	·00020723	·00013438	·00008579	*0·9*
1·0	·00143471	·00101035−	·00070084	·00047881	·00032214	·00021342	·00013922	·00008941	·00005652	*1·0*
1·1	·00100446	·00070084	·00048163	·00032595+	·00021722	·00014254	·00009208	·00005856	·00003666	*1·1*
1·2	·00069268	·00047881	·00032595+	·00021851	·00014423	·00009373	·00005997	·00003777	·00002341	*1·2*
1·3	·00047045+	·00032214	·00021722	·00014423	·00009428	·00006068	·00003844	·00002397	·00001471	*1·3*
1·4	·00031466	·00021342	·00014254	·00009373	·00006068	·00003867	·00002426	·00001498	·00000910	*1·4*
1·5	·000207230	·000139216	·0^{4}92084	·0^{4}59965+	·0^{4}38442	·0^{4}24258	·0^{4}15067	·0^{4}09211	·0^{4}055414	*1·5*
1·6	·000134377	·0^{4}89405+	·0^{4}58564	·0^{4}37665+	·0^{4}23972	·0^{4}14978	·0^{4}09211	·0^{4}05574	·0^{4}033201	*1·6*
1·7	·0^{4}85786	·0^{4}56523	·0^{4}36664	·0^{4}23411	·0^{4}14714	·0^{4}09102	·0^{4}055414	·0^{4}033201	·0^{4}019575−	*1·7*
1·8	·0^{4}53913	·0^{4}35176	·0^{4}22593	·0^{4}14284	·0^{4}08888	·0^{4}05444	·0^{4}032808	·0^{4}019459	·0^{4}011357	*1·8*
1·9	·0^{4}33352	·0^{4}21547	·0^{4}13703	·0^{4}08577	·0^{4}05284	·0^{4}03204	·0^{4}019114	·0^{4}011222	·0^{4}006483	*1·9*
2·0	·0^{4}20308	·0^{4}12991	·0^{4}08180	·0^{4}05069	·0^{4}03091	·0^{4}018554	·0^{4}010958	·0^{4}006368	·0^{4}003641	*2·0*
2·1	·0^{4}12170	·0^{4}07708	·0^{4}04805−	·0^{4}02948	·0^{4}01780	·0^{4}010573	·0^{4}006181	·0^{4}003555+	·0^{4}002012	*2·1*
2·2	·0^{4}07178	·0^{4}04501	·0^{4}02778	·0^{4}01687	·0^{4}010081	·0^{4}005928	·0^{4}003430	·0^{4}001953	·0^{4}001094	*2·2*
2·3	·0^{4}04166	·0^{4}02586	·0^{4}015800	·0^{4}009498	·0^{4}005619	·0^{4}003271	·0^{4}001873	·0^{4}001055+	·0^{4}000585+	*2·3*
2·4	·0^{4}02380	·0^{4}01462	·0^{4}008843	·0^{4}005262	·0^{4}003081	·0^{4}001775+	·0^{4}001006	·0^{4}000561	·0^{4}000308	*2·4*
2·5	·0^{4}01337	·0^{4}008136	·0^{4}004870	·0^{4}002868	·0^{4}001662	·0^{4}000948	·0^{4}000532	·0^{4}000293	·0^{4}000159	*2·5*
2·6	·0^{4}00740	·0^{4}004453	·0^{4}002639	·0^{4}001538	·0^{4}000882	·0^{4}000498	·0^{4}000276	·0^{4}000151	·0^{4}0000811	*2·6*

k	d/N for r = − ·65									k
	h = 1·8	*h = 1·9*	*h = 2·0*	*h = 2·1*	*h = 2·2*	*h = 2·3*	*h = 2·4*	*h = 2·5*	*h = 2·6*	
0·0	·00125967	·00084858	·00056305+	·00036794	·00023678	·00015004	·00009361	·00005750+	·00003477	*0·0*
0·1	·00094254	·00062919	·00041367	·00026783	·00017075−	·00010718	·00006624	·00004030	·00002413	*0·1*
0·2	·00069494	·00045966	·00029941	·00019205−	·00012128	·00007541	·00004616	·00002781	·00001649	*0·2*
0·3	·00050483	·00033082	·00021348	·00013563	·00008484	·00005225−	·00003167	·00001890	·00001110	*0·3*
0·4	·00036126	·00023453	·00014991	·00009434	·00005845−	·00003565−	·00002140	·00001264	·00000735+	*0·4*
0·5	·000254641	·000163749	·000103673	·0^{4}64618	·0^{4}39647	·0^{4}23944	·0^{4}14233	·0^{4}08327	·0^{4}04794	*0·5*
0·6	·000176773	·000112592	·0^{4}70600	·0^{4}43579	·0^{4}26478	·0^{4}15835−	·0^{4}09320	·0^{4}05398	·0^{4}03077	*0·6*
0·7	·000120847	·0^{4}76232	·0^{4}47339	·0^{4}28936	·0^{4}17409	·0^{4}10308	·0^{4}06007	·0^{4}03445+	·0^{4}01944	*0·7*
0·8	·0^{4}81347	·0^{4}50818	·0^{4}31250−	·0^{4}18914	·0^{4}11267	·0^{4}06606	·0^{4}03811	·0^{4}02164	·0^{4}01209	*0·8*
0·9	·0^{4}53913	·0^{4}33352	·0^{4}20308	·0^{4}12170	·0^{4}07178	·0^{4}04166	·0^{4}02380	·0^{4}01337	·0^{4}00740	*0·9*
1·0	·0^{4}35176	·0^{4}21547	·0^{4}12991	·0^{4}07708	·0^{4}04501	·0^{4}02586	·0^{4}01462	·0^{4}008136	·0^{4}004453	*1·0*
1·1	·0^{4}22593	·0^{4}13703	·0^{4}08180	·0^{4}04805−	·0^{4}02778	·0^{4}015800	·0^{4}008843	·0^{4}004870	·0^{4}002639	*1·1*
1·2	·0^{4}14284	·0^{4}08577	·0^{4}05069	·0^{4}02948	·0^{4}01687	·0^{4}009498	·0^{4}005262	·0^{4}002868	·0^{4}001538	*1·2*
1·3	·0^{4}08888	·0^{4}05284	·0^{4}03091	·0^{4}01780	·0^{4}010081	·0^{4}005619	·0^{4}003081	·0^{4}001662	·0^{4}000882	*1·3*
1·4	·0^{4}05444	·0^{4}03204	·0^{4}018554	·0^{4}010573	·0^{4}005928	·0^{4}003271	·0^{4}001775+	·0^{4}000948	·0^{4}000498	*1·4*
1·5	·0^{4}032808	·0^{4}019114	·0^{4}010958	·0^{4}006181	·0^{4}003430	·0^{4}001873	·0^{4}001006	·0^{4}000532	·0^{4}000276	*1·5*
1·6	·0^{4}019459	·0^{4}011222	·0^{4}006368	·0^{4}003555+	·0^{4}001953	·0^{4}001055+	·0^{4}000561	·0^{4}000293	·0^{4}000151	*1·6*
1·7	·0^{4}011357	·0^{4}006483	·0^{4}003641	·0^{4}002012	·0^{4}001094	·0^{4}000585+	·0^{4}000308	·0^{4}000159	·0^{4}0000811	*1·7*
1·8	·0^{4}006522	·0^{4}003685−	·0^{4}002048	·0^{4}001120	·0^{4}000603	·0^{4}000319	·0^{4}0001661	·0^{4}0000851	·0^{4}0000429	*1·8*
1·9	·0^{4}003685−	·0^{4}002061	·0^{4}001134	·0^{4}000614	·0^{4}000327	·0^{4}0001712	·0^{4}0000882	·0^{4}0000447	·0^{4}0000223	*1·9*
2·0	·0^{4}002048	·0^{4}001134	·0^{4}0006174	·0^{4}0003307	·0^{4}0001743	·0^{4}0000903	·0^{4}0000461	·0^{4}0000231	·0^{4}0000114	*2·0*
2·1	·0^{4}001120	·0^{4}000614	·0^{4}0003307	·0^{4}0001753	·0^{4}0000914	·0^{4}0000469	·0^{4}0000237	·0^{4}0000117	·0^{4}0000058	*2·1*
2·2	·0^{4}000603	·0^{4}000327	·0^{4}0001743	·0^{4}0000914	·0^{4}0000472	·0^{4}0000239	·0^{4}0000119	·0^{4}0000059	·0^{4}0000028	*2·2*
2·3	·0^{4}000319	·0^{4}0001712	·0^{4}0000903	·0^{4}0000469	·0^{4}0000239	·0^{4}0000120	·0^{4}0000059	·0^{4}0000029	·0^{4}0000014	*2·3*
2·4	·0^{4}0001661	·0^{4}0000882	·0^{4}0000461	·0^{4}0000237	·0^{4}0000119	·0^{4}0000059	·0^{4}0000029	·0^{4}0000014	·0^{4}0000007	*2·4*
2·5	·0^{4}0000851	·0^{4}0000447	·0^{4}0000231	·0^{4}0000117	·0^{4}0000059	·0^{4}0000029	·0^{4}0000014	·0^{4}0000007	·0^{4}0000003	*2·5*
2·6	·0^{4}0000429	·0^{4}0000223	·0^{4}0000114	·0^{4}0000058	·0^{4}0000028	·0^{4}0000014	·0^{4}0000007	·0^{4}0000003	·0^{4}0000001	*2·6*

0^4 indicates that four zeros must be placed before the figures that follow.

TABLE IX. *Negative Correlation—(continued).*

k	d/N for $r = -\cdot70$									k
	$h = 0\cdot0$	$h = 0\cdot1$	$h = 0\cdot2$	$h = 0\cdot3$	$h = 0\cdot4$	$h = 0\cdot5$	$h = 0\cdot6$	$h = 0\cdot7$	$h = 0\cdot8$	
0·0	·12659166	·10745519	·09004105+	·07445180	·06072555+	·04884035+	·03872180	·03025303	·02328595−	*0·0*
0·1	·10745519	·09052528	·07526022	·06172350+	·04991962	·03979999	·03127159	·02420725−	·01845654	*0·1*
0·2	·09004105+	·07526022	·06205979	·05046818	·04046128	·03196965+	·02488758	·01908328	·01440906	*0·2*
0·3	·07445180	·06172350+	·05046818	·04068415+	·03232451	·02530494	·01951290	·01481720	·01107722	*0·3*
0·4	·06072555+	·04991962	·04046128	·03232451	·02544562	·01973133	·01506763	·01132840	·00838350−	*0·4*
0·5	·04884035+	·03979999	·03196965+	·02530494	·01973133	·01515204	·01145612	·00852612	·00624477	*0·5*
0·6	·03872180	·03127159	·02488758	·01951290	·01506763	·01145612	·00857420	·00631560	·00457729	*0·6*
0·7	·03025303	·02420725−	·01908328	·01481720	·01132840	·00852612	·00631560	·00460324	·00330076	*0·7*
0·8	·02328595−	·01845654	·01440906	·01107722	·00838350−	·00624477	·00457729	·00330076	·00234126	*0·8*
0·9	·01765282	·01385649	·01071087	·00815108	·00610548	·00450030	·00326355−	·00232799	·00163320	*0·9*
1·0	·01317710	·01024119	·00783649	·00590236	·00437486	·00319039	·00228866	·00161471	·00112024	*1·0*
1·1	·00968298	·00744980	·00564202	·00420509	·00308372	·00222456	·00157836	·00110124	·00075544	*1·1*
1·2	·00700303	·00533269	·00399647	·00294702	·00213784	·00152536	·00107028	·00073838	·00050078	*1·2*
1·3	·00498381	·00375551	·00278464	·00203130	·00145745+	·00102839	·00071349	·00048666	·00032628	*1·3*
1·4	·00348941	·00260157	·00190826	·00137681	·00097694	·00068161	·00046755−	·00031525+	·00020892	*1·4*
1·5	·00240314	·00177243	·00128591	·00091753	·00064376	·00044408	·00030113	·00020070	·00013146	*1·5*
1·6	·00162768	·00118742	·00085197	·00060111	·00041698	·00028435+	·00019059	·00012555−	·00008127	*1·6*
1·7	·00108407	·00078212	·00055490	·00038709	·00026545+	·00017893	·00011854	·00007717	·00004936	*1·7*
1·8	·00070987	·00050643	·00035525−	·00024499	·00016607	·00011064	·00007243	·00004660	·00002945−	*1·8*
1·9	·00045695−	·00032232	·00022352	·00015237	·00010208	·00006721	·00004348	·00002764	·00001726	*1·9*
2·0	·00028912	·00020161	·00013821	·00009312	·00006166	·00004011	·00002564	·$0^4$16104	·$0^4$09935−	*2·0*
2·1	·00017978	·00012393	·00008397	·00005591	·00003658	·00002352	·$0^4$14854	·$0^4$09216	·$0^4$05616	*2·1*
2·2	·00010986	·00007485+	·00005012	·00003298	·00002132	·$0^4$13544	·$0^4$08451	·$0^4$05180	·$0^4$03118	*2·2*
2·3	·00006596	·00004442	·00002939	·00001911	·$0^4$12207	·$0^4$07660	·$0^4$04722	·$0^4$02859	·$0^4$01700	*2·3*
2·4	·00003891	·00002589	·00001693	·$0^4$10876	·$0^4$06864	·$0^4$04255+	·$0^4$02591	·$0^4$01549	·$0^4$00910	*2·4*
2·5	·00002255+	·00001483	·$0^4$09579	·$0^4$06080	·$0^4$03791	·$0^4$02321	·$0^4$01396	·$0^4$00825−	·$0^4$00478	*2·5*
2·6	·00001284	·$0^4$08340	·$0^4$05323	·$0^4$03338	·$0^4$02056	·$0^4$01243	·$0^4$00739	·$0^4$00431	·$0^4$00247	*2·6*

k	d/N for $r = -\cdot70$									k
	$h = 0\cdot9$	$h = 1\cdot0$	$h = 1\cdot1$	$h = 1\cdot2$	$h = 1\cdot3$	$h = 1\cdot4$	$h = 1\cdot5$	$h = 1\cdot6$	$h = 1\cdot7$	
0·0	·01765282	·01317710	·00968298	·00700303	·00498381	·00348941	·00240314	·00162768	·00108407	*0·0*
0·1	·01385649	·01024119	·00744980	·00533269	·00375551	·00260157	·00177243	·00118742	·00078212	*0·1*
0·2	·01071087	·00783649	·00564202	·00399647	·00278464	·00190826	·00128591	·00085197	·00055490	*0·2*
0·3	·00815108	·00590236	·00420509	·00294702	·00203130	·00137681	·00091753	·00060111	·00038709	*0·3*
0·4	·00610548	·00437486	·00308372	·00213784	·00145745+	·00097694	·00064376	·00041698	·00026545+	*0·4*
0·5	·00450030	·00319039	·00222456	·00152536	·00102839	·00068161	·00044408	·00028435+	·00017893	*0·5*
0·6	·00326355−	·00228866	·00157836	·00107028	·00071349	·00046755−	·00030113	·00019059	·00011854	*0·6*
0·7	·00232799	·00161471	·00110124	·00073838	·00048666	·00031525+	·00020070	·00012555−	·00007717	*0·7*
0·8	·00163320	·00112024	·00075544	·00050078	·00032628	·00020892	·00013146	·00008127	·00004936	*0·8*
0·9	·00112665−	·00076413	·00050946	·00033385+	·00021501	·00013607	·00008461	·00005169	·00003102	*0·9*
1·0	·00076413	·00051238	·00033770	·00021874	·00013923	·00008708	·00005350+	·00003230	·$0^4$19149	*1·0*
1·1	·00050946	·00033770	·00022000	·00014084	·00008859	·00005475+	·00003324	·$0^4$19824	·$0^4$11612	*1·1*
1·2	·00033385+	·00021874	·00014084	·00008910	·00005539	·00003382	·$0^4$20287	·$0^4$11952	·$0^4$06196	*1·2*
1·3	·00021501	·00013923	·00008859	·00005539	·00003402	·$0^4$20522	·$0^4$12161	·$0^4$07078	·$0^4$04046	*1·3*
1·4	·00013607	·00008708	·00005475+	·00003382	·$0^4$20522	·$0^4$12232	·$0^4$07160	·$0^4$04116	·$0^4$02324	*1·4*
1·5	·00008461	·00005350+	·00003324	·$0^4$20287	·$0^4$12161	·$0^4$07160	·$0^4$04141	·$0^4$02351	·$0^4$01311	*1·5*
1·6	·00005169	·00003230	·$0^4$19824	·$0^4$11952	·$0^4$07078	·$0^4$04116	·$0^4$02351	·$0^4$01319	·$0^4$00726	*1·6*
1·7	·00003102	·$0^4$19149	·$0^4$11612	·$0^4$06916	·$0^4$04046	·$0^4$02324	·$0^4$01311	·$0^4$00726	·$0^4$00395−	*1·7*
1·8	·$0^4$18285−	·$0^4$11152	·$0^4$06680	·$0^4$03930	·$0^4$02271	·$0^4$01288	·$0^4$00718	·$0^4$00393	·$0^4$00211	*1·8*
1·9	·$0^4$10587	·$0^4$06378	·$0^4$03774	·$0^4$02193	·$0^4$01252	·$0^4$00701	·$0^4$00386	·$0^4$00208	·$0^4$001105+	*1·9*
2·0	·$0^4$06020	·$0^4$03583	·$0^4$02094	·$0^4$01202	·$0^4$00677	·$0^4$00375−	·$0^4$00204	·$0^4$001086	·$0^4$000569	*2·0*
2·1	·$0^4$03362	·$0^4$01976	·$0^4$01141	·$0^4$00647	·$0^4$00360	·$0^4$00197	·$0^4$001055−	·$0^4$000556	·$0^4$000287	*2·1*
2·2	·$0^4$01844	·$0^4$01070	·$0^4$00610	·$0^4$00342	·$0^4$00188	·$0^4$001013	·$0^4$000537	·$0^4$000279	·$0^4$000142	*2·2*
2·3	·$0^4$00993	·$0^4$00569	·$0^4$00320	·$0^4$00177	·$0^4$000961	·$0^4$000512	·$0^4$000268	·$0^4$000137	·$0^4$000069	*2·3*
2·4	·$0^4$00525−	·$0^4$00297	·$0^4$00165+	·$0^4$000902	·$0^4$000483	·$0^4$000254	·$0^4$000131	·$0^4$000066	·$0^4$000033	*2·4*
2·5	·$0^4$00272	·$0^4$00152	·$0^4$000836	·$0^4$000451	·$0^4$000239	·$0^4$000124	·$0^4$000063	·$0^4$000032	·$0^4$000015+	*2·5*
2·6	·$0^4$00139	·$0^4$000766	·$0^4$000415+	·$0^4$000221	·$0^4$000115+	·$0^4$000059	·$0^4$000030	·$0^4$000015−	·$0^4$000007	*2·6*

0^4 indicates that four zeros must be placed before the figures that follow.

TABLE IX. *Negative Correlation—(continued).*

k	d/N for $r = -\cdot 70$									k
	$h = 1{\cdot}8$	$h = 1{\cdot}9$	$h = 2{\cdot}0$	$h = 2{\cdot}1$	$h = 2{\cdot}2$	$h = 2{\cdot}3$	$h = 2{\cdot}4$	$h = 2{\cdot}5$	$h = 2{\cdot}6$	
0·0	·00070987	·00045695$^-$	·00028912	·00017978	·00010986	·00006596	·00003891	·00002255$^+$	·00001284	*0·0*
0·1	·00050643	·00032232	·00020161	·00012393	·00007485$^+$	·00004442	·00002589	·00001483	·0^{4}08340	*0·1*
0·2	·00035525$^-$	·00022352	·00013821	·00008397	·00005012	·00002939	·00001693	·0^{4}09579	·0^{4}05323	*0·2*
0·3	·00024499	·00015237	·00009312	·00005591	·00003298	·00001911	·0^{4}10876	·0^{4}06080	·0^{4}03338	*0·3*
0·4	·00016607	·00010208	·00006166	·00003658	·00002132	·0^{4}12207	·0^{4}06864	·0^{4}03791	·0^{4}02056	*0·4*
0·5	·00011064	·00006721	·00004011	·00002352	·0^{4}13544	·0^{4}07660	·0^{4}04255$^+$	·0^{4}02321	·0^{4}01243	*0·5*
0·6	·00007243	·00004348	·00002564	·0^{4}14854	·0^{4}08451	·0^{4}04722	·0^{4}02591	·0^{4}01396	·0^{4}00739	*0·6*
0·7	·00004660	·00002764	·000016104	·0^{4}09216	·0^{4}05180	·0^{4}02859	·0^{4}01549	·0^{4}00825$^-$	·0^{4}00431	*0·7*
0·8	·00002945$^-$	·0^{4}17259	·0^{4}09935$^-$	·0^{4}05616	·0^{4}03118	·0^{4}01700	·0^{4}00910	·0^{4}00478	·0^{4}00247	*0·8*
0·9	·0^{4}18285$^-$	·0^{4}10587	·0^{4}06020	·0^{4}03362	·0^{4}01844	·0^{4}00993	·0^{4}00525$^-$	·0^{4}00272	·0^{4}00139	*0·9*
1·0	·0^{4}11152	·0^{4}06378	·0^{4}03583	·0^{4}01976	·0^{4}01070	·0^{4}00569	·0^{4}00297	·0^{4}00152	·0^{4}000766	*1·0*
1·1	·0^{4}06680	·0^{4}03774	·0^{4}02094	·0^{4}01141	·0^{4}00610	·0^{4}00320	·0^{4}00165$^+$	·0^{4}000836	·0^{4}000415$^+$	*1·1*
1·2	·0^{4}03930	·0^{4}02193	·0^{4}01202	·0^{4}00647	·0^{4}00342	·0^{4}00177	·0^{4}000902	·0^{4}000451	·0^{4}000221	*1·2*
1·3	·0^{4}02271	·0^{4}01252	·0^{4}00677	·0^{4}00360	·0^{4}00188	·0^{4}000961	·0^{4}000483	·0^{4}000239	·0^{4}000115$^+$	*1·3*
1·4	·0^{4}01288	·0^{4}00701	·0^{4}00375$^-$	·0^{4}00197	·0^{4}001013	·0^{4}000512	·0^{4}000254	·0^{4}000124	·0^{4}000059	*1·4*
1·5	·0^{4}00718	·0^{4}00386	·0^{4}00204	·0^{4}001055$^-$	·0^{4}000537	·0^{4}000268	·0^{4}000131	·0^{4}000063	·0^{4}000030	*1·5*
1·6	·0^{4}00393	·0^{4}00208	·0^{4}001086	·0^{4}000556	·0^{4}000279	·0^{4}000137	·0^{4}000066	·0^{4}000032	·0^{4}000015$^-$	*1·6*
1·7	·0^{4}00211	·0^{4}001105$^+$	·0^{4}000569	·0^{4}000287	·0^{4}000142	·0^{4}000069	·0^{4}000033	·0^{4}000015$^+$	·0^{4}000007	*1·7*
1·8	·0^{4}001111	·0^{4}000575$^+$	·0^{4}000292	·0^{4}000146	·0^{4}000071	·0^{4}000034	·0^{4}000016	·0^{4}000007	·0^{4}000003	*1·8*
1·9	·0^{4}000575$^+$	·0^{4}000294	·0^{4}000147	·0^{4}000072	·0^{4}000035$^+$	·0^{4}000016	·0^{4}000008	·0^{4}000003	·0^{4}000002	*1·9*
2·0	·0^{4}000292	·0^{4}000147	·0^{4}000073	·0^{4}000035$^+$	·0^{4}000017	·0^{4}000008	·0^{4}000004	·0^{4}000002	·0^{4}000001	*2·0*
2·1	·0^{4}000146	·0^{4}000072	·0^{4}000035$^+$	·0^{4}000017	·0^{4}000008	·0^{4}000004	·0^{4}000002	·0^{4}000001		*2·1*
2·2	·0^{4}000071	·0^{4}000035$^+$	·0^{4}000017	·0^{4}000008	·0^{4}000004	·0^{4}000002	·0^{4}000001			*2·2*
2·3	·0^{4}000034	·0^{4}000016	·0^{4}000008	·0^{4}000004	·0^{4}000002	·0^{4}000001				*2·3*
2·4	·0^{4}000016	·0^{4}000008	·0^{4}000004	·0^{4}000002	·0^{4}000001					*2·4*
2·5	·0^{4}000007	·0^{4}000003	·0^{4}000002	·0^{4}000001						*2·5*
2·6	·0^{4}000003	·0^{4}000002	·0^{4}000001							*2·6*

k	d/N for $r = -\cdot 75$									k
	$h = 0{\cdot}0$	$h = 0{\cdot}1$	$h = 0{\cdot}2$	$h = 0{\cdot}3$	$h = 0{\cdot}4$	$h = 0{\cdot}5$	$h = 0{\cdot}6$	$h = 0{\cdot}7$	$h = 0{\cdot}8$	
0·0	·11502673	·09601193	·07895514	·06393679	·05096068	·03996170	·03081764	·02336334	·01740584	*0·0*
0·1	·09601193	·07937492	·06462260	·05178732	·04083268	·03166336	·02413803	·01808359	·01330939	*0·1*
0·2	·07895514	·06462260	·05206585$^-$	·04127527	·03218190	·02466872	·01858381	·01375392	·00999731	*0·2*
0·3	·06393679	·05178732	·04127527	·03235663	·02493843	·01889056	·01405849	·01027567	·00737442	*0·3*
0·4	·05096068	·04083268	·03218190	·02493843	·01899393	·01421330	·01044640	·00753871	·00534026	*0·4*
0·5	·03996170	·03166336	·02466872	·01889056	·01421330	·01050393	·00762221	·00542947	·00379547	*0·5*
0·6	·03081764	·02413803	·01858381	·01405849	·01044640	·00762221	·00545954	·00383772	·00264682	*0·6*
0·7	·02336334	·01808359	·01375392	·01027567	·00753871	·00542947	·00383772	·00266155$^-$	·00181066	*0·7*
0·8	·01740584	·01330939	·00999731	·00737442	·00534026	·00379547	·00264682	·00181066	·00121481	*0·8*
0·9	·01273898	·00962023	·00713469	·00519483	·00371236	·00260314	·00179065$^-$	·00120807	·00079919	*0·9*
1·0	·00915625$^+$	·00682714	·00499785$^+$	·00359109	·00253193	·00175128	·00118805$^+$	·00079032	·00051544	*1·0*
1·1	·00646129	·00475554	·00343554	·00243550$^+$	·00169384	·00115543	·00077289	·00050687	·00032585$^-$	*1·1*
1·2	·00447528	·00325055$^+$	·00231690	·00162018	·00111127	·00074745$^+$	·00049291	·00031864	·00020188	*1·2*
1·3	·00304167	·00217976	·00153259	·00105695$^+$	·00071483	·00047401	·00030812	·00019631	·00012256	*1·3*
1·4	·00202812	·00143371	·00099416	·00067606	·00045077	·00029464	·00018876	·00011851	·00007290	*1·4*
1·5	·00132639	·00092475$^-$	·00063230	·00042391	·00027861	·00017948	·00011331	·00007009	·00004248	*1·5*
1·6	·00085066	·00058481	·00039422	·00026052	·00016876	·00010713	·00006664	·00004061	·00002424	*1·6*
1·7	·00053489	·00036254	·00024090	·00015691	·00010016	·00006265$^-$	·00003839	·00002305$^-$	·00001355$^+$	*1·7*
1·8	·00032970	·00022028	·00014426	·00009260	·00005824	·00003589	·00002166	·00001281	·00000742	*1·8*
1·9	·00019919	·00013116	·00008465$^+$	·00005354	·00003317	·00002014	·00001197	·00000697	·00000398	*1·9*
2·0	·00011793	·00007653	·00004866	·00003032	·00001851	·00001107	·00000648	·0^{4}03716	·0^{4}02087	*2·0*
2·1	·00006841	·00004374	·00002740	·00001682	·00001011	·00000595$^+$	·0^{4}03434	·0^{4}01939	·0^{4}01072	*2·1*
2·2	·00003888	·00002449	·00001512	·00000914	·00000541	·0^{4}03138	·0^{4}01782	·0^{4}00991	·0^{4}00539	*2·2*
2·3	·00002164	·00001343	·00000817	·00000486	·0^{4}02835$^+$	·0^{4}01619	·0^{4}00905$^+$	·0^{4}00496	·0^{4}00266	*2·3*
2·4	·00001180	·00000721	·00000432	·0^{4}02533	·0^{4}01454	·0^{4}00818	·0^{4}00450$^+$	·0^{4}00243	·0^{4}001280	*2·4*
2·5	·00000630	·00000379	·0^{4}02237	·0^{4}01292	·0^{4}00730	·0^{4}00404	·0^{4}00219	·0^{4}001163	·0^{4}000604	*2·5*
2·6	·00000330	·0^{4}01954	·0^{4}01135$^-$	·0^{4}00645$^+$	·0^{4}00359	·0^{4}00196	·0^{4}001044	·0^{4}000545$^+$	·0^{4}000279	*2·6*

0^4 indicates that four zeros must be placed before the figures that follow.

TABLE IX. *Negative Correlation*—(*continued*).

k	d/N for $r = -\cdot75$									k
	$h = 0{\cdot}9$	$h = 1{\cdot}0$	$h = 1{\cdot}1$	$h = 1{\cdot}2$	$h = 1{\cdot}3$	$h = 1{\cdot}4$	$h = 1{\cdot}5$	$h = 1{\cdot}6$	$h = 1{\cdot}7$	
0·0	·01273898	·00915625+	·00646129	·00447528	·00304167	·00202812	·00132639	·00085066	·00053489	*0·0*
0·1	·00962023	·00682714	·00475554	·00325055+	·00217976	·00143371	·00092475−	·00058481	·00036254	*0·1*
0·2	·00713469	·00499785+	·00343554	·00231690	·00153259	·00099416	·00063230	·00039422	·00024090	*0·2*
0·3	·00519483	·00359109	·00243550+	·00162018	·00105695+	·00067606	·00042391	·00026052	·00015691	*0·3*
0·4	·00371236	·00253193	·00169384	·00111127	·00071483	·00045077	·00027861	·00016876	·00010016	*0·4*
0·5	·00260314	·00175128	·00115543	·00074745+	·00047401	·00029464	·00017948	·00010713	·00006265−	*0·5*
0·6	·00179065−	·00118805+	·00077289	·00049291	·00030812	·00018876	·00011331	·00006664	·00003839	*0·6*
0·7	·00120807	·00079032	·00050687	·00031864	·00019631	·00011851	·00007009	·00004061	·00002305−	*0·7*
0·8	·00079919	·00051544	·00032585−	·00020188	·00012256	·00007290	·00004248	·00002424	·00001355+	*0·8*
0·9	·00051832	·00032951	·00020530	·00012534	·00007497	·00004393	·00002522	·00001418	·00000780	*0·9*
1·0	·00032951	·00020645+	·00012675+	·00007625−	·00004493	·00002594	·00001466	·00000812	·0^{4}04401	*1·0*
1·1	·00020530	·00012675+	·00007668	·00004544	·00002638	·00001500−	·00000835−	·0^{4}04552	·0^{4}02430	*1·1*
1·2	·00012534	·00007625−	·00004544	·00002653	·00001517	·00000849	·0^{4}04656	·0^{4}02500−	·0^{4}01314	*1·2*
1·3	·00007497	·00004493	·00002638	·00001517	·00000854	·0^{4}04709	·0^{4}02542	·0^{4}01344	·0^{4}00695+	*1·3*
1·4	·00004393	·00002594	·00001500−	·00000849	·0^{4}04709	·0^{4}02557	·0^{4}01359	·0^{4}00707	·0^{4}00360	*1·4*
1·5	·00002522	·00001466	·00000835−	·0^{4}04656	·0^{4}02542	·0^{4}01359	·0^{4}00711	·0^{4}00364	·0^{4}001827	*1·5*
1·6	·00001418	·00000812	·0^{4}04552	·0^{4}02500−	·0^{4}01344	·0^{4}00707	·0^{4}00364	·0^{4}001838	·0^{4}000907	*1·6*
1·7	·00000780	·0^{4}04401	·0^{4}02430	·0^{4}01314	·0^{4}00695+	·0^{4}00360	·0^{4}001827	·0^{4}000907	·0^{4}000441	*1·7*
1·8	·0^{4}04207	·0^{4}02336	·0^{4}01270	·0^{4}00676	·0^{4}00352	·0^{4}001797	·0^{4}000896	·0^{4}000438	·0^{4}000210	*1·8*
1·9	·0^{4}02220	·0^{4}01214	·0^{4}00650−	·0^{4}00340	·0^{4}001747	·0^{4}000877	·0^{4}000431	·0^{4}000207	·0^{4}000098	*1·9*
2·0	·0^{4}01147	·0^{4}00618	·0^{4}00325+	·0^{4}001679	·0^{4}000848	·0^{4}000419	·0^{4}000202	·0^{4}000096	·0^{4}000044	*2·0*
2·1	·0^{4}00580	·0^{4}00308	·0^{4}001596	·0^{4}000810	·0^{4}000403	·0^{4}000196	·0^{4}000094	·0^{4}000043	·0^{4}000020	*2·1*
2·2	·0^{4}00287	·0^{4}001499	·0^{4}000766	·0^{4}000385+	·0^{4}000187	·0^{4}000090	·0^{4}000041	·0^{4}000019	·0^{4}000009	*2·2*
2·3	·0^{4}001393	·0^{4}000715+	·0^{4}000359	·0^{4}000177	·0^{4}000085+	·0^{4}000040	·0^{4}000019	·0^{4}000008	·0^{4}000004	*2·3*
2·4	·0^{4}000661	·0^{4}000334	·0^{4}000166	·0^{4}000080	·0^{4}000038	·0^{4}000018	·0^{4}000008	·0^{4}000004	·0^{4}000002	*2·4*
2·5	·0^{4}000307	·0^{4}000153	·0^{4}000074	·0^{4}000035+	·0^{4}000017	·0^{4}000008	·0^{4}000003	·0^{4}000002	·0^{4}000001	*2·5*
2·6	·0^{4}000139	·0^{4}000068	·0^{4}000033	·0^{4}000015+	·0^{4}000007	·0^{4}000003	·0^{4}000001	·0^{4}000001		*2·6*

k	d/N for $r = -\cdot75$									k
	$h = 1{\cdot}8$	$h = 1{\cdot}9$	$h = 2{\cdot}0$	$h = 2{\cdot}1$	$h = 2{\cdot}2$	$h = 2{\cdot}3$	$h = 2{\cdot}4$	$h = 2{\cdot}5$	$h = 2{\cdot}6$	
0·0	·00032970	·00019919	·00011793	·00006841	·00003888	·00002164	·00001180	·00000630	·00000330	*0·0*
0·1	·00022028	·00013116	·00007653	·00004374	·00002449	·00001343	·00000721	·00000379	·0^{4}01954	*0·1*
0·2	·00014426	·00008465+	·00004866	·00002740	·00001512	·00000817	·00000432	·0^{4}02237	·0^{4}01135−	*0·2*
0·3	·00009260	·00005354	·00003032	·00001682	·00000914	·00000486	·0^{4}02533	·0^{4}01292	·0^{4}00645+	*0·3*
0·4	·00005824	·00003317	·00001851	·00001011	·00000541	·0^{4}02835+	·0^{4}01454	·0^{4}00730	·0^{4}00359	*0·4*
0·5	·00003589	·00002014	·00001107	·00000595+	·0^{4}03138	·0^{4}01619	·0^{4}00818	·0^{4}00404	·0^{4}00196	*0·5*
0·6	·00002166	·00001197	·00000648	·0^{4}03434	·0^{4}01782	·0^{4}00905+	·0^{4}00450+	·0^{4}00219	·0^{4}001044	*0·6*
0·7	·00001281	·00000697	·0^{4}03716	·0^{4}01939	·0^{4}00991	·0^{4}00496	·0^{4}00243	·0^{4}001163	·0^{4}000545+	*0·7*
0·8	·00000742	·0^{4}03976	·0^{4}02087	·0^{4}01072	·0^{4}00539	·0^{4}00266	·0^{4}001280	·0^{4}000604	·0^{4}000279	*0·8*
0·9	·0^{4}04207	·0^{4}02220	·0^{4}01147	·0^{4}00580	·0^{4}00287	·0^{4}001393	·0^{4}000661	·0^{4}000307	·0^{4}000139	*0·9*
1·0	·0^{4}02336	·0^{4}01214	·0^{4}00618	·0^{4}00308	·0^{4}001499	·0^{4}000715+	·0^{4}000334	·0^{4}000153	·0^{4}000068	*1·0*
1·1	·0^{4}01270	·0^{4}00650−	·000325+	·0^{4}001596	·0^{4}000766	·0^{4}000359	·0^{4}000166	·0^{4}000074	·0^{4}000033	*1·1*
1·2	·0^{4}00676	·0^{4}00340	·0^{4}001679	·0^{4}000810	·0^{4}000385+	·0^{4}000177	·0^{4}000080	·0^{4}000035+	·0^{4}000015+	*1·2*
1·3	·0^{4}00352	·0^{4}001747	·0^{4}000848	·0^{4}000403	·0^{4}000187	·0^{4}000085+	·0^{4}000038	·0^{4}000017	·0^{4}000007	*1·3*
1·4	·0^{4}001797	·0^{4}000877	·0^{4}000419	·0^{4}000196	·0^{4}000090	·0^{4}000040	·0^{4}000018	·0^{4}000008	·0^{4}000003	*1·4*
1·5	·0^{4}000896	·0^{4}000431	·0^{4}000202	·0^{4}000094	·0^{4}000041	·0^{4}000019	·0^{4}000008	·0^{4}000003	·0^{4}000001	*1·5*
1·6	·0^{4}000438	·0^{4}000207	·0^{4}000096	·0^{4}000043	·0^{4}000019	·0^{4}000008	·0^{4}000004	·0^{4}000002	·0^{4}000001	*1·6*
1·7	·0^{4}000210	·0^{4}000098	·0^{4}000044	·0^{4}000020	·0^{4}000009	·0^{4}000004	·0^{4}000002	·0^{4}000001		*1·7*
1·8	·0^{4}000098	·0^{4}000045−	·0^{4}000020	·0^{4}000009	·0^{4}000004	·0^{4}000002	·0^{4}000001			*1·8*
1·9	·0^{4}000045−	·0^{4}000020	·0^{4}000009	·0^{4}000004	·0^{4}000002	·0^{4}000001				*1·9*
2·0	·0^{4}000020	·0^{4}000009	·0^{4}000004	·0^{4}000002	·0^{4}000001					*2·0*
2·1	·0^{4}000009	·0^{4}000004	·0^{4}000002	·0^{4}000001						*2·1*
2·2	·0^{4}000004	·0^{4}000002	·0^{4}000001							*2·2*
2·3	·0^{4}000002	·0^{4}000001								*2·3*
2·4	·0^{4}000001									*2·4*
2·5										*2·5*
2·6										*2·6*

0^4 indicates that four zeros must be placed before the figures that follow.

TABLE IX. *Negative Correlation*—(*continued*).

d/N *for* $r = -\cdot 80$.

	$h=0$	$h=\cdot 1$	$h=\cdot 2$	$h=\cdot 3$	$h=\cdot 4$	$h=\cdot 5$	$h=\cdot 6$	$=\cdot 7$	$h=\cdot 8$
$k=$ 0	·1024,160	·0835,592	·0669,639	·0526,767	·0406,497	·0307,541	·0227,991	·0165,531	·0117,648
·1	·0835,592	·0673,159	·0532,349	·0413,006	·0314,152	·0234,157	·0170,936	·0122,156	·0085,420
·2	·0669,639	·0532,349	·0415,199	·0317,511	·0237,937	·0174,638	·0125,482	·0088,225	·0060,673
·3	·0526,767	·0413,006	·0317,511	·0239,210	·0176,518	·0127,520	·0090,146	·0062,334	·0042,143
·4	·0406,497	·0314,152	·0237,937	·0176,518	·0128,207	·0091,123	·0063,352	·0043,066	·0028,615
·5	·0307,541	·0234,157	·0174,638	·0127,520	·0091,123	·0063,694	·0043,534	·0029,084	·0018,986
·6	·0227,991	·0170,936	·0125,482	·0090,146	·0063,352	·0043,534	·0029,242	·0019,193	·0012,306
·7	·0165,531	·0122,156	·0088,225	·0062,334	·0043,066	·0029,084	·0019,193	·0012,373	·0007,790
·8	·0117,648	·0085,420	·0060,673	·0042,143	·0028,615	·0018,986	·0012,306	·0007,790	·0004,814
·9	·0081,817	·0058,423	·0040,797	·0027,849	·0018,578	·0012,107	·0007,705	·0004,788	·0002,904
1·0	·0055,652	·0039,068	·0026,812	·0017,982	·0011,782	·0007,539	·0004,710	·0002,873	·0001,710
1·1	·0037,010	·0025,535	·0017,217	·0011,342	·0007,297	·0004,583	·0002,810	·0001,682	·0000,982
1·2	·0024,056	·0016,307	·0010,799	·0006,985	·0004,412	·0002,720	·0001,637	·0000,961	·0000,550
1·3	·0015,278	·0010,172	·0006,615	·0004,200	·0002,604	·0001,575	·0000,930	·0000,535	·0000,301
1·4	·0009,477	·0006,196	·0003,956	·0002,465	·0001,499	·0000,890	·0000,515	·0000,291	·0000,160
1·5	·0005,741	·0003,685	·0002,309	·0001,412	·0000,842	·0000,490	·0000,278	·0000,154	·0000,083
1·6	·0003,395	·0002,139	·0001,315	·0000,789	·0000,462	·0000,264	·0000,147	·0000,080	·0000,042
1·7	·0001,960	·0001,211	·0000,731	·0000,430	·0000,247	·0000,138	·0000,075	·0000,040	·0000,021
1·8	·0001,104	·0000,669	·0000,396	·0000,229	·0000,129	·0000,071	·0000,038	·0000,020	·0000,010
1·9	·0000,606	·0000,361	·0000,209	·0000,118	·0000,065	·0000,035	·0000,018	·0000,009	·0000,005
2·0	·0000,3252	·0000,1897	·0000,1079	·0000,0599	·0000,0324	·0000,0171	·0000,0088	·0000,0044	·0000,0021
2·1	·0000,1700	·0000,0972	·0000,0542	·0000,0295	·0000,0156	·0000,0081	·0000,0041	·0000,0020	·0000,0010
2·2	·0000,0867	·0000,0486	·0000,0266	·0000,0142	·0000,0074	·0000,0037	·0000,0018	·0000,0009	·0000,0004
2·3	·0000,0431	·0000,0237	·0000,0127	·0000,0066	·0000,0034	·0000,0017	·0000,0008	·0000,0004	·0000,0002
2·4	·0000,0209	·0000,0112	·0000,0059	·0000,0030	·0000,0015	·0000,0007	·0000,0003	·0000,0002	·0000,0001
2·5	0000,0099	·0000,0052	·0000,0027	·0000,0013	·0000,0007	·0000,0003	·0000,0001	·0000,0001	·0000,0000
2·6	·0000,0045	·0000,0023	·0000,0012	·0000,0006	·0000,0003	·0000,0001	·0000,0001	·0000,0000	

	$h=\cdot 9$	$h=1\cdot 0$	$h=1\cdot 1$	$h=1\cdot 2$	$h=1\cdot 3$	$h=1\cdot 4$	$h=1\cdot 5$	$h=1\cdot 6$	$h=1\cdot 7$
$k=$ 0	·0081,817	·0055,652	·0037,010	·0024,056	·0015,278	·0009,477	·0005,741	·0003,395	·0001,960
·1	·0058,423	·0039,068	·0025,535	·0016,307	·0010,172	·0006,196	·0003,685	·0002,139	·0001,211
·2	·0040,797	·0026,812	·0017,217	·0010,799	·0006,615	·0003,956	·0002,309	·0001,315	·0000,731
·3	·0027,849	·0017,982	·0011,342	·0006,985	·0004,200	·0002,465	·0001,412	·0000,789	·0000,430
·4	·0018,578	·0011,782	·0007,297	·0004,412	·0002,604	·0001,499	·0000,842	·0000,462	·0000,247
·5	·0012,107	·0007,539	·0004,583	·0002,720	·0001,575	·0000,890	·0000,490	·0000,264	·0000,138
·6	·0007,705	·0004,710	·0002,810	·0001,637	·0000,930	·0000,515	·0000,278	·0000,147	·0000,075
·7	·0004,788	·0002,873	·0001,682	·0000,961	·0000,535	·0000,291	·0000,154	·0000,080	·0000,040
·8	·0002,904	·0001,710	·0000,982	·0000,550	·0000,301	·0000,160	·0000,083	·0000,042	·0000,021
·9	·0001,719	·0000,993	·0000,559	·0000,307	·0000,165	·0000,086	·0000,044	·0000,022	·0000,011
1·0	·0000,993	·0000,562	·0000,311	·0000,167	·0000,088	·0000,045	·0000,023	·0000,011	·0000,005
1·1	·0000,559	·0000,311	·0000,168	·0000,089	·0000,046	·0000,023	·0000,011	·0000,005	·0000,002
1·2	·0000,307	·0000,167	·0000,089	·0000,046	·0000,023	·0000,011	·0000,005	·0000,003	·0000,001
1·3	·0000,165	·0000,088	·0000,046	·0000,023	·0000,012	·0000,006	·0000,003	·0000,001	·0000,0005
1·4	·0000,086	·0000,045	·0000,023	·0000,011	·0000,006	·0000,003	·0000,001	·0000,0005	·0000,0002
1·5	·0000,044	·0000,023	·0000,011	·0000,005	·0000,003	·0000,001	·0000,0005	·0000,0002	·0000,0001
1·6	·0000,022	·0000,011	·0000,005	·0000,003	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000
1·7	·0000,011	·0000,005	·0000,002	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000	
1·8	·0000,005	·0000,002	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000		
1·9	·0000,002	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000			
2·0	·0000,0010	·0000,0005	·0000,0002	·0000,0001	·0000,0000				
2·1	·0000,0004	·0000,0002	·0000,0001	·0000,0000					
2·2	·0000,0002	·0000,0001	·0000,0000						
2·3	·0000,0001	·0000,0000							
2·4	·0000,0000								

TABLE IX. *Negative Correlation*—(*continued*).

d/N *for* $r = -\cdot 80$.

	$h=1\cdot8$	$h=1\cdot9$	$h=2\cdot0$	$h=2\cdot1$	$h=2\cdot2$	$h=2\cdot3$	$h=2\cdot4$	$h=2\cdot5$	$h=2\cdot6$
$k=$ 0	·0001,104	·0000,606	·0000,3252	·0000,1700	·0000,0867	·0000,0431	·0000,0209	·0000,0099	·0000,0045
·1	·0000,669	·0000,361	·0000,1897	·0000,0972	·0000,0486	·0000,0237	·0000,0112	·0000,0052	·0000,0023
·2	·0000,396	·0000,209	·0000,1079	·0000,0542	·0000,0266	·0000,0127	·0000,0059	·0000,0027	·0000,0012
·3	·0000,229	·0000,118	·0000,0599	·0000,0295	·0000,0142	·0000,0066	·0000,0030	0000,0013	·0000,0006
·4	·0000,129	·0000,065	·0000,0324	·0000,0156	·0000,0074	·0000,0034	·0000,0015	·0000,0007	·0000,0003
·5	·0000,071	·0000,035	·0000,0171	·0000,0081	·0000,0037	·0000,0017	·0000,0007	·0000,0003	·0000,0001
·6	·0000,038	·0000,018	·0000,0088	·0000,0041	·0000,0018	·0000,0008	·0000,0003	·0000,0001	·0000,0001
·7	·0000,020	·0000,009	·0000,0044	·0000,0020	·0000,0009	·0000,0004	·0000,0002	·0000,0001	·0000,0000
·8	·0000,010	·0000,005	·0000,0021	·0000,0010	·0000,0004	·0000,0002	·0000,0001	·0000,0000	
·9	·0000,005	·0000,002	·0000,0010	·0000,0004	·0000,0002	·0000,0001	·0000,0000		
1·0	·0000,002	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000			
1·1	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000				
1·2	·0000,0005	·0000,0002	·0000,0001	·0000,0000					
1·3	·0000,0002	·0000,0001	·0000,0000						
1·4	·0000,0001	·0000,0000							
1·5	·0000,0000								

d/N *for* $r = -\cdot 85$.

	$h=0$	$h=\cdot1$	$h=\cdot2$	$h=\cdot3$	$h=\cdot4$	$h=\cdot5$	$h=\cdot6$	$h=\cdot7$	$h=\cdot8$
$k=$ 0	·0883,010	·0696,651	·0537,127	·0404,314	·0296,851	·0212,402	·0147,991	·0100,334	·0066,146
·1	·0696,651	·0539,919	·0408,547	·0301,542	·0216,905	·0151,935	·0103,559	·0068,639	·0044,211
·2	·0537,127	·0408,547	·0303,123	·0219,192	·0154,352	·0105,767	·0070,478	·0045,639	·0028,705
·3	·0404,314	·0301,542	·0219,192	·0155,166	·0106,889	·0071,604	·0046,616	·0029,477	·0018,094
·4	·0296,851	·0216,905	·0154,352	·0106,889	·0071,984	·0047,113	·0029,950	·0018,483	·0011,068
·5	·0212,402	·0151,935	·0105,767	·0071,604	·0047,113	·0030,109	·0018,680	·0011,246	·0006,566
·6	·0147,991	·0103,559	·0070,478	·0046,616	·0029,950	·0018,680	·0011,306	·0006,637	·0003,777
·7	·0100,334	·0068,639	·0045,639	·0029,477	·0018,483	·0011,246	·0006,637	·0003,797	·0002,106
·8	·0066,146	·0044,211	·0028,705	·0018,094	·0011,068	·0006,566	·0003,777	·0002,106	·0001,137
·9	·0042,377	·0027,658	·0017,526	·0010,778	·0006,428	·0003,717	·0002,083	·0001,131	·0000,595
1·0	·0026,368	·0016,797	·0010,383	·0006,226	·0003,620	·0002,039	·0001,113	·0000,589	·0000,301
1·1	·0015,927	·0009,897	·0005,966	·0003,487	·0001,975	·0001,084	·0000,576	·0000,297	·0000,148
1·2	·0009,335	·0005,656	·0003,323	·0001,893	·0001,044	·0000,558	·0000,289	·0000,145	·0000,070
1·3	·0005,306	·0003,134	·0001,794	·0000,995	·0000,535	·0000,278	·0000,140	·0000,068	·0000,032
1·4	·0002,924	·0001,682	·0000,938	·0000,507	·0000,265	·0000,134	·0000,066	·0000,031	·0000,014
1·5	·0001,561	·0000,875	·0000,475	·0000,250	·0000,127	·0000,063	·0000,030	·0000,014	·0000,006
1·6	·0000,808	·0000,441	·0000,233	·0000,119	·0000,059	0000,028	·0000,013	·0000,006	·0000,003
1·7	·0000,405	·0000,215	·0000,111	·0000,055	·0000,027	·0000,012	·0000,006	·0000,002	·0000,001
1·8	·0000,196	·0000,102	·0000,051	·0000,025	·0000,012	·0000,005	·0000,002	·0000,001	·0000,0004
1·9	·0000,092	·0000,046	·0000,023	·0000,011	·0000,005	·0000,002	·0000,001	·0000,0004	·0000,0001
2·0	·0000,0419	·0000,0205	·0000,0097	·0000,0045	·0000,0020	·0000,0009	·0000,0004	·0000,0001	·0000,0001
2·1	·0000,0184	·0000,0088	·0000,0040	·0000,0018	·0000,0008	·0000,0003	·0000,0001	·0000,0000	·0000,0000
2·2	·0000,0079	·0000,0036	·0000,0017	·0000,0007	·0000,0003	·0000,0001	·0000,0000		
2·3	·0000,0032	·0000,0015	·0000,0006	·0000,0003	·0000,0001	·0000,0000			
2·4	·0000,0013	·0000,0006	·0000,0002	·0000,0001	·0000,0000				
2·5	·0000,0005	·0000,0002	·0000,0001	·0000,0000					
2·6	·0000,0002	·0000,0001	·0000,0000						

TABLE IX. *Negative Correlation*—(*continued*).

d/N for r = − ·85.

	h=·9	h=1·0	h=1·1	h=1·2	h=1·3	h=1·4	h=1·5	h=1·6	h=1·7
k= 0	·0042,377	·0026,368	·0015,927	·0009,335	·0005,306	·0002,924	·0001,561	·0000,808	·0000,405
·1	·0027,658	·0016,797	·0009,897	·0005,656	·0003,134	·0001,682	·0000,875	·0000,441	·0000,215
·2	·0017,526	·0010,383	·0005,966	·0003,323	·0001,794	·0000,938	·0000,475	·0000,233	·0000,111
·3	·0010,778	·0006,226	·0003,487	·0001,893	·0000,995	·0000,507	·0000,250	·0000,119	·0000,055
·4	·0006,428	·0003,620	·0001,975	·0001,044	·0000,535	·0000,265	·0000,127	·0000,059	·0000,027
·5	·0003,717	·0002,039	·0001,084	·0000,558	·0000,278	·0000,134	·0000,063	·0000,028	·0000,012
·6	·0002,083	·0001,113	·0000,576	·0000,289	·0000,140	·0000,066	·0000,030	·0000,013	·0000,006
·7	·0001,131	·0000,589	·0000,297	·0000,145	·0000,068	·0000,031	·0000,014	·0000,006	·0000,002
·8	·0000,595	·0000,301	·0000,148	·0000,070	·0000,032	·0000,014	·0000,006	·0000,003	·0000,001
·9	·0000,303	·0000,149	·0000,071	·0000,033	·0000,015	·0000,006	·0000,003	·0000,001	·0000,0004
1·0	·0000,149	·0000,072	·0000,033	·0000,015	·0000,006	·0000,003	·0000,001	·0000,0004	·0000,0002
1·1	·0000,071	·0000,033	·0000,015	·0000,007	·0000,003	·0000,001	·0000,0004	·0000,0002	·0000,0001
1·2	·0000,033	·0000,015	·0000,007	·0000,003	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000
1·3	·0000,015	·0000,006	·0000,003	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000	
1·4	·0000,006	·0000,003	·0000,001	·0000,0005	·0000,0002	·0000,0001	·0000,0000		
1·5	·0000,003	·0000,001	·0000,0004	·0000,0002	·0000,0001	0000,0000			
1·6	·0000,001	·0000,0004	·0000,0002	·0000,0001	·0000,0000				
1·7	·0000,0004	·0000,0002	·0000,0001	·0000,0000					
1·8	·0000,0002	·0000,0001	·0000,0000						
1·9	·0000,0001	·0000,0000							
2·0	·0000,0000								

	h=1·8	h=1·9	h=2·0	h=2·1	h=2·2	h=2·3	h=2·4	h=2·5	h=2·6
k= 0	·0000,196	·0000,092	·0000,0419	·0000,0184	·0000,0079	·0000,0032	·0000,0013	·0000,0005	·0000,0002
·1	·0000,102	·0000,046	·0000,0205	·0000,0088	·0000,0036	·0000,0015	·0000,0006	·0000,0002	·0000,0001
·2	·0000,051	·0000,023	·0000,0097	·0000,0040	·0000,0017	·0000,0006	·0000,0002	·0000,0001	·0000,0000
·3	·0000,025	·0000,011	·0000,0045	·0000,0018	·0000,0007	·0000,0003	·0000,0001	·0000,0000	
·4	·0000,012	·0000,005	·0000,0020	·0000,0008	·0000,0003	·0000,0001	·0000,0000		
·5	·0000,005	·0000,002	·0000,0009	·0000,0003	·0000,0001	·0000,0000			
·6	·0000,002	·0000,001	·0000,0004	·0000,0001	·0000,0000				
·7	·0000,001	·0000,0004	·0000,0001	·0000,0000					
·8	·0000,0004	·0000,0001	·0000,0001						
·9	·0000,0002	·0000,0001	·0000,0000						
1·0	·0000,0001	·0000,0000							
1·1	·0000,0000								

d/N for r = − ·90.

	h=0	h=·1	h=·2	h=·3	h=·4	h=·5	h=·6	h=·7	h=·8
k= 0	·0717,832	·0535,024	·0385,698	·0268,454	·0180,108	·0116,302	·0072,185	·0043,011	·0024,576
·1	·0535,024	·0387,680	·0271,230	·0182,917	·0118,733	·0074,080	·0044,371	·0025,486	·0014,024
·2	·0385,698	·0271,230	·0183,863	·0119,967	·0075,240	·0045,302	·0026,157	·0014,469	·0007,661
·3	·0268,454	·0182,917	·0119,967	·0075,631	·0045,775	·0026,569	·0014,774	·0007,863	·0004,003
·4	·0180,108	·0118,733	·0075,240	·0045,775	·0026,707	·0014,928	·0007,987	·0004,087	·0001,999
·5	·0116,302	·0074,080	·0045,302	·0026,569	·0014,928	·0008,029	·0004,130	·0002,030	·0000,953
·6	·0072,185	·0044,371	·0026,157	·0014,774	·0007,987	·0004,130	·0002,041	·0000,963	·0000,434
·7	·0043,011	·0025,486	·0014,469	·0007,863	·0004,087	·0002,030	·0000,963	·0000,436	·0000,189
·8	·0024,576	·0014,024	·0007,661	·0004,003	·0001,999	·0000,953	·0000,434	·0000,189	·0000,078
·9	·0013,452	·0007,386	·0003,879	·0001,947	·0000,934	·0000,427	·0000,187	·0000,078	·0000,031
1·0	·0007,048	·0003,721	·0001,878	·0000,905	·0000,416	·0000,183	·0000,077	·0000,031	·0000,012
1·1	·0003,532	·0001,791	·0000,868	·0000,401	·0000,177	·0000,075	·0000,030	·0000,011	·0000,004
1·2	·0001,692	·0000,824	·0000,383	·0000,170	·0000,072	·0000,029	·0000,011	·0000,004	·0000,001
1·3	·0000,774	·0000,362	·0000,161	·0000,069	·0000,028	·0000,011	·0000,004	·0000,001	·0000,0005
1·4	·0000,338	·0000,151	·0000,065	·0000,026	·0000,010	·0000,004	·0000,001	·0000,0005	·0000,0001
1·5	·0000,141	·0000,060	·0000,025	·0000,010	·0000,004	·0000,001	·0000,0004	·0000,0001	·0000,0000
1·6	·0000,056	·0000,023	·0000,009	·0000,003	·0000,001	·0000,0004	·0000,0001	·0000,0000	
1·7	·0000,021	·0000,008	·0000,003	·0000,001	·0000,0004	·0000,0001	·0000,0000		
1·8	·0000,008	·0000,003	·0000,001	·0000,0004	·0000,0001	·0000,0000			
1·9	·0000,003	·0000,001	·0000,0003	·0000,0001	·0000,0000				
2·0	·0000,0009	·0000,0003	·0000,0001	·0000,0000					
2·1	·0000,0003	·0000,0001	·0000,0000						
2·2	·0000,0001	·0000,0000							
2·3	·0000,0000								

TABLE IX. *Negative Correlation—(continued).*

d/N *for* $r = -\cdot 90$.

	$h=\cdot 9$	$h=1\cdot 0$	$h=1\cdot 1$	$h=1\cdot 2$	$h=1\cdot 3$	$h=1\cdot 4$	$h=1\cdot 5$	$h=1\cdot 6$	$h=1\cdot 7$
$k=$ 0	·0013,452	·0007,048	·0003,532	·0001,692	·0000,774	·0000,338	·0000,141	·0000,056	·0000,021
·1	·0007,386	·0003,721	·0001,791	·0000,824	·0000,362	·0000,151	·0000,060	·0000,023	·0000,008
·2	·0003,879	·0001,878	·0000,868	·0000,383	·0000,161	·0000,065	·0000,025	·0000,009	·0000,003
·3	·0001·947	·0000,905	·0000,401	·0000,170	·0000,069	·0000,026	·0000,010	·0000,003	·0000,001
·4	·0000,934	·0000,416	·0000,177	·0000,072	·0000,028	·0000,010	·0000,004	·0000,001	·0000,0004
·5	·0000,427	·0000,183	·0000,075	·0000,029	·0000,011	·0000,004	·0000,001	·0000,0004	·0000,0001
·6	·0000,187	·0000,077	·0000,030	·0000,011	·0000,004	·0000,001	·0000,0004	·0000,0001	·0000,0000
·7	·0000,078	·0000,031	·0000,011	·0000,004	·0000,001	·0000,0005	·0000,0001	·0000,0000	
·8	·0000,031	·0000,012	·0000,004	·0000,001	·0000,0005	·0000,0001	·0000,0000		
·9	·0000,012	·0000,004	·0000,001	·0000,0005	·0000,0002	·0000,0000			
1·0	·0000,004	·0000,001	·0000,0005	·0000,0002	·0000,0000				
1·1	·0000,001	·0000,0005	·0000,0002	·0000,0000					
1·2	·0000,0005	·0000,0002	·0000,0000						
1·3	·0000,0002	·0000,0000							
1·4	·0000,0000								

	$h=1\cdot 8$	$h=1\cdot 9$	$h=2\cdot 0$	$h=2\cdot 1$	$h=2\cdot 2$	$h=2\cdot 3$
$k=$ 0	·0000,008	·0000,003	·0000,0009	·0000,0003	·0000,0001	·0000,0000
·1	·0000,003	·0000,001	·0000,0003	·0000,0001	·0000,0000	
·2	·0000,001	·0000,0003	·0000,0001	·0000,0000		
·3	·0000,0004	·0000,0001	·0000,0000			
·4	·0000,0001	·0000,0000				
·5	·0000,0000					

d/N *for* $r = -\cdot 95$.

	$h=0$	$h=\cdot 1$	$h=\cdot 2$	$h=\cdot 3$	$h=\cdot 4$	$h=\cdot 5$	$h=\cdot 6$	$h=\cdot 7$	$h=\cdot 8$
$k=$ 0	·0505,416	·0330,242	·0202,154	·0115,376	·0061,136	·0029,965	·0013,543	·0005,629	·0002,146
·1	·0330,242	·0203,181	·0116,555	·0062,076	·0030,582	·0013,893	·0005,804	·0002,224	·0000,781
·2	·0202,154	·0116,555	·0062,393	·0030,895	·0014,107	·0005,923	·0002,282	·0000,805	·0000,260
·3	·0115,376	·0062,076	·0030,895	·0014,179	·0005,984	·0002,317	·0000,822	·0000,266	·0000,079
·4	·0061,136	·0030,582	·0014,107	·0005,984	·0002,329	·0000,830	·0000,270	·0000,080	·0000,022
·5	·0029,965	·0013,893	·0005,923	·0002,317	·0000,830	·0000,272	·0000,081	·0000,022	·0000,005
·6	·0013,543	·0005,804	·0002,282	·0000,822	·0000,270	·0000,081	·0000,022	·0000,006	·0000,001
·7	·0005,629	·0002,224	·0000,805	·0000,266	·0000,080	·0000,022	·0000,006	·0000,001	·0000,0003
·8	·0002,146	·0000,781	·0000,260	·0000,079	·0000,022	·0000,005	·0000,001	·0000,0003	·0000,0000
·9	·0000,749	·0000,250	·0000,076	·0000,021	·0000,005	·0000,001	·0000,0003	·0000,0000	
1·0	·0000,239	·0000,073	·0000,021	·0000,005	·0000,001	·0000,0003	·0000,0000		
1·1	·0000,070	·0000,020	·0000,005	·0000,001	·0000,0002	·0000,0000			
1·2	·0000,019	·0000,005	·0000,001	·0000,0002	·0000,0000				
1·3	·0000,004	·0000,001	·0000,0002	·0000,0000					
1·4	·0000,001	·0000,0002	·0000,0000						
1·5	·0000,0002	·0000,0000							
1·6	·0000,0000								

	$h=\cdot 9$	$h=1\cdot 0$	$h=1\cdot 1$	$h=1\cdot 2$	$h=1\cdot 3$	$h=1\cdot 4$	$h=1\cdot 5$
$k=$ 0	·0000,749	·0000,239	·0000,070	·0000,019	·0000,004	·0000,001	·0000,0002
·1	·0000,250	·0000,073	·0000,020	·0000,005	·0000,001	·0000,0002	·0000,0000
·2	·0000,076	·0000,021	·0000,005	·0000,001	·0000,0002	·0000,0000	
·3	·0000,021	·0000,005	·0000,001	·0000,0002	·0000,0000		
·4	·0000,005	·0000,001	·0000,0002	·0000,0000			
·5	·0000,001	·0000,0003	·0000,0000				
·6	·0000,0003	·0000,0000					
·7	·0000,0000						

TABLE X. *For finding the Frequency of the First Product Moment.*
Table of the Auxiliary Function T_m.

v	$n = 2, (m = 0)$ T_m	$\log T_m$	ρ	$n = 3, (m = \cdot 5)$ T_m	$\log T_m$	ρ
0	∞	∞	No true mode, the distribution curve has an infinite ordinate at $v = 0$, and consists of two unlike J-curves placed back to back	·500000	$\bar{1}$·6989700	No true mode, the distribution curve has a finite ordinate, $\frac{1}{4}N(1-\rho^2)$, at $v = 0$, and consists of two unlike exponential curves placed back to back
·1	·772560	$\bar{1}$·8879323		·452419	$\bar{1}$·6555406	
·2	·557903	$\bar{1}$·7465586		·409365	$\bar{1}$·6121111	
·3	·436868	$\bar{1}$·6403499		·370409	$\bar{1}$·5686817	
·4	·354766	$\bar{1}$·5499416		·335160	$\bar{1}$·5252522	
·5	·294252	$\bar{1}$·4687190		·303265	$\bar{1}$·4818228	
·6	·247493	$\bar{1}$·3935629		·274406	$\bar{1}$·4383933	
·7	·210250	$\bar{1}$·3227360		·248293	$\bar{1}$·3949629	
·8	·179956	$\bar{1}$·2551653		·224664	$\bar{1}$·3515344	
·9	·154931	$\bar{1}$·1901385		·203285	$\bar{1}$·3081050	
1·0	·134016	$\bar{1}$·1271574		·183940	$\bar{1}$·2646755	
1·1	·116375	$\bar{1}$·0658592		·166436	$\bar{1}$·2212461	
1·2	·101384	$\bar{1}$·0059708		·150597	$\bar{1}$·1778166	
1·3	(1) 885690	$\bar{2}$·9472817		·136266	$\bar{1}$·1343872	
1·4	(1) 775578	$\bar{2}$·8896256		·123298	$\bar{1}$·0909577	
1·5	(1) 680564	$\bar{2}$·8328691		·111565	$\bar{1}$·0475283	
1·6	(1) 598279	$\bar{2}$·7769034		·100948	$\bar{1}$·0040988	
1·7	(1) 526791	$\bar{2}$·7216384		(1) 913418	$\bar{2}$·9606694	
1·8	(1) 464514	$\bar{2}$·6669989		(1) 826494	$\bar{2}$·9172399	
1·9	(1) 410129	$\bar{2}$·6129210		(1) 747843	$\bar{2}$·8738105	
2·0	(1) 362535	$\bar{2}$·5593504		(1) 676676	$\bar{2}$·8303810	
2·1	(1) 320805	$\bar{2}$·5062406		(1) 612282	$\bar{2}$·7869516	
2·2	(1) 284152	$\bar{2}$·4535508		(1) 554016	$\bar{2}$·7435221	
2·3	(1) 251910	$\bar{2}$·4012458		(1) 501294	$\bar{2}$·7000927	
2·4	(1) 223509	$\bar{2}$·3492945		(1) 453590	$\bar{2}$·6566633	
2·5	(1) 198458	$\bar{2}$·2976695		(1) 410425	$\bar{2}$·6132338	
2·6	(1) 176338	$\bar{2}$·2463466		(1) 371368	$\bar{2}$·5698044	
2·7	(1) 156785	$\bar{2}$·1953040		(1) 336028	$\bar{2}$·5263749	
2·8	(1) 139483	$\bar{2}$·1445223		(1) 304050	$\bar{2}$·4829455	
2·9	(1) 124161	$\bar{2}$·0939842		(1) 275116	$\bar{2}$·4395160	
3·0	(1) 110579	$\bar{2}$·0436737		(1) 248935	$\bar{2}$·3960866	
3·1	(2) 985319	$\bar{3}$·9935769		(1) 225246	$\bar{2}$·3526571	
3·2	(2) 878376	$\bar{3}$·9436805		(1) 203811	$\bar{2}$·3092276	
3·3	(2) 783381	$\bar{3}$·8939729		(1) 184416	$\bar{2}$·2657982	
3·4	(2) 698945	$\bar{3}$·8444433		(1) 166866	$\bar{2}$·2223688	
3·5	(2) 623852	$\bar{3}$·7950817		(1) 150987	$\bar{2}$·1789393	
3·6	(2) 557031	$\bar{3}$·7458793		(1) 136619	$\bar{2}$·1355099	
3·7	(2) 497539	$\bar{3}$·6968275		(1) 123618	$\bar{2}$·0920804	
3·8	(2) 444548	$\bar{3}$·6479187		(1) 111854	$\bar{2}$·0486510	
3·9	(2) 397325	$\bar{3}$·5991455		(1) 101210	$\bar{2}$·0052234	
4·0	(2) 355224	$\bar{3}$·5505018		(2) 915782	$\bar{3}$·9617921	
4·5	(2) 203714	$\bar{3}$·3090204		(2) 555450	$\bar{3}$·7446449	
5·0	(2) 117491	$\bar{3}$·0700058		(2) 336897	$\bar{3}$·5274976	
5·5	(3) 680772	$\bar{4}$·8330017		(2) 204339	$\bar{3}$·3103504	
6·0	(3) 395976	$\bar{4}$·5976685		(2) 123938	$\bar{3}$·0932031	
6·5	(3) 231071	$\bar{4}$·3637459		(3) 751720	$\bar{4}$·8760561	
7·0	(3) 135217	$\bar{4}$·1310303		(3) 455941	$\bar{4}$·6589086	
7·5	(4) 793157	$\bar{5}$·8993592		(3) 276542	$\bar{4}$·4417614	
8·0	(4) 466231	$\bar{5}$·6686009		(3) 167731	$\bar{4}$·2246141	
8·5	(4) 274566	$\bar{5}$·4386473		(3) 101734	$\bar{4}$·0074670	

v	$n = 4, (m = 1 \cdot 0)$ T_m	$\log T_m$	ρ	$n = 5, (m = 1 \cdot 5)$ T_m	$\log T_m$	ρ
0	·318310	$\bar{1}$·5028502	·00000	·250000	$\bar{1}$·3979400	·00000
·1	·313658	$\bar{1}$·4964558	·24631	·248830	$\bar{1}$·3959032	·09091
·2	·304048	$\bar{1}$·4829422	·36698	·245619	$\bar{1}$·3902623	·16667
·3	·291826	$\bar{1}$·4651236	·44910	·240766	$\bar{1}$·3815950	·23077
·4	·278121	$\bar{1}$·4442332	·51023	·234612	$\bar{1}$·3703502	·28571
·5	·263631	$\bar{1}$·4209961	·55808	·227449	$\bar{1}$·3568840	·33333
·6	·248823	$\bar{1}$·3958908	·59679	·219525	$\bar{1}$·3414833	·37500
·7	·234021	$\bar{1}$·3692547	·62890	·211049	$\bar{1}$·3243828	·41176
·8	·219451	$\bar{1}$·3413374	·65602	·202198	$\bar{1}$·3057769	·44444
·9	·205272	$\bar{1}$·3123292	·67928	193121	$\bar{1}$·2858286	·47368
1·0	·191593	$\bar{1}$·2823796	·69948	·183940	$\bar{1}$·2646755	·50000
1·1	·178488	$\bar{1}$·2516086	·71720	·174757	$\bar{1}$·2424354	·52381
1·2	·166002	$\bar{1}$·2201135	·73289	·165657	$\bar{1}$·2192093	·54545
1·3	·154161	$\bar{1}$·1879751	·74688	·156706	$\bar{1}$·1950849	·56522
1·4	·142975	$\bar{1}$·1552611	·75944	·147958	$\bar{1}$·1701389	·58333
1·5	·132443	$\bar{1}$·1220288	·77078	·139456	$\bar{1}$·1444383	·60000
1·6	·122554	$\bar{1}$·0883270	·78108	·131233	$\bar{1}$·1180422	·61538
1·7	·113292	$\bar{1}$·0541979	·79048	·123311	$\bar{1}$·0910032	·62963
1·8	·104635	$\bar{1}$·0196783	·79909	·115709	$\bar{1}$·0633680	·64286
1·9	(1) 965607	$\bar{2}$·9848003	·80700	·108437	$\bar{1}$·0351785	·65517
2·0	(1) 890414	$\bar{2}$·9495919	·81431	·101501	$\bar{1}$·0064723	·66667
2·1	(1) 820499	$\bar{2}$·9140783	·82107	(1) 949037	$\bar{2}$·9772833	·67742
2·2	(1) 755582	$\bar{2}$·8782814	·82736	(1) 886425	$\bar{2}$·9476421	·68750
2·3	(1) 695379	$\bar{2}$·8422213	·83321	(1) 827135	$\bar{2}$·9175766	·69697
2·4	(1) 639611	$\bar{2}$·8059157	·83867	(1) 771103	$\bar{2}$·8871122	·70588
2·5	(1) 588004	$\bar{2}$·7693806	·84378	(1) 718244	$\bar{2}$·8562718	·71429
2·6	(1) 540294	$\bar{2}$·7326305	·84857	(1) 668462	$\bar{2}$·8250768	·72222
2·7	(1) 496225	$\bar{2}$·6956786	·85308	(1) 621651	$\bar{2}$·7935466	·72973
2·8	(1) 455551	$\bar{2}$·6585369	·85732	(1) 577696	$\bar{2}$·7616991	·73684
2·9	(1) 418038	$\bar{2}$·6212161	·86132	(1) 536476	$\bar{2}$·7295506	·74359
3·0	(1) 383466	$\bar{2}$·5837265	·86510	(1) 497871	$\bar{2}$·6971172	·75000
3·1	(1) 351623	$\bar{2}$·5460771	·86868	(1) 461754	$\bar{2}$·6644110	·75610
3·2	(1) 322312	$\bar{2}$·5082763	·87208	(1) 428003	$\bar{2}$·6314469	·76190
3·3	(1) 295347	$\bar{2}$·4703320	·87530	(1) 396494	$\bar{2}$·5982367	·76744
3·4	(1) 270552	$\bar{2}$·4322514	·87836	(1) 367106	$\bar{2}$·5647915	·77273
3·5	(1) 247766	$\bar{2}$·3940411	·88127	(1) 339721	$\bar{2}$·5311218	·77778
3·6	(1) 226834	$\bar{2}$·3557073	·88405	(1) 314223	$\bar{2}$·4972377	·78261
3·7	(1) 207614	$\bar{2}$·3172558	·88669	(1) 290501	$\bar{2}$·4631483	·78723
3·8	(1) 189973	$\bar{2}$·2786919	·88922	(1) 268449	$\bar{2}$·4288622	·79167
3·9	(1) 173788	$\bar{2}$·2400205	·89164	(1) 247963	$\bar{2}$·3943876	·79592
4·0	(1) 158945	$\bar{2}$·2012464	·89395	(1) 228945	$\bar{2}$·3597321	·80000
4·5	(1) 101386	$\bar{2}$·0059791	·90418	(1) 152749	$\bar{2}$·1839775	·81818
5·0	(2) 643720	$\bar{3}$·8714096	·91260	(1) 101069	$\bar{2}$·0046188	·83333
5·5	(2) 407138	$\bar{3}$·6097421	·91965	(2) 664100	$\bar{3}$·8222337	·84615
6·0	(2) 256670	$\bar{3}$·4093747	·92565	(2) 433782	$\bar{3}$·6372712	·85714
6·5	(2) 161361	$\bar{3}$·2077992	·93081	(2) 281895	$\bar{3}$·4500871	·86667
7·0	(2) 101200	$\bar{3}$·0051786	·93530	(2) 182376	$\bar{3}$·2609686	·87500
7·5	(3) 633351	$\bar{4}$·8016443	·93924	(2) 117530	$\bar{3}$·0701503	·88235
8·0	(3) 395644	$\bar{4}$·5973051	·94273	(3) 754791	$\bar{4}$·8778267	·88889
8·5	(3) 246746	$\bar{4}$·3922508	·94584	(3) 483237	$\bar{4}$·6841605	·89474

v	$n = 6, (m = 2 \cdot 0)$ T_m	$\log T_m$	ρ	$n = 7, (m = 2 \cdot 5)$ T_m	$\log T_m$	ρ	v
0	·212207	$\bar{1}$·3267589	·00000	·187500	$\bar{1}$·2730013	·00000	0
·1	·211680	$\bar{1}$·3256804	·04939	·187188	$\bar{1}$·2722786	·03323	·1
·2	·210137	$\bar{1}$·3225031	·09646	·186261	$\bar{1}$·2701226	·06593	·2
·3	·207657	$\bar{1}$·3173456	·14053	·184742	$\bar{1}$·2665646	·09774	·3
·4	·204335	$\bar{1}$·3103419	·18148	·182662	$\bar{1}$·2616487	·12844	·4
·5	·200275	$\bar{1}$·3016264	·21939	·180064	$\bar{1}$·2554264	·15789	·5
·6	·195581	$\bar{1}$·2913272	·25444	·176992	$\bar{1}$·2479530	·18605	·6
·7	·190355	$\bar{1}$·2795638	·28686	·173494	$\bar{1}$·2392857	·21288	·7
·8	·184691	$\bar{1}$·2664460	·31686	·169622	$\bar{1}$·2294814	·23841	·8
·9	178679	$\bar{1}$·2520740	·34465	·165423	$\bar{1}$·2185960	·26267	·9
1·0	·172401	$\bar{1}$·2365392	·37044	·160947	$\bar{1}$·2066836	·28571	1·0
1·1	·165930	$\bar{1}$·2199243	·39442	·156241	$\bar{1}$·1937960	·30759	1·1
1·2	·159333	$\bar{1}$·2023044	·41674	·151350	$\bar{1}$·1799827	·32836	1·2
1·3	·152668	$\bar{1}$·1837480	·43757	·146316	$\bar{1}$·1652903	·34808	1·3
1·4	·145988	$\bar{1}$·1643171	·45704	·141177	$\bar{1}$·1497632	·36681	1·4
1·5	·139338	$\bar{1}$·1440683	·47526	·135970	$\bar{1}$·1334431	·38462	1·5
1·6	·132756	$\bar{1}$·1230531	·49235	·130728	$\bar{1}$·1163686	·40154	1·6
1·7	·126275	$\bar{1}$·1013184	·50840	·125481	$\bar{1}$·0985771	·41765	1·7
1·8	·119924	$\bar{1}$·0789076	·52351	·120255	$\bar{1}$·0801028	·43299	1·8
1·9	·113726	$\bar{1}$·0558599	·53774	·115074	$\bar{1}$·0609786	·44760	1·9
2·0	·107699	$\bar{1}$·0322116	·55117	·109960	$\bar{1}$·0412344	·46154	2·0
2·1	·101858	$\bar{1}$·0079962	·56387	·104930	$\bar{1}$·0208991	·47484	2·1
2·2	(1) 962153	$\bar{2}$·9832442	·57589	·100000	$\bar{1}$·0000000	·48753	2·2
2·3	(1) 907787	$\bar{2}$·9579841	·58728	(1) 951832	$\bar{2}$·9785605	·49967	2·3
2·4	(1) 855544	$\bar{2}$·9322423	·59809	(1) 904912	$\bar{2}$·9566062	·51128	2·4
2·5	(1) 805458	$\bar{2}$·9060429	·60835	(1) 859327	$\bar{2}$·9341586	·52239	2·5
2·6	(1) 757545	$\bar{2}$·8794086	·61812	(1) 815153	$\bar{2}$·9112389	·53303	2·6
2·7	(1) 711804	$\bar{2}$·8523603	·62742	(1) 772443	$\bar{2}$·8878666	·54323	2·7
2·8	(1) 668217	$\bar{2}$·8249175	·63629	(1) 731241	$\bar{2}$·8640605	·55301	2·8
2·9	(1) 626756	$\bar{2}$·7970986	·64475	(1) 691573	$\bar{2}$·8398381	·56241	2·9
3·0	(1) 587382	$\bar{2}$·7689203	·65284	(1) 653455	$\bar{2}$·8152159	·57143	3·0
3·1	(1) 550046	$\bar{2}$·7403988	·66057	(1) 616893	$\bar{2}$·7902095	·58010	3·1
3·2	(1) 514694	$\bar{2}$·7115488	·66797	(1) 581880	$\bar{2}$·7648338	·58844	3·2
3·3	(1) 481265	$\bar{2}$·6823843	·67506	(1) 548407	$\bar{2}$·7391027	·59647	3·3
3·4	(1) 449695	$\bar{2}$·6529183	·68185	(1) 516451	$\bar{2}$·7130294	·60420	3·4
3·5	(1) 419917	$\bar{2}$·6231632	·68837	(1) 485989	$\bar{2}$·6866266	·61165	3·5
3·6	(1) 391860	$\bar{2}$·5931309	·69464	(1) 456989	$\bar{2}$·6599060	·61883	3·6
3·7	(1) 365453	$\bar{2}$·5628314	·70066	(1) 429417	$\bar{2}$·6328790	·62576	3·7
3·8	(1) 340624	$\bar{2}$·5322757	·70645	(1) 403233	$\bar{2}$·6055562	·63245	3·8
3·9	(1) 317302	$\bar{2}$·5014734	·71202	(1) 378397	$\bar{2}$·5779480	·63892	3·9
4·0	(1) 295416	$\bar{2}$·4704337	·71738	(1) 354866	$\bar{2}$·5500638	·64516	4·0
4·5	(1) 205098	$\bar{2}$·3119606	·74150	(1) 255160	$\bar{2}$·4068122	·67347	4·5
5·0	(1) 140824	$\bar{2}$·1486770	·76185	(1) 181082	$\bar{2}$·2578761	·69767	5·0
5·5	(2) 957871	$\bar{3}$·9813069	·77925	(1) 127073	$\bar{2}$·1040534	·71859	5·5
6·0	(2) 646284	$\bar{3}$·8104234	·79429	(2) 883055	$\bar{3}$·9459880	·73684	6·0
6·5	(2) 433000	$\bar{3}$·6364874	·80743	(2) 608423	$\bar{3}$·7842057	·75290	6·5
7·0	(2) 288320	$\bar{3}$·4598752	·81899	(2) 416046	$\bar{3}$·6191415	·76712	7·0
7·5	(2) 190940	$\bar{3}$·2808977	·82925	(2) 282592	$\bar{3}$·4511592	·77982	7·5
8·0	(2) 125839	$\bar{3}$·0998147	·83842	(2) 190794	$\bar{3}$·2805655	·79121	8·0
8·5	(3) 825745	$\bar{4}$·9168459	·84665	(2) 128121	$\bar{3}$·1076220	·80149	8·5

TABLE X.—(*continued*).

v	$n=2$, $(m=0)$ T_m	$\log T_m$	ρ	$n=3$, $(m=\cdot5)$ T_m	$\log T_m$	ρ	$n=4$, $(m=1\cdot0)$ T_m	$\log T_m$	ρ
9·0	(4) 161960	$\bar{5}$·2094084	No true mode, the distribution curve has an infinite ordinate at v=0, and consists of two unlike J-curves placed back to back	(4) 617049	$\bar{5}$·7903197	No true mode, the distribution curve has a finite ordinate at v=0, and consists of two unlike exponential curves placed back to back	(3) 153659	$\bar{4}$·1865572	·94862
9·5	(5) 956772	$\bar{6}$·9808085		(4) 374259	$\bar{5}$·5731724		(4) 955628	$\bar{5}$·9802887	·95114
10·0	(5) 565957	$\bar{6}$·7527834		(4) 227000	$\bar{5}$·3560252		(4) 593609	$\bar{5}$·7735004	·95342
10·5	(5) 335180	$\bar{6}$·5252781		(4) 137682	$\bar{5}$·1388780		(4) 368332	$\bar{5}$·5662396	·95549
11·0	(5) 198722	$\bar{6}$·2982449		(5) 835085	$\bar{6}$·9217307		(4) 228322	$\bar{5}$·3585477	·95739
11·5	(5) 117935	$\bar{6}$·0716428		(5) 506505	$\bar{6}$·7045835		(4) 141404	$\bar{5}$·1504608	·95914
12·0	(6) 700545	$\bar{7}$·8454357		(5) 307211	$\bar{6}$·4874362		(5) 875005	$\bar{6}$·9420105	·96074
12·5	(6) 416478	$\bar{7}$·6195919		(5) 186333	$\bar{6}$·2702890		(5) 541034	$\bar{6}$·7332246	·96223
13·0	(6) 247790	$\bar{7}$·3940833		(5) 113016	$\bar{6}$·0531417		(5) 334294	$\bar{6}$·5241290	·96360
13·5	(6) 147532	$\bar{7}$·1688850		(6) 685480	$\bar{7}$·8359945		(5) 206417	$\bar{6}$·3147448	·96488
14·0	(7) 878972	$\bar{8}$·9439750		(6) 415764	$\bar{7}$·6188472		(5) 127377	$\bar{6}$·1050925	·96607
14·5	(7) 524002	$\bar{8}$·7193328		(6) 252174	$\bar{7}$·4017000		(6) 785579	$\bar{7}$·8951900	·96719
15·0	(7) 312566	$\bar{8}$·4949412		(6) 152951	$\bar{7}$·1845528		(6) 484232	$\bar{7}$·6850534	·96823
15·5	(7) 186545	$\bar{8}$·2707834		(7) 927696	$\bar{8}$·9674055		(6) 298330	$\bar{7}$·4746973	·96921
16·0	(7) 111390	$\bar{8}$·0468456		(7) 562676	$\bar{8}$·7502583		(6) 183711	$\bar{7}$·2641352	·97013
18·0	(8) 142246	$\bar{9}$·1530407		(8) 761499	$\bar{9}$·8816693		(7) 263062	$\bar{8}$·4200584	·97332
20·0	(9) 182751	$\overline{10}$·2618589		(8) 103058	$\bar{9}$·0130804		(8) 374530	$\bar{9}$·5734868	·97589
22·0	(10) 235944	$\overline{11}$·3728088		(9) 139473	$\overline{10}$·1444914		(9) 530746	$\overline{10}$·7248864	·97801
24·0	(11) 305860	$\overline{12}$·4855221		(10) 188757	$\overline{11}$·2759025		(10) 749203	$\overline{11}$·8745996	·97979
26·0	(12) 397850	$\overline{13}$·5997191		(11) 255454	$\overline{12}$·4073135		(10) 105412	$\overline{11}$·0228891	·98130
28·0	(13) 519017	$\overline{14}$·7151814		(12) 345720	$\overline{13}$·5387245		(11) 147897	$\overline{12}$·1699606	·98260
30·0	(14) 678790	$\overline{15}$·8317356		(13) 467881	$\overline{14}$·6701355		(12) 207004	$\overline{13}$·3159781	·98374
32·0	(15) 889696	$\overline{16}$·9492418		(14) 633208	$\overline{15}$·8015466		(13) 289118	$\overline{14}$·4610745	·98473
34·0	(15) 116838	$\overline{16}$·0675850		(15) 856954	$\overline{16}$·9329576		(14) 403050	$\overline{15}$·6053593	·98561
36·0	(16) 153699	$\overline{17}$·1866710		(15) 115976	$\overline{16}$·0643687		(15) 560949	$\overline{16}$·7489232	·98639
38·0	(17) 202497	$\overline{18}$·3064182		(16) 156957	$\overline{17}$·1957797		(16) 779548	$\overline{17}$·8918428	·98710
40·0	(18) 267153	$\overline{19}$·4267606		(17) 212418	$\overline{18}$·3271907		(16) 108189	$\overline{17}$·0341831	·98773
45·0	(20) 169769	$\overline{21}$·2298592		(19) 143126	$\overline{20}$·1557182		(19) 772404	$\overline{20}$·8878446	·98907
50·0	(22) 108549	$\overline{23}$·0356261		(22) 964375	$\overline{23}$·9842459		(21) 548146	$\overline{22}$·7388964	·99015
55·0	(25) 697516	$\overline{26}$·8435542		(24) 649791	$\overline{25}$·8127735		(23) 387106	$\overline{24}$·5878297	·99103
60·0	(27) 450058	$\overline{28}$·6532683		(26) 437826	$\overline{27}$·6413011		(25) 272276	$\overline{26}$·4350090	·99177
65·0	(29) 291396	$\overline{30}$·4644833		(28) 295005	$\overline{29}$·4698287		(27) 190859	$\overline{28}$·2807116	·99240
70·0	(31) 189224	$\overline{32}$·2769773		(30) 198772	$\overline{31}$·2983563		(29) 133400	$\overline{30}$·1251556	·99293
75·0	(33) 123190	$\overline{34}$·0905743		(32) 133932	$\overline{33}$·1268839		(32) 930062	$\overline{33}$·9685117	·99340
80·0	(36) 803771	$\overline{37}$·9051322		(35) 902426	$\overline{36}$·9554115		(34) 647023	$\overline{35}$·8109197	·99381
85·0	(38) 525454	$\overline{39}$·7205347		(37) 608050	$\overline{38}$·7839391		(36) 449256	$\overline{37}$·6524935	·99417
90·0	(40) 344101	$\overline{41}$·5366856		(39) 409701	$\overline{40}$·6124666		(38) 311407	$\overline{39}$·4933279	·99449
95·0	(42) 225686	$\overline{43}$·3535041		(41) 276054	$\overline{42}$·4409942		(40) 215527	$\overline{41}$·3335015	·99478
100·0	(44) 148225	$\overline{45}$·1709217		(43) 186004	$\overline{44}$·2695218		(42) 148964	$\overline{43}$·1730824	·99504
105·0	(47) 974721	$\overline{48}$·9888803		(45) 125328	$\overline{46}$·0980460		(44) 102832	$\overline{45}$·0121279	·99527
110·0	(49) 641696	$\overline{50}$·8073294		(48) 844456	$\overline{49}$·9265770		(47) 709067	$\overline{48}$·8506873	·99549
115·0	(51) 422888	$\overline{52}$·7184089		(50) 568990	$\overline{51}$·7551046		(49) 488431	$\overline{50}$·6888036	·99568
120·0	(53) 278953	$\overline{54}$·4455310		(52) 383382	$\overline{53}$·5836322		(51) 336136	$\overline{52}$·5265144	·99586

$n=5$, $(m=1\cdot5)$ T_m	$\log T_m$	ρ	$n=6$, $(m=2\cdot0)$ T_m	$\log T_m$	ρ	$n=7$, $(m=2\cdot5)$ T_m	$\log T_m$	ρ	v
(3) 308525	$\bar{4}$·4892897	·90000	(3) 539732	$\bar{4}$·7321780	·85408	(3) 856156	$\bar{4}$·9325527	·81081	9·0
(3) 196486	$\bar{4}$·2933317	·90476	(3) 351537	$\bar{4}$·5459717	·86083	(3) 569576	$\bar{4}$·7555514	·81930	9·5
(3) 124850	$\bar{4}$·0963879	·90909	(3) 228226	$\bar{4}$·3583656	·86699	(3) 377387	$\bar{4}$·5767869	·82707	10·0
(4) 791673	$\bar{5}$·8985458	·91304	(3) 147734	$\bar{4}$·1694807	·87262	(3) 249119	$\bar{4}$·3964065	·83420	10·5
(4) 501051	$\bar{5}$·6998819	·91667	(4) 953725	$\bar{5}$·9794231	·87780	(3) 163885	$\bar{4}$·2145404	·84076	11·0
(4) 316565	$\bar{5}$·5004635	·92000	(4) 614166	$\bar{5}$·7882858	·88257	(3) 107474	$\bar{4}$·0313033	·84683	11·5
(4) 199687	$\bar{5}$·3003496	·92308	(4) 394595	5·5961516	·88699	(4) 702744	$\bar{5}$·8467973	·85246	12·0
(4) 125775	$\bar{5}$·0995927	·92593	(4) 252984	$\bar{5}$·4030939	·89109	(4) 458262	$\bar{5}$·6611137	·85769	12·5
(5) 791115	$\bar{6}$·8982398	·92857	(4) 161874	$\bar{5}$·2091784	·89490	(4) 298081	$\bar{5}$·4743342	·86256	13·0
(5) 496973	$\bar{6}$·6963325	·93103	(4) 103387	$\bar{5}$·0144640	·89845	(4) 193434	$\bar{5}$·2865323	·86711	13·5
(5) 311823	$\bar{6}$·4939086	·93333	(5) 659180	$\bar{6}$·8190040	·90177	(4) 125249	$\bar{5}$·0977743	·87137	14·0
(5) 195435	$\bar{6}$·2910017	·93548	(5) 419610	$\bar{6}$·6228461	·90488	(5) 809320	$\bar{6}$·9081205	·87537	14·5
(5) 122361	$\bar{6}$·0876428	·93750	(5) 266706	$\bar{6}$·4260333	·90780	(5) 521946	$\bar{6}$·7176254	·87912	15·0
(6) 765349	$\bar{7}$·8838595	·93939	(5) 169280	$\bar{6}$·2286058	·91055	(5) 336000	$\bar{6}$·5263391	·88266	15·5
(6) 478274	$\bar{7}$·6796772	·94118	(5) 107300	$\bar{6}$·0305997	·91313	(5) 215927	$\bar{6}$·3343067	·88599	16·0
(7) 723424	$\bar{8}$·8593929	·94737	(6) 171163	$\bar{7}$·2334109	·92214	(6) 362664	$\bar{7}$·5595043	·89764	18·0
(7) 108211	$\bar{8}$·0342697	·95238	(7) 268636	$\bar{8}$·4291645	·92946	(7) 596446	$\bar{8}$·7755714	·90713	20·0
(8) 160394	$\bar{9}$·2051892	·95652	(8) 416039	$\bar{9}$·6191342	·93552	(8) 964110	$\bar{9}$·9841265	·91501	22·0
(9) 235946	$\overline{10}$·3728124	·96000	(9) 637197	$\overline{10}$·8042739	·94062	(8) 153601	$\bar{9}$·1863934	·92166	24·0
(10) 344864	$\overline{11}$·5376472	·96296	(10) 966763	$\overline{11}$·9853199	·94498	(9) 241724	$\overline{10}$·3833194	·92734	26·0
(11) 501294	$\overline{12}$·7000925	·96552	(10) 145496	$\overline{11}$·1628517	·94874	(10) 376403	$\overline{11}$·5756539	·93226	28·0
(12) 725216	$\overline{13}$·8604673	·96774	(11) 217437	$\overline{12}$·3373341	·95202	(11) 580757	$\overline{12}$·7639948	·93656	30·0
(12) 104479	$\overline{13}$·0190305	·96970	(12) 322957	$\overline{13}$·5091454	·95490	(12) 888866	$\overline{13}$·9488363	·94034	32·0
(13) 149967	$\overline{14}$·1759948	·97143	(13) 477087	$\overline{14}$·6785974	·95746	(12) 135077	$\overline{13}$·1305827	·94370	34·0
(14) 214556	$\overline{15}$·3315404	·97297	(14) 701375	$\overline{15}$·8459505	·95974	(13) 203973	$\overline{14}$·3095728	·94670	36·0
(15) 306065	$\overline{16}$·4858143	·97436	(14) 102665	$\overline{15}$·0114243	·96179	(14) 306262	$\overline{15}$·4860926	·94939	38·0
(16) 435456	$\overline{17}$·6389446	·97561	(15) 149694	$\overline{16}$·1752055	·96364	(15) 457495	$\overline{16}$·6603860	·95183	40·0
(18) 329190	$\overline{19}$·5174461	·97826	(17) 119744	$\overline{18}$·0782525	·96757	(17) 386977	$\overline{18}$·5876849	·95700	45·0
(20) 245916	$\overline{21}$·3907861	·98039	(20) 941119	$\overline{21}$·9736444	·97074	(19) 319811	$\overline{20}$·5048932	·96118	50·0
(22) 181941	$\overline{23}$·2599315	·98214	(22) 729136	$\overline{23}$·9680792	·97334	(21) 259348	$\overline{22}$·4138824	·96461	55·0
(24) 133537	$\overline{25}$·1256009	·98361	(24) 558221	$\overline{25}$·7468062	·97551	(23) 207037	$\overline{24}$·3160474	·96749	60·0
(27) 973515	$\overline{28}$·9883426	·98485	(26) 423106	$\overline{27}$·6264495	·97736	(25) 163101	$\overline{26}$·2124556	·96993	65·0
(29) 705642	$\overline{30}$·8485846	·98592	(28) 317960	$\overline{29}$·5023725	·97895	(27) 127040	$\overline{28}$·1039420	·97203	70·0
(31) 508941	$\overline{32}$·7066674	·98684	(30) 237181	$\overline{31}$·3750800	·98033	(30) 979879	$\overline{31}$·9911724	·97386	75·0
(33) 365482	$\overline{34}$·5628665	·98765	(32) 175785	$\overline{33}$·2449808	·98154	(32) 749352	$\overline{33}$·8746857	·97546	80·0
(35) 261461	$\overline{36}$·4174075	·98837	(34) 129542	$\overline{35}$·1124102	·98261	(34) 568754	$\overline{35}$·7549248	·97688	85·0
(37) 186414	$\overline{38}$·2704780	·98901	(37) 949832	$\overline{38}$·9776470	·98356	(36) 428803	$\overline{37}$·6322577	·97814	90·0
(39) 132506	$\overline{40}$·1222355	·98958	(39) 693306	$\overline{40}$·8409251	·98442	(38) 321361	$\overline{39}$·5069938	·97928	95·0
(42) 939319	$\overline{43}$·9728132	·99010	(41) 504015	$\overline{42}$·7024431	·98519	(40) 239550	$\overline{41}$·3793955	·98030	100·0
(44) 664240	$\overline{45}$·8223253	·99057	(43) 365065	$\overline{44}$·5623706	·98588	(42) 177700	$\overline{43}$·2496874	·98122	105·0
(46) 468673	$\overline{47}$·6708700	·99099	(45) 263545	$\overline{46}$·4208540	·98652	(44) 131239	$\overline{45}$·1180629	·98206	110·0
(48) 330014	$\overline{49}$·5185326	·99138	(47) 189679	$\overline{48}$·2780203	·98710	(47) 965363	$\overline{48}$·9846905	·98283	115·0
(50) 231946	$\overline{51}$·3653875	·99174	(49) 136138	$\overline{50}$·1339805	·98763	(49) 707484	$\overline{50}$·8497168	·98354	120·0

TABLE X.—(*continued*).

v	n = 8, (m = 3·0) T_m	log T_m	ρ	n = 9, (m = 3·5) T_m	log T_m	ρ	n = 10, (m = 4·0) T_m	log T_m	ρ	n = 11, (m = 4·5) T_m	log T_m	ρ	n = 12, (m = 5·0) T_m	log T_m	ρ	n = 13, (m = 5·5) T_m	log T_m	ρ	v
0	·169765	$\bar{1}$·2298489	·00000	·156250	$\bar{1}$·1938200	·00000	·145513	$\bar{1}$·1629021	·00000	·136719	$\bar{1}$·1358281	·00000	·129345	$\bar{1}$·1117496	·00000	·123047	$\bar{1}$·0900706	·00000	0
·1	·169553	$\bar{1}$·2293063	·02497	·156094	$\bar{1}$·1933859	·01999	·145392	$\bar{1}$·1625402	·01666	·136621	$\bar{1}$·1355179	·01428	·129264	$\bar{1}$·1114781	·01250	·122979	$\bar{1}$·0898293	·01111	·1
·2	·168921	$\bar{1}$·2276826	·04976	·155627	$\bar{1}$·1920851	·03989	·145029	$\bar{1}$·1614556	·03328	·136329	$\bar{1}$·1345879	·02854	·129022	$\bar{1}$·1106642	·02498	·122774	$\bar{1}$·0891058	·02221	·2
·3	·167876	$\bar{1}$·2249891	·07422	·154854	$\bar{1}$·1899229	·05965	·144428	$\bar{1}$·1596509	·04982	·135844	$\bar{1}$·1330397	·04275	·128620	$\bar{1}$·1093090	·03743	·122434	$\bar{1}$·0879005	·03329	·3
·4	·166434	$\bar{1}$·2212428	·09822	·153783	$\bar{1}$·1869072	·07919	·143592	$\bar{1}$·1571304	·06623	·135169	$\bar{1}$·1308760	·05689	·128060	$\bar{1}$·1074138	·04983	·121959	$\bar{1}$·0862151	·04433	·4
·5	·164614	$\bar{1}$·2164660	·12166	·152422	$\bar{1}$·1830488	·09845	·142528	$\bar{1}$·1539002	·08250	·134307	$\bar{1}$·1281001	·07093	·127345	$\bar{1}$·1049811	·06218	·121353	$\bar{1}$·0840506	·05534	·5
·6	·162437	$\bar{1}$·2106843	·14449	·150786	$\bar{1}$·1783610	·11738	·141243	$\bar{1}$·1499675	·09858	·133265	$\bar{1}$·1247167	·08486	·126478	$\bar{1}$·1020140	·07445	·120617	$\bar{1}$·0814092	·06629	·6
·7	·159929	$\bar{1}$·2039259	·16663	·148888	$\bar{1}$·1728587	·13595	·139747	$\bar{1}$·1453411	·11444	·132048	$\bar{1}$·1208298	·09866	·125463	$\bar{1}$·0985158	·08663	·119755	$\bar{1}$·0782935	·07719	·7
·8	·157116	$\bar{1}$·1962208	·18808	·146743	$\bar{1}$·1665584	·15412	·138048	$\bar{1}$·1400307	·13007	·130662	$\bar{1}$·1161495	·11231	·124306	$\bar{1}$·0944906	·09872	·118770	$\bar{1}$·0747060	·08801	·8
·9	·154028	$\bar{1}$·1875998	·20881	·144370	$\bar{1}$·1594780	·17187	·136159	$\bar{1}$·1340470	·14544	·129116	$\bar{1}$·1109786	·12579	·123011	$\bar{1}$·0899431	·11069	·117666	$\bar{1}$·0706501	·09876	·9
1·0	·150694	$\bar{1}$·1780945	·22881	·141787	$\bar{1}$·1516360	·18919	·134092	$\bar{1}$·1274015	·16054	·127417	$\bar{1}$·1052259	·13910	·121584	$\bar{1}$·0848781	·12254	·116447	$\bar{1}$·0661292	·10942	1·0
1·1	·147142	$\bar{1}$·1677361	·24809	·139012	$\bar{1}$·1430517	·20606	·131858	$\bar{1}$·1201064	·17536	·125574	$\bar{1}$·0988995	·15221	·120033	$\bar{1}$·0793012	·13426	·115119	$\bar{1}$·0611473	·11999	1·1
1·2	·143402	$\bar{1}$·1565558	·26666	·136064	$\bar{1}$·1337448	·22247	·129472	$\bar{1}$·1121745	·18987	·123597	$\bar{1}$·0920077	·16513	·118364	$\bar{1}$·0732182	·14585	·113686	$\bar{1}$·0557085	·13046	1·2
1·3	·139503	$\bar{1}$·1445843	·28454	·132964	$\bar{1}$·1237350	·23842	·126946	$\bar{1}$·1036186	·20408	·121495	$\bar{1}$·0845594	·17784	·116583	$\bar{1}$·0666353	·15728	·112155	$\bar{1}$·0498172	·14083	1·3
1·4	·135472	$\bar{1}$·1318511	·30173	·129731	$\bar{1}$·1130423	·25392	·124295	$\bar{1}$·0944523	·21799	·119279	$\bar{1}$·0765640	·19033	·114699	$\bar{1}$·0595589	·16857	·110529	$\bar{1}$·0434780	·15108	1·4
1·5	·131337	$\bar{1}$·1183855	·31828	·126382	$\bar{1}$·1016862	·26897	·121532	$\bar{1}$·0846891	·23157	·116958	$\bar{1}$·0680305	·20261	·112719	$\bar{1}$·0519958	·17970	·108817	$\bar{1}$·0366960	·16122	1·5
1·6	·127120	$\bar{1}$·1042152	·33419	·122938	$\bar{1}$·0896867	·28356	·118670	$\bar{1}$·0743426	·24485	·114543	$\bar{1}$·0589687	·21466	·110650	$\bar{1}$·0439529	·19066	·107023	$\bar{1}$·0294761	·17124	1·6
1·7	·122848	$\bar{1}$·0893673	·34949	·119416	$\bar{1}$·0770626	·29772	·115725	$\bar{1}$·0634265	·25781	·112044	$\bar{1}$·0493887	·22648	·108502	$\bar{1}$·0354373	·20146	·105154	$\bar{1}$·0218248	·18114	1·7
1·8	·118541	$\bar{1}$·0738677	·36420	·115833	$\bar{1}$·0638330	·31145	·112708	$\bar{1}$·0519545	·27045	·109471	$\bar{1}$·0393001	·23808	·106281	$\bar{1}$·0264565	·21209	·103215	$\bar{1}$·0137444	·19091	1·8
1·9	·114220	$\bar{1}$·0577393	·37836	·112206	$\bar{1}$·0500163	·32476	·109633	$\bar{1}$·0399400	·28279	·106835	$\bar{1}$·0287130	·24944	·103996	$\bar{1}$·0170177	·22255	·101215	$\bar{1}$·0052435	·20055	1·9
2·0	·109904	$\bar{1}$·0410117	·39198	·108550	$\bar{1}$·0356305	·33766	·106512	$\bar{1}$·0273965	·29481	·104145	$\bar{1}$·0176373	·26058	·101655	$\bar{1}$·0071283	·23284	(1) 991578	$\bar{2}$·9963267	·21006	2·0
2·1	·105609	$\bar{1}$·0237019	·40508	·104880	$\bar{1}$·0206931	·35017	·103356	$\bar{1}$·0143372	·30654	·101411	$\bar{1}$·0060830	·27148	(1) 992650	$\bar{2}$·9967961	·24295	(1) 970510	$\bar{2}$·9869999	·21943	2·1
2·2	·101352	$\bar{1}$·0058338	·41770	·101209	$\bar{1}$·0052210	·36228	·100179	$\bar{1}$·0007752	·31797	(1) 986416	$\bar{2}$·9940601	·28216	(1) 968341	$\bar{2}$·9860284	·25289	(1) 949006	$\bar{2}$·9772690	·22867	2·2
2·3	(1) 971467	$\bar{2}$·9874279	·42985	(1) 975508	$\bar{2}$·9892309	·37403	(1) 969891	$\bar{2}$·9867231	·32911	(1) 958469	$\bar{2}$·9815783	·29261	(1) 943698	$\bar{2}$·9748331	·26265	(1) 927128	$\bar{2}$·9671397	·23778	2·3
2·4	(1) 930046	$\bar{2}$·9685043	·44155	(1) 939158	$\bar{2}$·9727385	·38541	(1) 937980	$\bar{2}$·9721936	·33996	(1) 930352	$\bar{2}$·9686474	·30284	(1) 918793	$\bar{2}$·9632179	·27224	(1) 904936	$\bar{2}$·9566181	·24674	2·4
2·5	(1) 889368	$\bar{2}$·9490816	·45283	(1) 903149	$\bar{2}$·9557593	·39645	(1) 906147	$\bar{2}$·9571989	·35053	(1) 902147	$\bar{2}$·9552772	·31285	(1) 893695	$\bar{2}$·9511895	·28165	(1) 882491	$\bar{2}$·9457101	·25557	2·5
2·6	(1) 849529	$\bar{2}$·9291782	·46370	(1) 867577	$\bar{2}$·9383082	·40715	(1) 874482	$\bar{2}$·9417509	·36083	(1) 873931	$\bar{2}$·9414770	·32264	(1) 868473	$\bar{2}$·9387564	·29089	(1) 859848	$\bar{2}$·9344217	·26426	2·6
2·7	(1) 810608	$\bar{2}$·9088111	·47418	(1) 832529	$\bar{2}$·9203995	·41752	(1) 843066	$\bar{2}$·9258614	·37086	(1) 845778	$\bar{2}$·9272564	·33221	(1) 843191	$\bar{2}$·9259260	·29996	(1) 837064	$\bar{2}$·9227589	·27281	2·7
2·8	(1) 772675	$\bar{2}$·8879968	·48429	(1) 798081	$\bar{2}$·9020472	·42758	(1) 811973	$\bar{2}$·9095418	·38064	(1) 817757	$\bar{2}$·9126244	·34158	(1) 817909	$\bar{2}$·9127051	·30885	(1) 814194	$\bar{2}$·9107276	·28123	2·8
2·9	(1) 735785	$\bar{2}$·8667510	·49405	(1) 764301	$\bar{2}$·8832645	·43734	(1) 781273	$\bar{2}$·8928030	·39016	(1) 789933	$\bar{2}$·8975902	·35074	(1) 792687	$\bar{2}$·8991016	·31758	(1) 791287	$\bar{2}$·8983339	·28950	2·9
3·0	(1) 699985	$\bar{2}$·8450885	·50348	(1) 731248	$\bar{2}$·8640644	·44681	(1) 751028	$\bar{2}$·8756561	·39944	(1) 762364	$\bar{2}$·8821626	·35969	(1) 767578	$\bar{2}$·8851226	·32615	(1) 768393	$\bar{2}$·8855836	·29765	3·0
3·1	(1) 665310	$\bar{2}$·8230238	·51259	(1) 698971	$\bar{2}$·8444593	·45600	(1) 721292	$\bar{2}$·8581112	·40849	(1) 735107	$\bar{2}$·8663505	·36845	(1) 742635	$\bar{2}$·8707753	·33455	(1) 745560	$\bar{2}$·8724826	·30565	3·1
3·2	(1) 631786	$\bar{2}$·8005703	·52138	(1) 667515	$\bar{2}$·8244611	·46491	(1) 692116	$\bar{2}$·8401788	·41730	(1) 708210	$\bar{2}$·8501622	·37702	(1) 717905	$\bar{2}$·8560668	·34278	(1) 722831	$\bar{2}$·8590368	·31353	3·2
3·3	(1) 599434	$\bar{2}$·7777411	·52989	(1) 636915	$\bar{2}$·8040813	·47357	(1) 663542	$\bar{2}$·8218687	·42588	(1) 681720	$\bar{2}$·8336061	·38539	(1) 693432	$\bar{2}$·8410038	·35086	(1) 700248	$\bar{2}$·8452519	·32127	3·3
3·4	(1) 568262	$\bar{2}$·7545486	·53812	(1) 607199	$\bar{2}$·7833309	·48197	(1) 635610	$\bar{2}$·8031904	·43425	(1) 655678	$\bar{2}$·8166904	·39358	(1) 669258	$\bar{2}$·8255935	·35878	(1) 677850	$\bar{2}$·8311337	·32888	3·4
3·5	(1) 538275	$\bar{2}$·7310045	·54608	(1) 578390	$\bar{2}$·7622208	·49014	(1) 608350	$\bar{2}$·7841533	·44241	(1) 630120	$\bar{2}$·7994231	·40158	(1) 645420	$\bar{2}$·8098424	·36655	(1) 655674	$\bar{2}$·8166878	·33636	3·5
3·6	(1) 509472	$\bar{2}$·7071203	·55379	(1) 550505	$\bar{2}$·7407610	·49808	(1) 581790	$\bar{2}$·7647665	·45036	(1) 605079	$\bar{2}$·7818119	·40941	(1) 621953	$\bar{2}$·7937573	·37417	(1) 633753	$\bar{2}$·8019198	·34371	3·6
3·7	(1) 481844	$\bar{2}$·6829067	·56125	(1) 523554	$\bar{2}$·7189616	·50579	(1) 555954	$\bar{2}$·7450386	·45811	(1) 580583	$\bar{2}$·7638644	·41707	(1) 598887	$\bar{2}$·7773446	·38164	(1) 612118	$\bar{2}$·7868352	·35094	3·7
3·8	(1) 455380	$\bar{2}$·6583741	·56848	(1) 497545	$\bar{2}$·6968320	·51328	(1) 530858	$\bar{2}$·7249782	·46567	(1) 556658	$\bar{2}$·7455881	·42456	(1) 576250	$\bar{2}$·7606106	·38896	(1) 590799	$\bar{2}$·7714394	·35804	3·8
3·9	(1) 430063	$\bar{2}$·6335324	·57549	(1) 472478	$\bar{2}$·6743815	·52057	(1) 506516	$\bar{2}$·7045934	·47305	(1) 533323	$\bar{2}$·7269901	·43188	(1) 554066	$\bar{2}$·7435617	·39614	(1) 569820	$\bar{2}$·7557379	·36502	3·9
4·0	(1) 405874	$\bar{2}$·6083910	·58228	(1) 448352	$\bar{2}$·6516187	·52766	(1) 482939	$\bar{2}$·6838923	·48024	(1) 510596	$\bar{2}$·7080775	·43905	(1) 532358	$\bar{2}$·7262039	·40319	(1) 549207	$\bar{2}$·7397359	·37188	4·0
4·5	(1) 300950	$\bar{2}$·4784937	·61335	(1) 341515	$\bar{2}$·5334096	·56036	(1) 376620	$\bar{2}$·5759038	·51369	(1) 406471	$\bar{2}$·6090296	·47261	(1) 431507	$\bar{2}$·6349883	·43640	(1) 452270	$\bar{2}$·6553977	·40443	4·5
5·0	(1) 219946	$\bar{2}$·3423161	·64027	(1) 256182	$\bar{2}$·4085492	·58904	(1) 289114	$\bar{2}$·4610688	·54340	(1) 318473	$\bar{2}$·5030730	·50275	(1) 344270	$\bar{2}$·5368993	·46655	(1) 366683	$\bar{2}$·5642907	·43426	5·0
5·5	(1) 158736	$\bar{2}$·2006752	·66378	(1) 189599	$\bar{2}$·2778350	·61437	(1) 218847	$\bar{2}$·3401401	·56990	(1) 245981	$\bar{2}$·3909019	·52991	(1) 270749	$\bar{2}$·4325667	·49396	(1) 293075	$\bar{2}$·4669788	·46162	5·5
6·0	(1) 113303	$\bar{2}$·0542432	·68448	(1) 138655	$\bar{2}$·1419362	·63687	(1) 163592	$\bar{2}$·2137625	·59365	(1) 187552	$\bar{2}$·2731218	·55447	(1) 210160	$\bar{2}$·3225503	·51894	(1) 231192	$\bar{2}$·3639729	·48674	6·0
6·5	(2) 800900	$\bar{3}$·9035785	·70283	(1) 100327	$\bar{2}$·0014185	·65698	(1) 120918	$\bar{2}$·0824904	·61504	(1) 141340	$\bar{2}$·1502656	·57673	(1) 161194	$\bar{2}$·2073481	·54177	(1) 180191	$\bar{2}$·2557341	·50985	6·5
7·0	(2) 561241	$\bar{3}$·7491497	·71921	(2) 719057	$\bar{3}$·8567633	·67503	(2) 884712	$\bar{3}$·9468021	·63438	(1) 105389	$\bar{2}$·0227947	·59700	(1) 122293	$\bar{2}$·0874024	·56267	(1) 138892	$\bar{2}$·1426779	·53115	7·0
7·5	(2) 390259	$\bar{3}$·5913527	·73390	(2) 510955	$\bar{3}$·7083826	·69133	(2) 641376	$\bar{3}$·8071127	·65193	(2) 778248	$\bar{3}$·8911177	·61551	(2) 918557	$\bar{3}$·9631063	·58187	(1) 105969	$\bar{2}$·0251780	·55081	7·5
8·0	(2) 269479	$\bar{3}$·4305256	·74715	(2) 360273	$\bar{3}$·5566316	·70611	(2) 461088	$\bar{3}$·6637835	·66793	(2) 569631	$\bar{3}$·7555938	·63247	(2) 683613	$\bar{3}$·8348100	·59954	(2) 800886	$\bar{3}$·9035709	·56900	8·0
8·5	(2) 184909	$\bar{3}$·2669583	·75917	(2) 252242	$\bar{3}$·4018182	·71957	(2) 328951	$\bar{3}$·5171310	·68257	(2) 413562	$\bar{3}$·6165403	·64805	(2) 504459	$\bar{3}$·7028261	·61586	(2) 600012	$\bar{3}$·7781600	·58587	8·5

TABLE X.—(*continued*).

v	$n = 8, (m = 3·0)$			$n = 9, (m = 3·5)$			$n = 10, (m = 4·0)$		
	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ
9·0	(2) 126154	$\bar{3}$·1009019	·77010	(2) 175473	$\bar{3}$·2442111	·73187	(2) 233042	$\bar{3}$·3674334	·69601
9·5	(3) 856199	$\bar{4}$·9325749	·78010	(2) 121352	$\bar{3}$·0840454	·74315	(2) 164035	$\bar{3}$·2149364	·70838
10·0	(3) 578320	$\bar{4}$·7621684	·78927	(3) 834697	$\bar{4}$·9215287	·75354	(2) 114778	$\bar{3}$·0598579	·71980
10·5	(3) 388911	$\bar{4}$·5898507	·79772	(3) 571274	$\bar{4}$·7568443	·76313	(3) 798715	$\bar{4}$·9023919	·73038
11·0	(3) 260478	$\bar{4}$·4157706	·80552	(3) 389184	$\bar{4}$·5901552	·77202	(3) 552983	$\bar{4}$·7427117	·74021
11·5	(3) 173804	$\bar{4}$·2400603	·81274	(3) 264002	$\bar{4}$·4216078	·78026	(3) 381042	$\bar{4}$·5809729	·74935
12·0	(3) 115568	$\bar{4}$·0628379	·81945	(3) 178374	$\bar{4}$·2513319	·78794	(3) 261406	$\bar{4}$·4173156	·75789
12·5	(4) 765965	$\bar{5}$·8842090	·82571	(3) 120073	$\bar{4}$·0794452	·79511	(3) 178594	$\bar{4}$·2518660	·76587
13·0	(4) 506138	$\bar{5}$·7042688	·83154	(4) 805478	$\bar{5}$·9060536	·80181	(3) 121545	$\bar{4}$·0847388	·77335
13·5	(4) 333506	$\bar{5}$·5231030	·83700	(4) 538583	$\bar{5}$·7312530	·80809	(4) 824210	$\bar{5}$·9160381	·78037
14·0	(4) 219174	$\bar{5}$·3407895	·84212	(4) 359030	$\bar{5}$·5551306	·81399	(4) 557004	$\bar{5}$·7458585	·78698
14·5	(4) 143681	$\bar{5}$·1573988	·84692	(4) 238652	$\bar{5}$·3777657	·81954	(4) 375221	$\bar{5}$·5742867	·79320
15·0	(5) 939713	$\bar{6}$·9729952	·85145	(4) 158209	$\bar{5}$·1992308	·82477	(4) 252001	$\bar{5}$·4014021	·79907
15·5	(5) 613250	$\bar{6}$·7876374	·85572	(4) 104615	$\bar{5}$·0195923	·82971	(4) 168763	$\bar{5}$·2272771	·80463
16·0	(5) 399373	$\bar{6}$·6013792	·85975	(5) 690099	$\bar{6}$·8389111	·83438	(4) 112714	$\bar{5}$·0519789	·80988
18·0	(6) 705145	$\bar{7}$·8482784	·87385	(5) 127884	$\bar{6}$·1068170	·85076	(5) 218889	$\bar{6}$·3402247	·82838
20·0	(6) 121366	$\bar{7}$·0840957	·88538	(6) 230055	$\bar{7}$·3618313	·86421	(6) 411040	$\bar{7}$·6138845	·84361
22·0	(7) 204537	$\bar{8}$·3107720	·89498	(7) 403805	$\bar{8}$·6061713	·87544	(7) 750640	$\bar{8}$·8754318	·85638
24·0	(8) 338670	$\bar{9}$·5297765	·90311	(8) 694271	$\bar{9}$·8415289	·88496	(7) 133893	$\bar{8}$·1267589	·86722
26·0	(9) 552397	$\overline{10}$·7422512	·91006	(8) 117280	$\bar{9}$·0692247	·89313	(8) 234072	$\bar{9}$·3503868	·87655
28·0	(10) 889408	$\overline{11}$·9491008	·91609	(9) 195123	$\overline{10}$·2903084	·90023	(9) 402146	$\overline{10}$·6043843	·88466
30·0	(10) 141597	$\overline{11}$·1510547	·92136	(10) 320352	$\overline{11}$·5056281	·90644	(10) 680494	$\overline{11}$·8328240	·89177
32·0	(11) 223208	$\overline{12}$·3487089	·92601	(11) 519851	$\overline{12}$·7158787	·91192	(10) 113620	$\overline{11}$·0554556	·89806
34·0	(12) 348784	$\overline{13}$·5425570	·93014	(12) 834906	$\overline{13}$·9216373	·91680	(11) 187471	$\overline{12}$·2729335	·90366
36·0	(13) 540770	$\overline{14}$·7330124	·93384	(12) 132858	$\overline{13}$·1233877	·92116	(12) 306061	$\overline{13}$·4858080	·90868
38·0	(14) 832577	$\overline{15}$·9204244	·93716	(13) 209671	$\overline{14}$·3215387	·92509	(13) 494932	$\overline{14}$·6945456	·91320
40·0	(14) 127377	$\overline{15}$·1050914	·94017	(14) 328429	$\overline{15}$·5164412	·92865	(14) 793498	$\overline{15}$·8995456	·91729
45·0	(16) 113854	$\overline{17}$·0563485	·94656	(16) 310002	$\overline{17}$·4913642	·93623	(16) 790392	$\overline{17}$·8978424	·92602
50·0	(19) 988866	$\overline{20}$·9951377	·95171	(18) 282813	$\overline{19}$·4514994	·94235	(18) 756988	$\overline{19}$·8790888	·93308
55·0	(21) 838994	$\overline{22}$·9237590	·95597	(20) 250934	$\overline{21}$·3995600	·94740	(20) 702095	$\overline{21}$·8463961	·93892
60·0	(23) 698119	$\overline{24}$·8439298	·95953	(22) 217558	$\overline{23}$·3375756	·95164	(22) 634009	$\overline{23}$·8020955	·94382
65·0	(25) 571433	$\overline{26}$·7569656	·96256	(24) 184971	$\overline{25}$·2671034	·95524	(24) 559730	$\overline{25}$·7479784	·94799
70·0	(27) 461210	$\overline{28}$·6638986	·96517	(26) 154655	$\overline{27}$·1893649	·95835	(26) 484676	$\overline{27}$·6854517	·95158
75·0	(29) 367748	$\overline{30}$·5655498	·96743	(28) 127449	$\overline{29}$·1053354	·96105	(28) 412705	$\overline{29}$·6156398	·95471
80·0	(31) 290126	$\overline{32}$·4625865	·96942	(30) 103707	$\overline{31}$·0158063	·96343	(30) 346303	$\overline{31}$·5394557	·95746
85·0	(33) 226755	$\overline{34}$·3555565	·97119	(33) 834504	$\overline{34}$·9214283	·96553	(32) 286848	$\overline{33}$·4576512	·95990
90·0	(35) 175758	$\overline{36}$·2449158	·97276	(35) 664880	$\overline{36}$·8227433	·96740	(34) 234883	$\overline{35}$·3708522	·96207
95·0	(37) 135222	$\overline{38}$·1310467	·97416	(37) 525058	$\overline{38}$·7202070	·96908	(36) 190364	$\overline{37}$·2795858	·96402
100·0	(39) 103342	$\overline{40}$·0142756	·97543	(39) 411345	$\overline{40}$·6142067	·97059	(38) 152862	$\overline{39}$·1842996	·96578
105·0	(42) 785020	$\overline{43}$·8948806	·97658	(41) 319944	$\overline{42}$·5050736	·97197	(40) 121724	$\overline{41}$·0853774	·96737
110·0	(44) 593064	$\overline{45}$·7731018	·97763	(43) 247226	$\overline{44}$·3930940	·97322	(43) 961945	$\overline{44}$·9831504	·96883
115·0	(46) 445808	$\overline{47}$·6491480	·97859	(45) 189896	$\overline{46}$·2785153	·97436	(45) 754930	$\overline{46}$·8779065	·97016
120·0	(48) 333581	$\overline{49}$·5232015	·97947	(47) 145064	$\overline{48}$·1615582	·97541	(47) 588705	$\overline{48}$·7698976	·97138

$n = 11, (m = 4·5)$			$n = 12, (m = 5·0)$			$n = 13, (m = 5·5)$			v
T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	
(2) 298015	$\bar{3}$·4742387	·66241	(2) 369346	$\bar{3}$·5674338	·63096	(2) 445881	$\bar{3}$·6492186	·60154	9·0
(2) 213275	$\bar{3}$·3289394	·67568	(2) 268463	$\bar{3}$·4288841	·64496	(2) 328847	$\bar{3}$·5169939	·61613	9·5
(2) 151658	$\bar{3}$·1808657	·68798	(2) 193822	$\bar{3}$·2874021	·65798	(2) 240829	$\bar{3}$·3817097	·62973	10·0
(2) 107206	$\bar{3}$·0302187	·69940	(2) 139056	$\bar{3}$·1431909	·67011	(2) 175214	$\bar{3}$·2435688	·64245	10·5
(3) 753664	$\bar{4}$·8771779	·71004	(3) 991823	$\bar{4}$·9964341	·68144	(2) 126694	$\bar{3}$·1027558	·65436	11·0
(3) 527115	$\bar{4}$·7219055	·71996	(3) 703555	$\bar{4}$·8472981	·69204	(3) 910833	$\bar{4}$·9594386	·66553	11·5
(3) 366901	$\bar{4}$·5275019	·72925	(3) 496517	$\bar{4}$·6959337	·70197	(3) 651284	$\bar{4}$·8137705	·67602	12·0
(3) 254238	$\bar{4}$·4052398	·73795	(3) 348721	$\bar{4}$·5424788	·71130	(3) 463331	$\bar{4}$·6658917	·68590	12·5
(3) 175429	$\bar{4}$·2441005	·74612	(3) 243814	$\bar{4}$·3870585	·72008	(3) 328043	$\bar{4}$·5159307	·69521	13·0
(3) 120570	$\bar{4}$·0812408	·75380	(3) 169742	$\bar{4}$·2297881	·72835	(3) 231209	$\bar{4}$·3640055	·70399	13·5
(4) 825585	$\bar{5}$·9167616	·76104	(3) 117699	$\bar{4}$·0707729	·73616	(3) 162265	$\bar{4}$·2102246	·71230	14·0
(4) 563320	$\bar{5}$·7507551	·76787	(4) 813036	$\bar{5}$·9101096	·74354	(3) 113420	$\bar{4}$·0546882	·72017	14·5
(4) 383095	$\bar{5}$·5833063	·77433	(4) 559613	$\bar{5}$·7478874	·75052	(4) 789748	$\bar{5}$·8974884	·72763	15·0
(4) 259713	$\bar{5}$·4144931	·78044	(4) 383874	$\bar{5}$·5841885	·75714	(4) 547912	$\bar{5}$·7387109	·73471	15·5
(4) 175545	$\bar{5}$·2443875	·78624	(4) 262476	$\bar{5}$·4190889	·76343	(4) 378822	$\bar{5}$·5784348	·74143	16·0
(5) 356697	$\bar{6}$·5522993	·80668	(5) 557214	$\bar{6}$·7460223	·78566	(5) 838958	$\bar{6}$·9237404	·76530	18·0
(6) 698337	$\bar{7}$·8440648	·82358	(5) 113594	$\bar{6}$·0553572	·80411	(5) 177878	$\bar{6}$·2501215	·78519	20·0
(6) 132547	$\bar{7}$·1223709	·83779	(6) 223860	$\bar{7}$·3499765	·81966	(6) 363594	$\bar{7}$·5606171	·80200	22·0
(7) 245070	$\bar{8}$·3892895	·84989	(7) 428657	$\bar{8}$·6321102	·83295	(7) 720438	$\bar{8}$·8575964	·81640	24·0
(8) 443048	$\bar{9}$·6464604	·86031	(8) 800794	$\bar{9}$·9035209	·84442	(7) 138976	$\bar{8}$·1429400	·82887	26·0
(9) 785524	$\overline{10}$·8951592	·86939	(8) 146428	$\bar{9}$·1656246	·85443	(8) 261918	$\bar{9}$·4181647	·83975	28·0
(9) 136923	$\overline{10}$·1364760	·87737	(9) 262770	$\overline{10}$·4195758	·86323	(9) 483627	$\overline{10}$·6845105	·84935	30·0
(10) 235112	$\overline{11}$·3712743	·88443	(10) 463797	$\overline{11}$·6663275	·87103	(10) 877010	$\overline{11}$·9430044	·85787	32·0
(11) 398366	$\overline{12}$·6002819	·89073	(11) 806632	$\overline{12}$·9066756	·87800	(10) 156497	$\overline{11}$·1945053	·86548	34·0
(12) 666978	$\overline{13}$·8241114	·89637	(11) 138449	$\overline{12}$·1412913	·88425	(11) 275258	$\overline{12}$·4397397	·87232	36·0
(12) 110480	$\overline{13}$·0432834	·90147	(12) 234826	$\overline{13}$·3707460	·88990	(12) 477888	$\overline{13}$·6793265	·87850	38·0
(13) 181236	$\overline{14}$·2582438	·90608	(13) 394031	$\overline{14}$·5955299	·89502	(13) 819970	$\overline{14}$·9137979	·88411	40·0
(15) 190381	$\overline{16}$·2796235	·91593	(15) 436217	$\overline{16}$·6397021	·90596	(15) 956035	$\overline{16}$·9804738	·89611	45·0
(17) 191314	$\overline{18}$·2817474	·92391	(17) 459695	$\overline{18}$·6624699	·91484	(16) 105597	$\overline{17}$·0236530	·90587	50·0
(19) 185400	$\overline{20}$·2681094	·93051	(19) 465259	$\overline{20}$·6676947	·92219	(18) 111571	$\overline{19}$·0475494	·91395	55·0
(21) 174314	$\overline{22}$·2413320	·93606	(21) 455282	$\overline{22}$·6582803	·92838	(20) 113589	$\overline{21}$·0553380	·92076	60·0
(23) 159747	$\overline{24}$·2034340	·94079	(23) 432977	$\overline{24}$·6364648	·93365	(22) 112065	$\overline{23}$·0494701	·92657	65·0
(25) 143219	$\overline{26}$·1560021	·94487	(25) 401801	$\overline{26}$·6040112	·93820	(24) 107616	$\overline{25}$·0318790	·93159	70·0
(27) 125981	$\overline{28}$·1003061	·94842	(27) 365031	$\overline{28}$·5623297	·94217	(26) 100951	$\overline{27}$·0041093	·93596	75·0
(29) 108988	$\overline{30}$·0373782	·95154	(29) 325514	$\overline{30}$·5125691	·94566	(29) 927742	$\overline{30}$·9674271	·93981	80·0
(32) 929113	$\overline{33}$·9680685	·95431	(31) 285546	$\overline{32}$·4556756	·94875	(31) 837281	$\overline{32}$·9228714	·94323	85·0
(34) 781782	$\overline{35}$·8930856	·95678	(33) 246853	$\overline{34}$·3924392	·95151	(33) 743551	$\overline{34}$·8713110	·94627	90·0
(36) 650169	$\overline{37}$·8130263	·95899	(35) 210632	$\overline{36}$·3235246	·95399	(35) 650846	$\overline{36}$·8134782	·94901	95·0
(38) 535054	$\overline{39}$·7283980	·96099	(37) 177622	$\overline{38}$·2494972	·95622	(37) 562337	$\overline{38}$·7499964	·95148	100·0
(40) 436150	$\overline{41}$·6396356	·96280	(39) 148198	$\overline{40}$·1708435	·95825	(39) 480176	$\overline{40}$·6814004	·95373	105·0
(42) 352464	$\overline{43}$·5471147	·96445	(41) 122457	$\overline{42}$·0879823	·96010	(41) 405651	$\overline{42}$·6081525	·95577	110·0
(44) 282593	$\overline{45}$·4511620	·96597	(43) 100295	$\overline{44}$·0012785	·96180	(43) 339356	$\overline{44}$·5306551	·95765	115·0
(46) 224938	$\overline{47}$·3520634	·96736	(46) 814801	$\overline{47}$·9110513	·96335	(45) 281359	$\overline{46}$·4492604	·95937	120·0

TABLE X.—(*continued*).

v	$n = 14, (m = 6{\cdot}0)$ T_m	$\log T_m$	ρ	$n = 15, (m = 6{\cdot}5)$ T_m	$\log T_m$	ρ	$n = 16, (m = 7{\cdot}0)$ T_m	$\log T_m$	ρ
0	·117586	$\bar{1}$·0703556	·00000	·112793	$\bar{1}$·0522821	·00000	·108541	$\bar{1}$·0355946	·00000
·5	·116128	$\bar{1}$·0649366	·04985	·111520	$\bar{1}$·0473530	·04534	·107418	$\bar{1}$·0310755	·04158
1·0	·111886	$\bar{1}$·0487750	·09879	·107805	$\bar{1}$·0326394	·09001	·104129	$\bar{1}$·0175736	·08265
1·5	·105234	$\bar{1}$·0221544	·14606	·101942	$\bar{1}$·0083519	·13343	(1) 989122	$\bar{2}$·9952500	·12276
2·0	(1) 967170	$\bar{2}$·9855029	·19110	(1) 943661	$\bar{2}$·9748160	·17513	(1) 921208	$\bar{2}$·9643575	·16152
2·5	(1) 869657	$\bar{2}$·9393478	·23355	(1) 855936	$\bar{2}$·9324415	·21480	(1) 841820	$\bar{2}$·9252193	·19867
3·0	(1) 766074	$\bar{2}$·8842705	·27326	(1) 761538	$\bar{2}$·8816915	·25225	(1) 755454	$\bar{2}$·8782080	·23401
3·5	(1) 662021	$\bar{2}$·8208718	·31020	(1) 665359	$\bar{2}$·8230560	·28742	(1) 666386	$\bar{2}$·8237257	·26747
4·0	(1) 562013	$\bar{2}$·7497462	·34445	(1) 571519	$\bar{2}$·7570307	·32032	(1) 578346	$\bar{2}$·7621874	·29900
4·5	(1) 469315	$\bar{2}$·6714649	·37613	(1) 483173	$\bar{2}$·6841024	·35102	(1) 494319	$\bar{2}$·6940076	·32864
5·0	(1) 385981	$\bar{2}$·5865664	·40542	(1) 402475	$\bar{2}$·6047385	·37961	(1) 416478	$\bar{2}$·6195917	·35645
5·5	(1) 313005	$\bar{2}$·4955515	·43250	(1) 330660	$\bar{2}$·5193815	·40624	(1) 346202	$\bar{2}$·5393292	·38251
6·0	(1) 250543	$\bar{2}$·3988818	·45754	(1) 268192	$\bar{2}$·4284455	·43102	(1) 284178	$\bar{2}$·4535899	·40691
6·5	(1) 198144	$\bar{2}$·2969800	·48072	(1) 214939	$\bar{2}$·3323152	·45410	(1) 230527	$\bar{2}$·3627221	·42976
7·0	(1) 154964	$\bar{2}$·1902321	·50220	(1) 170352	$\bar{2}$·2313464	·47561	(1) 184949	$\bar{2}$·2670515	·45116
7·5	(1) 119947	$\bar{2}$·0789895	·52214	(1) 133618	$\bar{2}$·1258663	·49567	(1) 146852	$\bar{2}$·1668800	·47122
8·0	(2) 919543	$\bar{3}$·9635719	·54067	(1) 103795	$\bar{2}$·0161764	·51440	(1) 115476	$\bar{2}$·0624922	·49003
8·5	(2) 698667	$\bar{3}$·8442702	·55793	(2) 799010	$\bar{3}$·9025520	·53192	(2) 899799	$\bar{3}$·9541454	·50769
9·0	(2) 526440	$\bar{3}$·7213487	·57403	(2) 609884	$\bar{3}$·7852474	·54832	(2) 695155	$\bar{3}$·8420814	·52428
9·5	(2) 393594	$\bar{3}$·5950485	·58907	(2) 461843	$\bar{3}$·6644946	·56369	(2) 532749	$\bar{3}$·7265230	·53989
10·0	(2) 292139	$\bar{3}$·4655890	·60314	(2) 347142	$\bar{3}$·5405074	·57812	(2) 405206	$\bar{3}$·6076758	·55459
10·5	(2) 215363	$\bar{3}$·3331705	·61634	(2) 259108	$\bar{3}$·4134813	·59169	(2) 306006	$\bar{3}$·4857298	·56844
11·0	(2) 157753	$\bar{3}$·1979765	·62872	(2) 192131	$\bar{3}$·2835965	·60446	(2) 229541	$\bar{3}$·3608606	·58152
11·5	(2) 114861	$\bar{3}$·0601730	·64037	(2) 141585	$\bar{3}$·1510184	·61650	(2) 171092	$\bar{3}$·2332308	·59388
12·0	(3) 831606	$\bar{4}$·9199174	·65134	(2) 103729	$\bar{3}$·0159007	·62787	(2) 126762	$\bar{3}$·1029907	·60557
12·5	(3) 598891	$\bar{4}$·7773476	·66168	(3) 755759	$\bar{4}$·8783833	·63861	(3) 933855	$\bar{4}$·9702796	·61664
13·0	(3) 429136	$\bar{4}$·6325947	·67145	(3) 547768	$\bar{4}$·7385967	·64878	(3) 684269	$\bar{4}$·8352269	·62714
13·5	(3) 306040	$\bar{4}$·4857783	·68069	(3) 395058	$\bar{4}$·5966612	·65841	(3) 498830	$\bar{4}$·6979526	·63711
14·0	(3) 217275	$\bar{4}$·3370092	·68944	(3) 283588	$\bar{4}$·4526884	·66755	(3) 361883	$\bar{4}$·5585682	·64659
14·5	(3) 153599	$\bar{4}$·1863894	·69774	(3) 202666	$\bar{4}$·3067816	·67623	(3) 261323	$\bar{4}$·4171776	·65560
15·0	(3) 108147	$\bar{4}$·0340137	·70562	(3) 144224	$\bar{4}$·1590370	·68448	(3) 187879	$\bar{4}$·2738776	·66418
15·5	(4) 758525	$\bar{5}$·8799697	·71311	(3) 102222	$\bar{4}$·0095440	·69234	(3) 134511	$\bar{4}$·1287582	·67236
16·0	(4) 530077	$\bar{5}$·7243392	·72024	(4) 721748	$\bar{5}$·8583858	·69982	(4) 959188	$\bar{5}$·9819039	·68016
18·0	(4) 122292	$\bar{5}$·0873994	·74559	(4) 173213	$\bar{5}$·2385796	·72653	(4) 239135	$\bar{5}$·3786436	·70808
20·0	(5) 269345	$\bar{6}$·4303083	·76681	(5) 395833	$\bar{6}$·5975124	·74896	(5) 566373	$\bar{6}$·7531022	·73163
22·0	(6) 570489	$\bar{7}$·7562471	·78480	(6) 867902	$\bar{7}$·9384709	·76805	(5) 128428	$\bar{6}$·1086614	·75173
24·0	(6) 116870	$\bar{7}$·0677045	·80025	(6) 183674	$\bar{7}$·2640466	·78448	(6) 280542	$\bar{7}$·4479974	·76908
26·0	(7) 232630	$\bar{8}$·3666661	·81365	(7) 376978	$\bar{8}$·5763164	·79876	(7) 593293	$\bar{8}$·7732691	·78420
28·0	(8) 451584	$\bar{9}$·6547386	·82538	(8) 753300	$\bar{9}$·8769679	·81129	(7) 121964	$\bar{8}$·0862323	·79748
30·0	(9) 857512	$\overline{10}$·9332404	·83573	(8) 147025	$\bar{9}$·1673901	·82236	(8) 244535	$\bar{9}$·3883405	·80924
32·0	(9) 159686	$\overline{10}$·2032659	·84493	(9) 281021	$\overline{10}$·4487391	·83221	(9) 479519	$\overline{10}$·6808062	·81972
34·0	(10) 292235	$\overline{11}$·4657329	·85316	(10) 527214	$\overline{11}$·7219871	·84104	(10) 921831	$\overline{11}$·9646511	·82912
36·0	(11) 526525	$\overline{12}$·7214189	·86056	(11) 972656	$\overline{12}$·9879592	·84899	(10) 174078	$\overline{11}$·2407443	·83759
38·0	(12) 935379	$\overline{13}$·9709876	·86726	(11) 176751	$\overline{12}$·2473610	·85619	(11) 323468	$\overline{12}$·5098308	·84527
40·0	(12) 164063	$\overline{13}$·2150106	·87335	(12) 316812	$\overline{13}$·5008010	·86273	(12) 592316	$\overline{13}$·7725535	·85226

v	$n = 17, (m = 7{\cdot}5)$ T_m	$\log T_m$	ρ	$n = 18, (m = 8{\cdot}0)$ T_m	$\log T_m$	ρ	$n = 19, (m = 8{\cdot}5)$ T_m	$\log T_m$	ρ
0	·104736	$\bar{1}$·0200973	·00000	·101305	$\bar{1}$·0056315	·00000	(1) 981903	$\bar{2}$·9920686	·00000
·5	·103735	$\bar{1}$·0159251	·03839	·100405	$\bar{1}$·0017568	·03566	(1) 973760	$\bar{2}$·9884518	·03327
1·0	·100798	$\bar{1}$·0034515	·07639	(1) 977613	$\bar{2}$·9901668	·07101	(1) 949793	$\bar{2}$·9776290	·06633
1·5	(1) 961175	$\bar{2}$·9828026	·11364	(1) 935323	$\bar{2}$·9709617	·10575	(1) 911341	$\bar{2}$·9596811	·09888
2·0	(1) 899866	$\bar{2}$·9541777	·14981	(1) 879633	$\bar{2}$·9443015	·13964	(1) 860475	$\bar{2}$·9347383	·13072
2·5	(1) 827629	$\bar{2}$·9178357	·18468	(1) 813572	$\bar{2}$·9103962	·17245	(1) 799784	$\bar{2}$·9029728	·16169
3·0	(1) 748306	$\bar{2}$·8740794	·21807	(1) 740448	$\bar{2}$·8694943	·20405	(1) 732135	$\bar{2}$·8645910	·19164
3·5	(1) 665643	$\bar{2}$·8232413	·24989	(1) 663549	$\bar{2}$·8218729	·23433	(1) 660427	$\bar{2}$·8198248	·22048
4·0	(1) 583002	$\bar{2}$·7656698	·28009	(1) 585903	$\bar{2}$·7678257	·26323	(1) 587387	$\bar{2}$·7689243	·24813
4·5	(1) 503175	$\bar{2}$·7017191	·30865	(1) 510101	$\bar{2}$·7076565	·29072	(1) 515406	$\bar{2}$·7121497	·27458
5·0	(1) 428292	$\bar{2}$·6317403	·33561	(1) 438197	$\bar{2}$·6416697	·31681	(1) 446443	$\bar{2}$·6497661	·29979
5·5	(1) 359812	$\bar{2}$·5560759	·36103	(1) 371677	$\bar{2}$·5701662	·34153	(1) 381978	$\bar{2}$·5820381	·32380
6·0	(1) 298576	$\bar{2}$·4750555	·38496	(1) 311486	$\bar{2}$·4934392	·36493	(1) 323018	$\bar{2}$·5092262	·34663
6·5	(1) 244902	$\bar{2}$·3889927	·40748	(1) 258090	$\bar{2}$·4117708	·38706	(1) 270137	$\bar{2}$·4315837	·36830
7·0	(1) 198694	$\bar{2}$·2981845	·42868	(1) 211559	$\bar{2}$·3254308	·40797	(1) 223540	$\bar{2}$·3493552	·38887
7·5	(1) 159555	$\bar{2}$·2029101	·44863	(1) 171662	$\bar{2}$·2346750	·42774	(1) 183136	$\bar{2}$·2627747	·40839
8·0	(1) 126891	$\bar{2}$·1034307	·46742	(1) 137958	$\bar{2}$·1397461	·44642	(1) 148616	$\bar{2}$·1720655	·42691
8·5	(2) 999978	$\bar{3}$·9999906	·48512	(1) 109868	$\bar{2}$·0408701	·46409	(1) 119520	$\bar{2}$·0774391	·44448
9·0	(2) 781299	$\bar{3}$·8928174	·50182	(2) 867486	$\bar{3}$·9382625	·48081	(2) 953007	$\bar{3}$·9790960	·46115
9·5	(2) 605512	$\bar{3}$·7821228	·51757	(2) 679396	$\bar{3}$·8321231	·49663	(2) 753745	$\bar{3}$·8772245	·47698
10·0	(2) 465697	$\bar{3}$·6681036	·53245	(2) 528007	$\bar{3}$·7226396	·51162	(2) 591565	$\bar{3}$·7720027	·49202
10·5	(2) 355585	$\bar{3}$·5509431	·54651	(2) 407368	$\bar{3}$·6099872	·52582	(2) 460891	$\bar{3}$·6635978	·50631
11·0	(2) 269657	$\bar{3}$·4308113	·55982	(2) 312126	$\bar{3}$·4943298	·53930	(2) 356588	$\bar{3}$·5521668	·51990
11·5	(2) 203173	$\bar{3}$·3078664	·57243	(2) 237586	$\bar{3}$·3758206	·55210	(2) 274067	$\bar{3}$·4378570	·53283
12·0	(2) 152144	$\bar{3}$·1822555	·58438	(2) 179723	$\bar{3}$·2546025	·56426	(2) 209318	$\bar{3}$·3208071	·54514
12·5	(2) 113270	$\bar{3}$·0541156	·59573	(2) 135148	$\bar{3}$·1308092	·57582	(2) 158908	$\bar{3}$·2011468	·55688
13·0	(3) 838637	$\bar{4}$·9235742	·60651	(2) 101057	$\bar{3}$·0045659	·58683	(2) 119949	$\bar{3}$·0789980	·56807
13·5	(3) 617661	$\bar{4}$·7907500	·61676	(3) 751604	$\bar{4}$·8759893	·59732	(3) 900483	$\bar{4}$·9544754	·57875
14·0	(3) 452641	$\bar{4}$·6557540	·62652	(3) 556146	$\bar{4}$·7451891	·60732	(3) 672491	$\bar{4}$·8276864	·58895
14·5	(3) 330133	$\bar{4}$·5186895	·63582	(3) 409513	$\bar{4}$·6122678	·61686	(3) 499726	$\bar{4}$·6987319	·59869
15·0	(3) 239692	$\bar{4}$·3796534	·64468	(3) 300138	$\bar{4}$·4773214	·62597	(3) 369579	$\bar{4}$·5677071	·60802
15·5	(3) 173275	$\bar{4}$·2387360	·65315	(3) 218998	$\bar{4}$·3404399	·63469	(3) 272083	$\bar{4}$·4347013	·61695
16·0	(3) 124745	$\bar{4}$·0960221	·66123	(3) 159114	$\bar{4}$·2017081	·64302	(3) 199434	$\bar{4}$·2997985	·62549
18·0	(4) 322639	$\bar{5}$·5087174	·69025	(4) 426386	$\bar{5}$·6318357	·67301	(4) 553014	$\bar{5}$·7427363	·65635
20·0	(5) 791078	$\bar{6}$·8982192	·71482	(4) 108112	$\bar{5}$·0338724	·69850	(4) 144848	$\bar{5}$·1609128	·68268
22·0	(5) 185341	$\bar{6}$·2679709	·73586	(5) 261465	$\bar{6}$·4174133	·72041	(5) 361286	$\bar{6}$·5578509	·70538
24·0	(6) 417561	$\bar{7}$·6207201	·75407	(6) 607057	$\bar{7}$·7832292	·73942	(6) 863767	$\bar{7}$·9363966	·72513
26·0	(7) 909265	$\bar{8}$·9586903	·76997	(6) 136019	$\bar{7}$·1336001	·75605	(6) 199010	$\bar{7}$·2988754	·74245
28·0	(7) 192177	$\bar{8}$·2837025	·78396	(7) 295393	$\bar{8}$·4704004	·77072	(7) 443821	$\bar{8}$·6472082	·75776
30·0	(8) 395609	$\bar{9}$·5972659	·79637	(8) 624007	$\bar{9}$·7951897	·78376	(8) 961607	$\bar{9}$·9829977	·77138
32·0	(9) 795506	$\overline{10}$·9006437	·80745	(8) 128611	$\bar{9}$·1092767	·79540	(8) 203046	$\bar{9}$·3075935	·78357
34·0	(9) 156640	$\overline{10}$·1949035	·81740	(9) 259281	$\overline{10}$·4137702	·80588	(9) 418930	$\overline{10}$·6221419	·79455
36·0	(10) 302660	$\overline{11}$·4809548	·82638	(10) 512409	$\overline{11}$·7096171	·81534	(10) 846494	$\overline{11}$·9276240	·80448
38·0	(11) 574882	$\overline{12}$·7595788	·83452	(11) 994563	$\overline{12}$·9976324	·82393	(10) 167836	$\overline{11}$·2248857	·81350
40·0	(11) 107511	$\overline{12}$·0314511	·84194	(11) 189899	$\overline{12}$·2785218	·83176	(11) 327085	$\overline{12}$·6305144	·82173

TABLE X.—(*continued*).

v	$n = 14, (m = 6·0)$			$n = 15, (m = 6·5)$			$n = 16, (m = 7·0)$			$n = 17, (m = 7·5)$			$n = 18, (m = 8·0)$			$n = 19, (m = 8·5)$			v
	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	
45·0	(14) 201327	$\overline{15}$·3039022	·88638	(14) 408904	$\overline{15}$·6116218	·87677	(14) 803560	$\overline{15}$·9050181	·86727	(13) 153206	$\overline{14}$·1852759	·85789	(13) 284069	$\overline{14}$·4534243	·84862	(13) 513288	$\overline{14}$·7103608	·83947	45·0
50·0	(16) 232949	$\overline{17}$·3672608	·89699	(16) 495369	$\overline{17}$·6949288	·88820	(15) 101869	$\overline{16}$·0080430	·87952	(15) 203137	$\overline{16}$·3077900	·87093	(15) 393730	$\overline{16}$·5951990	·86243	(15) 743309	$\overline{16}$·8711692	·85403	50·0
55·0	(18) 256825	$\overline{19}$·4096379	·90579	(18) 569635	$\overline{19}$·7555967	·89771	(17) 122127	$\overline{18}$·0868120	·88970	(17) 253788	$\overline{18}$·4044711	·88178	(17) 512394	$\overline{18}$·7096040	·87394	(16) 100719	$\overline{17}$·0031105	·86617	55·0
60·0	(20) 271938	$\overline{21}$·4344699	·91321	(20) 627065	$\overline{21}$·7973128	·90572	(19) 139718	$\overline{20}$·1452535	·89831	(19) 301633	$\overline{20}$·4794795	·89096	(19) 632443	$\overline{20}$·8010215	·88367	(18) 129057	$\overline{19}$·1107799	·87646	60·0
65·0	(22) 278236	$\overline{23}$·4444135	·91954	(22) 665171	$\overline{23}$·8229332	·91258	(21) 153608	$\overline{22}$·1864148	·90567	(21) 343596	$\overline{22}$·5360482	·89881	(21) 746213	$\overline{22}$·8728627	·89202	(20) 157674	$\overline{21}$·1977601	·88528	65·0
70·0	(24) 276418	$\overline{25}$·4415658	·92502	(24) 683461	$\overline{25}$·8347137	·91850	(23) 163196	$\overline{24}$·2127084	·91204	(23) 377345	$\overline{24}$·5767383	·90562	(23) 846904	$\overline{24}$·9278341	·89925	(22) 184883	$\overline{23}$·2668974	·89293	70·0
75·0	(26) 267676	$\overline{27}$·4276096	·92980	(26) 683076	$\overline{27}$·8344688	·92368	(25) 168296	$\overline{26}$·2260736	·91760	(25) 401433	$\overline{26}$·6036131	·91157	(25) 929219	$\overline{26}$·9681180	·90558	(24) 209166	$\overline{25}$·3204903	·89963	75·0
80·0	(28) 253465	$\overline{29}$·4039176	·93400	(28) 666312	$\overline{29}$·8236775	·92824	(27) 169081	$\overline{28}$·2280951	·92250	(27) 415297	$\overline{28}$·6183590	·91681	(27) 989693	$\overline{28}$·9955003	·91116	(26) 229309	$\overline{27}$·3604209	·90554	80·0
85·0	(30) 235300	$\overline{31}$·3716210	·93774	(30) 636154	$\overline{31}$·8035624	·93228	(29) 165990	$\overline{30}$·2200830	·92686	(29) 419152	$\overline{30}$·6223718	·92147	(28) 102674	$\overline{29}$·0114601	·91612	(28) 244484	$\overline{29}$·3882499	·91080	85·0
90·0	(32) 214619	$\overline{33}$·3316674	·94107	(32) 595862	$\overline{33}$·7751455	·93589	(31) 159637	$\overline{32}$·2031336	·93075	(31) 413828	$\overline{32}$·6168199	·92564	(30) 104049	$\overline{31}$·0172367	·92055	(30) 254264	$\overline{31}$·4052852	·91550	90·0
95·0	(34) 192688	$\overline{35}$·2848539	·94406	(34) 548642	$\overline{35}$·7392892	·93914	(33) 150720	$\overline{34}$·1781718	·93425	(33) 400581	$\overline{34}$·6026907	·92938	(32) 103247	$\overline{33}$·0138774	·92454	(32) 258603	$\overline{33}$·4126343	·91973	95·0
100·0	(36) 170554	$\overline{37}$·2318608	·94677	(36) 497426	$\overline{37}$·6967287	·94208	(35) 139955	$\overline{36}$·1459876	·93741	(35) 380914	$\overline{36}$·5808267	·93277	(34) 100526	$\overline{35}$·0022776	·92815	(34) 257776	$\overline{35}$·4112424	·92356	100·0
105·0	(38) 149029	$\overline{39}$·1732714	·94922	(38) 444729	$\overline{39}$·6480952	·94474	(37) 128014	$\overline{38}$·1072588	·94028	(37) 356412	$\overline{38}$·5519520	·93585	(37) 962068	$\overline{38}$·9832059	·93143	(36) 252303	$\overline{37}$·4019233	·92704	105·0
110·0	(40) 128704	$\overline{41}$·1095904	·95146	(40) 392586	$\overline{41}$·5939346	·94717	(39) 115497	$\overline{40}$·0625724	·94290	(39) 328620	$\overline{40}$·5166936	·93865	(39) 906419	$\overline{40}$·9573292	·93443	(38) 242875	$\overline{39}$·3853820	·93022	110·0
115·0	(42) 109966	$\overline{43}$·0412570	·95351	(42) 342549	$\overline{43}$·5347228	·94940	(41) 102906	$\overline{42}$·0124400	·94530	(41) 298950	$\overline{42}$·4755981	·94123	(41) 841838	$\overline{42}$·9252285	·93717	(40) 230268	$\overline{41}$·3622339	·93313	115·0
120·0	(45) 930371	$\overline{46}$·9686560	·95540	(44) 295717	$\overline{45}$·4708766	·95145	(44) 906379	$\overline{45}$·9573097	·94751	(43) 268624	$\overline{44}$·4291450	·94359	(43) 771638	$\overline{44}$·8874138	·93969	(42) 215287	$\overline{43}$·3330187	·93581	120·0

v	$n = 20, (m = 9·0)$			$n = 21, (m = 9·5)$			$n = 22, (m = 10·0)$			$n = 23, (m = 10·5)$			$n = 24, (m = 11·0)$			$n = 25, (m = 11·5)$			v
	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	T_m	$\log T_m$	ρ	
0	(1) 953460	$\overline{2}$·9793026	·00000	(1) 927353	$\overline{2}$·9672450	·00000	(1) 903278	$\overline{2}$·9558214	·00000	(1) 880985	$\overline{2}$·9449686	·00000	(1) 860265	$\overline{2}$·9346322	·00000	(1) 840940	$\overline{2}$·9247650	·00000	0
·5	(1) 946044	$\overline{2}$·9759115	·03122	(1) 920562	$\overline{2}$·9640532	·02938	(1) 897030	$\overline{2}$·9528070	·02775	(1) 875211	$\overline{2}$·9421126	·02630	(1) 854907	$\overline{2}$·9319188	·02498	(1) 835951	$\overline{2}$·9221810	·02379	·5
1·0	(1) 924189	$\overline{2}$·9657610	·06222	(1) 900527	$\overline{2}$·9544966	·05859	(1) 878575	$\overline{2}$·9437787	·05536	(1) 858139	$\overline{2}$·9335575	·05247	(1) 839054	$\overline{2}$·9237899	·04986	(1) 821179	$\overline{2}$·9144378	·04750	1·0
1·5	(1) 889032	$\overline{2}$·9489173	·09283	(1) 868221	$\overline{2}$·9386304	·08747	(1) 848756	$\overline{2}$·9287829	·08269	(1) 830505	$\overline{2}$·9193425	·07841	(1) 813352	$\overline{2}$·9102788	·07454	(1) 797195	$\overline{2}$·9015645	·07103	1·5
2·0	(1) 842340	$\overline{2}$·9254876	·12286	(1) 825169	$\overline{2}$·9165430	·11587	(1) 808900	$\overline{2}$·9078948	·10961	(1) 793472	$\overline{2}$·8995314	·10399	(1) 778825	$\overline{2}$·8914400	·09892	(1) 764906	$\overline{2}$·8836082	·09430	2·0
2·5	(1) 786348	$\overline{2}$·8956148	·15215	(1) 773313	$\overline{2}$·8883550	·14364	(1) 760704	$\overline{2}$·8812156	·13601	(1) 748532	$\overline{2}$·8742104	·12914	(1) 736797	$\overline{2}$·8673480	·12291	(1) 725492	$\overline{2}$·8606328	·11725	2·5
3·0	(1) 723555	$\overline{2}$·8594715	·18059	(1) 714845	$\overline{2}$·8542119	·17070	(1) 706105	$\overline{2}$·8488691	·16180	(1) 697406	$\overline{2}$·8434858	·15375	(1) 688802	$\overline{2}$·8380943	·14645	(1) 680328	$\overline{2}$·8327182	·13979	3·0
3·5	(1) 656529	$\overline{2}$·8172539	·20808	(1) 652050	$\overline{2}$·8142806	·19694	(1) 647140	$\overline{2}$·8109985	·18688	(1) 641920	$\overline{2}$·8074809	·17776	(1) 636481	$\overline{2}$·8037853	·16946	(1) 630895	$\overline{2}$·7999574	·16187	3·5
4·0	(1) 587726	$\overline{2}$·7691752	·23456	(1) 587143	$\overline{2}$·7687441	·22231	(1) 585817	$\overline{2}$·7677617	·21121	(1) 583892	$\overline{2}$·7663327	·20111	(1) 581489	$\overline{2}$·7645412	·19189	(1) 578702	$\overline{2}$·7624552	·18345	4·0
4·5	(1) 519350	$\overline{2}$·7154603	·25999	(1) 522152	$\overline{2}$·7177970	·24677	(1) 523996	$\overline{2}$·7193279	·23474	(1) 525036	$\overline{2}$·7201891	·22376	(1) 525402	$\overline{2}$·7204916	·21371	(1) 525202	$\overline{2}$·7203261	·20448	4·5
5·0	(1) 453252	$\overline{2}$·6563402	·28435	(1) 458819	$\overline{2}$·6616413	·27028	(1) 463313	$\overline{2}$·6658744	·25744	(1) 466881	$\overline{2}$·6692061	·24568	(1) 469650	$\overline{2}$·6717741	·23488	(1) 471728	$\overline{2}$·6736919	·22494	5·0
5·5	(1) 390883	$\overline{2}$·5920469	·30763	(1) 398550	$\overline{2}$·6004824	·29285	(1) 405119	$\overline{2}$·6075828	·27930	(1) 410719	$\overline{2}$·6135447	·26685	(1) 415462	$\overline{2}$·6185316	·25538	(1) 419450	$\overline{2}$·6226803	·24480	5·5
6·0	(1) 333283	$\overline{2}$·5228131	·32986	(1) 342394	$\overline{2}$·5345264	·31447	(1) 350458	$\overline{2}$·5446366	·30031	(1) 357576	$\overline{2}$·5533687	·28726	(1) 363841	$\overline{2}$·5609112	·27520	(1) 369337	$\overline{2}$·5674227	·26404	6·0
6·5	(1) 281103	$\overline{2}$·4488658	·35105	(1) 291057	$\overline{2}$·4639776	·33516	(1) 300068	$\overline{2}$·4772193	·32048	(1) 308207	$\overline{2}$·4888430	·30691	(1) 315545	$\overline{2}$·4990609	·29434	(1) 322146	$\overline{2}$·5080528	·28267	6·5
7·0	(1) 234653	$\overline{2}$·3704265	·37124	(1) 244927	$\overline{2}$·3890360	·35493	(1) 254397	$\overline{2}$·4055121	·33983	(1) 263107	$\overline{2}$·4201317	·32582	(1) 271100	$\overline{2}$·4331295	·31280	(1) 278423	$\overline{2}$·4447052	·30068	7·0
7·5	(1) 193958	$\overline{2}$·2877086	·39046	(1) 204125	$\overline{2}$·3098967	·37382	(1) 213645	$\overline{2}$·3296925	·35836	(1) 222534	$\overline{2}$·3473964	·34398	(1) 230815	$\overline{2}$·3632642	·33058	(1) 238514	$\overline{2}$·3775146	·31807	7·5
8·0	(1) 158825	$\overline{2}$·2009180	·40876	(1) 168558	$\overline{2}$·2267482	·39186	(1) 177801	$\overline{2}$·2499335	·37612	(1) 186550	$\overline{2}$·2707957	·36142	(1) 194810	$\overline{2}$·2896106	·34769	(1) 202588	$\overline{2}$·3066140	·33485	8·0
8·5	(1) 128899	$\overline{2}$·1102503	·42618	(1) 137966	$\overline{2}$·1397717	·40909	(1) 146691	$\overline{2}$·1664026	·39311	(1) 155055	$\overline{2}$·1904844	·37816	(1) 163046	$\overline{2}$·2123107	·36416	(1) 170661	$\overline{2}$·2321346	·35103	8·5

TABLE X.—(*continued*).

v	$n = 20, (m = 9\cdot0)$ T_m	$\log T_m$	ρ	$n = 21, (m = 9\cdot5)$ T_m	$\log T_m$	ρ	$n = 22, (m = 10\cdot0)$ T_m	$\log T_m$	ρ
9·0	(1) 103727	$\bar{2}$·0158923	·44276	(1) 111980	$\bar{2}$·0491413	·42552	(1) 120022	$\bar{2}$·0792612	·40937
9·5	(2) 827983	$\bar{3}$·9180216	·45854	(2) 901618	$\bar{3}$·9550228	·44122	(2) 974237	$\bar{3}$·9886645	·42494
10·0	(2) 655852	$\bar{3}$·8168059	·47357	(2) 720401	$\bar{3}$·8575743	·45620	(2) 784803	$\bar{3}$·8947607	·43984
10·5	(2) 515708	$\bar{3}$·7124038	·48789	(2) 571408	$\bar{3}$·7569462	·47051	(2) 627613	$\bar{3}$·7976919	·45410
11·0	(2) 402685	$\bar{3}$·6049655	·50154	(2) 450071	$\bar{3}$·6532809	·48418	(2) 498418	$\bar{3}$·6975933	·46775
11·5	(2) 312343	$\bar{3}$·4946324	·51456	(2) 352139	$\bar{3}$·5467137	·49724	(2) 393182	$\bar{3}$·5945937	·48082
12·0	(2) 240734	$\bar{3}$·3815376	·52698	(2) 273762	$\bar{3}$·4373725	·50973	(2) 308188	$\bar{3}$·4888155	·49334
12·5	(2) 184420	$\bar{3}$·2658069	·53884	(2) 211533	$\bar{3}$·3253784	·52168	(2) 240090	$\bar{3}$·3803749	·50535
13·0	(2) 140462	$\bar{3}$·1475587	·55018	(2) 162497	$\bar{3}$·2108460	·53312	(2) 185944	$\bar{3}$·2693826	·51685
13·5	(2) 106391	$\bar{3}$·0269046	·56101	(2) 124132	$\bar{3}$·0938835	·54407	(2) 143200	$\bar{3}$·1559431	·52789
14·0	(3) 801585	$\bar{4}$·9039496	·57137	(3) 943178	$\bar{4}$·9745935	·55456	(2) 109687	$\bar{3}$·0401561	·53848
14·5	(3) 600887	$\bar{4}$·7787930	·58129	(3) 712972	$\bar{4}$·8530727	·56462	(3) 835826	$\bar{4}$·9221157	·54865
15·0	(3) 448258	$\bar{4}$·6515284	·59079	(3) 536306	$\bar{4}$·7294127	·57427	(3) 633740	$\bar{4}$·8019114	·55841
15·5	(3) 332846	$\bar{4}$·5222436	·59990	(3) 401513	$\bar{4}$·6036999	·58353	(3) 478220	$\bar{4}$·6796280	·56780
16·0	(3) 246049	$\bar{4}$·3910221	·60864	(3) 299238	$\bar{4}$·4760171	·59242	(3) 359208	$\bar{4}$·5553462	·57682
18·0	(4) 705147	$\bar{5}$·8482798	·64025	(4) 885261	$\bar{5}$·9470711	·62469	(3) 109574	$\bar{4}$·0397078	·60966
20·0	(4) 190595	$\bar{5}$·2801112	·66733	(4) 246673	$\bar{5}$·3921214	·65245	(4) 314448	$\bar{5}$·4975487	·63803
22·0	(5) 489847	$\bar{6}$·6900603	·69076	(5) 652690	$\bar{6}$·8147068	·67654	(5) 855858	$\bar{6}$·9324017	·66272
24·0	(5) 120504	$\bar{6}$·0810025	·71120	(5) 165090	$\bar{6}$·2177214	·69761	(5) 222417	$\bar{6}$·3471685	·68437
26·0	(6) 285299	$\bar{7}$·4553002	·72916	(6) 401379	$\bar{7}$·6035543	·71618	(6) 554955	$\bar{7}$·7442575	·70350
28·0	(7) 652997	$\bar{8}$·8149113	·74507	(7) 942314	$\bar{8}$·9741958	·73265	(6) 133562	$\bar{7}$·1256830	·72050
30·0	(7) 145036	$\bar{8}$·1614772	·75925	(7) 214446	$\bar{8}$·3313183	·74736	(7) 311275	$\bar{8}$·4931442	·73570
32·0	(8) 313605	$\bar{9}$·4963832	·77196	(8) 474612	$\bar{9}$·6763387	·76056	(8) 704831	$\bar{9}$·8480850	·74937
34·0	(9) 661925	$\overline{10}$·8208091	·78341	(8) 102439	$\bar{9}$·0104667	·77247	(8) 155504	$\bar{9}$·1917413	·76172
36·0	(9) 136699	$\overline{10}$·1357668	·79379	(9) 216144	$\overline{10}$·3347424	·78327	(9) 335103	$\overline{10}$·5251784	·77292
38·0	(10) 276777	$\overline{11}$·4421306	·80322	(10) 446751	$\overline{11}$·6500660	·79311	(10) 706838	$\overline{11}$·8493201	·78314
40·0	(11) 550377	$\overline{12}$·7406606	·81184	(11) 906195	$\overline{12}$·9572215	·80210	(10) 146208	$\overline{11}$·1649723	·79249
45·0	(13) 905480	$\overline{14}$·9568790	·83044	(12) 156200	$\overline{13}$·1936814	·82152	(12) 263875	$\overline{13}$·4213988	·81272
50·0	(14) 136929	$\overline{15}$·1364948	·84572	(14) 246536	$\overline{15}$·3918803	·83750	(14) 434467	$\overline{15}$·6379568	·82938
55·0	(16) 193102	$\overline{17}$·2857859	·85848	(16) 361689	$\overline{17}$·5583351	·85087	(16) 662812	$\overline{17}$·8213903	·84334
60·0	(18) 256774	$\overline{19}$·4095503	·86931	(18) 498929	$\overline{19}$·6980384	·86222	(18) 948149	$\overline{19}$·9768768	·85521
65·0	(20) 324740	$\overline{21}$·5115354	·87860	(20) 652975	$\overline{21}$·8148964	·87198	(19) 128373	$\overline{20}$·1084742	·86541
70·0	(22) 393300	$\overline{23}$·5947241	·88666	(22) 816622	$\overline{23}$·9120210	·88044	(21) 165738	$\overline{22}$·2194212	·87427
75·0	(24) 458697	$\overline{25}$·6615258	·89373	(24) 981594	$\overline{25}$·9919319	·88787	(23) 205278	$\overline{24}$·3123418	·88205
80·0	(26) 517508	$\overline{27}$·7139170	·89996	(25) 113945	$\overline{26}$·0566961	·89442	(25) 245127	$\overline{26}$·3893913	·88892
85·0	(28) 566940	$\overline{29}$·7535374	·90551	(27) 128242	$\overline{28}$·1080305	·90026	(27) 283375	$\overline{28}$·4523623	·89504
90·0	(30) 605010	$\overline{31}$·7817629	·91047	(29) 140403	$\overline{30}$·1473763	·90548	(29) 318244	$\overline{30}$·5027600	·90052
95·0	(32) 630605	$\overline{33}$·7997576	·91494	(31) 149953	$\overline{32}$·1759553	·91019	(31) 348226	$\overline{32}$·5418610	·90545
100·0	(34) 643455	$\overline{35}$·8085179	·91899	(33) 156607	$\overline{34}$·1948119	·91445	(33) 372184	$\overline{34}$·5707580	·90993
105·0	(36) 644022	$\overline{37}$·8089005	·92267	(35) 160268	$\overline{36}$·2048455	·91832	(35) 389397	$\overline{36}$·5903922	·91400
110·0	(38) 633357	$\overline{39}$·8016485	·92603	(37) 161004	$\overline{38}$·2068368	·92186	(37) 399559	$\overline{38}$·6015806	·91771
115·0	(40) 612930	$\overline{41}$·7874107	·92911	(39) 159026	$\overline{40}$·2014672	·92511	(39) 402751	$\overline{40}$·6050371	·92112
120·0	(42) 584462	$\overline{43}$·7667565	·93194	(41) 154645	$\overline{42}$·1893352	·92809	(41) 399382	$\overline{42}$·6013887	·92426

$n = 23, (m = 10\cdot5)$ T_m	$\log T_m$	ρ	$n = 24, (m = 11\cdot0)$ T_m	$\log T_m$	ρ	$n = 25, (m = 11\cdot5)$ T_m	$\log T_m$	ρ	v
(1) 127824	$\bar{2}$·1066119	·39422	(1) 135364	$\bar{2}$·1315036	·38000	(1) 142628	$\bar{2}$·1542054	·36663	9·0
(1) 104550	$\bar{2}$·0193229	·40963	(1) 111514	$\bar{2}$·0473278	·39522	(1) 118291	$\bar{2}$·0729513	·38166	9·5
(2) 848705	$\bar{3}$·9287566	·42441	(2) 911806	$\bar{3}$·9599023	·40986	(2) 973855	$\bar{3}$·9884942	·39613	10·0
(2) 683985	$\bar{3}$·8350467	·43859	(2) 740225	$\bar{3}$·8693637	·42393	(2) 796072	$\bar{3}$·9009522	·41007	10·5
(2) 547421	$\bar{3}$·7383212	·45219	(2) 596801	$\bar{3}$·7758295	·43746	(2) 646307	$\bar{3}$·8104390	·42350	11·0
(2) 435213	$\bar{3}$·6387022	·46524	(2) 477987	$\bar{3}$·6794157	·45046	(2) 521273	$\bar{3}$·7170649	·43643	11·5
(2) 343801	$\bar{3}$·5363069	·47777	(2) 380394	$\bar{3}$·5802333	·46296	(2) 417768	$\bar{3}$·6209354	·44888	12·0
(2) 269927	$\bar{3}$·4312465	·48979	(2) 300877	$\bar{3}$·4783890	·47498	(2) 332776	$\bar{3}$·5221520	·46087	12·5
(2) 210682	$\bar{3}$·3236274	·50134	(2) 236584	$\bar{3}$·3739846	·48654	(2) 263519	$\bar{3}$·4208123	·47243	13·0
(2) 163512	$\bar{3}$·2135504	·51243	(2) 184977	$\bar{3}$·2671173	·49767	(2) 207496	$\bar{3}$·3170096	·48356	13·5
(2) 126215	$\bar{3}$·1011119	·52309	(2) 143840	$\bar{3}$·1578801	·50838	(2) 162492	$\bar{3}$·2108332	·49429	14·0
(3) 969178	$\bar{4}$·9864035	·53334	(2) 111266	$\bar{3}$·0463615	·51868	(2) 126581	$\bar{3}$·1023689	·50464	14·5
(3) 740478	$\bar{4}$·8695119	·54320	(3) 856340	$\bar{4}$·9326461	·52861	(3) 981067	$\bar{4}$·9916986	·51461	15·0
(3) 563015	$\bar{4}$·7505201	·55269	(3) 655865	$\bar{4}$·8168143	·53818	(3) 756659	$\bar{4}$·8789003	·52424	15·5
(3) 426096	$\bar{4}$·6295073	·56182	(3) 499969	$\bar{4}$·6989433	·54740	(3) 580830	$\bar{4}$·7640491	·53353	16·0
(3) 133871	$\bar{4}$·1266865	·59515	(3) 161616	$\bar{4}$·2084853	·58113	(3) 192973	$\bar{4}$·2854973	·56760	18·0
(4) 395282	$\bar{5}$·5969066	·62404	(4) 490547	$\bar{5}$·6906804	·61049	(4) 601562	$\bar{5}$·7792806	·59736	20·0
(4) 110578	$\bar{5}$·0436703	·64928	(4) 140930	$\bar{5}$·1490043	·63621	(4) 177348	$\bar{5}$·2488263	·62351	22·0
(5) 295038	$\bar{6}$·4698786	·67147	(5) 385787	$\bar{6}$·5863477	·65889	(5) 497746	$\bar{6}$·6970076	·64664	24·0
(6) 755007	$\bar{7}$·8779508	·69111	(5) 101189	$\bar{6}$·0051340	·67901	(5) 133735	$\bar{6}$·1262457	·66720	26·0
(6) 186174	$\bar{7}$·2699197	·70860	(6) 255510	$\bar{7}$·4074082	·69697	(6) 345615	$\bar{7}$·5385927	·68559	28·0
(7) 444126	$\bar{8}$·6475059	·72428	(7) 623602	$\bar{8}$·7949077	·71308	(7) 862578	$\bar{8}$·9357984	·70211	30·0
(7) 102843	$\bar{8}$·0121761	·73838	(7) 147611	$\bar{8}$·1691184	·72761	(7) 208624	$\bar{8}$·3193639	·71703	32·0
(8) 231841	$\bar{9}$·3651895	·75115	(8) 339875	$\bar{9}$·5313191	·74077	(8) 490438	$\bar{9}$·6905844	·73057	34·0
(9) 510074	$\overline{10}$·7076335	·76275	(9) 763162	$\overline{10}$·8826168	·75274	(8) 112353	$\bar{9}$·0505848	·74290	36·0
(9) 109762	$\overline{10}$·0404535	·77333	(9) 167485	$\overline{10}$·2239759	·76367	(9) 251389	$\overline{10}$·4003461	·75417	38·0
(10) 231460	$\overline{11}$·3644753	·78303	(10) 359949	$\overline{11}$·5562409	·77370	(10) 550464	$\overline{11}$·7407290	·76451	40·0
(12) 437114	$\overline{13}$·6405951	·80402	(12) 710858	$\overline{13}$·8517829	·79544	(11) 113612	$\overline{12}$·0554242	·78697	45·0
(14) 750396	$\overline{15}$·8752903	·82135	(13) 127173	$\overline{14}$·1043942	·81342	(13) 211706	$\overline{14}$·3257330	·80557	50·0
(15) 118992	$\overline{16}$·0755185	·83589	(15) 209524	$\overline{16}$·3212338	·82851	(15) 362245	$\overline{16}$·5590019	·82121	55·0
(17) 176455	$\overline{18}$·2466333	·84825	(17) 321975	$\overline{18}$·5078225	·84137	(17) 576648	$\overline{18}$·7609110	·83455	60·0
(19) 247081	$\overline{20}$·3928386	·85890	(19) 466126	$\overline{20}$·6685034	·85244	(19) 862854	$\overline{20}$·9359371	·84604	65·0
(21) 329226	$\overline{22}$·5174936	·86815	(21) 640846	$\overline{22}$·8067534	·86208	(20) 122368	$\overline{21}$·0876681	·85605	70·0
(23) 420073	$\overline{24}$·6233244	·87627	(23) 842162	$\overline{24}$·9253955	·87054	(22) 165586	$\overline{23}$·2190229	·86485	75·0
(25) 515908	$\overline{26}$·7125724	·88345	(24) 106354	$\overline{25}$·0267548	·87803	(24) 214984	$\overline{25}$·3324067	·87264	80·0
(27) 612495	$\overline{28}$·7871026	·88985	(26) 129648	$\overline{27}$·1127673	·88470	(26) 269045	$\overline{27}$·4298245	·87958	85·0
(29) 705477	$\overline{30}$·8484831	·89558	(28) 153131	$\overline{29}$·1850620	·89068	(28) 325810	$\overline{29}$·5129646	·88581	90·0
(31) 790760	$\overline{32}$·8980446	·90075	(30) 175801	$\overline{31}$·2450221	·89607	(30) 383056	$\overline{31}$·5832620	·89142	95·0
(33) 864821	$\overline{34}$·9369262	·90543	(32) 196713	$\overline{33}$·2938329	·90096	(32) 438477	$\overline{33}$·6419465	·89651	100·0
(35) 924934	$\overline{36}$·9661106	·90969	(34) 215039	$\overline{35}$·3325167	·90541	(34) 489869	$\overline{35}$·6900796	·90115	105·0
(37) 969282	$\overline{38}$·9864502	·91359	(36) 230124	$\overline{37}$·3619616	·90948	(36) 535284	$\overline{37}$·7285839	·90539	110·0
(39) 996990	$\overline{40}$·9986908	·91716	(38) 241515	$\overline{39}$·3829442	·91321	(38) 573148	$\overline{39}$·7582666	·90928	115·0
(40) 100806	$\overline{41}$·0034874	·92045	(40) 248970	$\overline{41}$·3961473	·91665	(40) 602334	$\overline{41}$·7798376	·91287	120·0

TABLE XI^a.

Means and Standard Deviations of r and $\frac{\Sigma_1 \Sigma_2}{\sigma_1 \sigma_2} r$.

Size of Sample		$\rho=0\cdot0$		$\rho=0\cdot3$		$\rho=0\cdot6$		$\rho=0\cdot9$	
		r	$\frac{\Sigma_1\Sigma_2}{\sigma_1\sigma_2} r$	r	$\frac{\Sigma_1\Sigma_2}{\sigma_1\sigma_2} r$	r	$\frac{\Sigma_1\Sigma_2}{\sigma_1\sigma_2} r$	r	$\frac{\Sigma_1\Sigma_2}{\sigma_1\sigma_2} r$
5	Mean	·0000	·0000	·2671	·2400	·5480	·4800	·8687	·7200
	S.D.	·5000	·4000	·4740	·4176	·3858	·4665	·1748	·5381
10	Mean	·0000	·0000	·2850	·2700	·5776	·5400	·8887	·8100
	S.D.	·3000	·3000	·3103	·3132	·2355	·3499	·0832	·4036
15	Mean	·0000	·0000	·2903	·2833	·5858	·5667	·8932	·8500
	S.D.	·2673	·2494	·2470	·2604	·1828	·2909	·0602	·3356
20	Mean	·0000	·0000	·2928	·2850	·5896	·5700	·8951	·8550
	S.D.	·2294	·2179	·2113	·2275	·1543	·2542	·0493	·2932
25	Mean	·0000	·0000	·2943	·2880	·5918	·5760	·8962	·8640
	S.D.	·2041	·1960	·1875	·2046	·1359	·2285	·0427	·2636
50	Mean	·0000	·0000	·2972	·2940	·5960	·5880	·8982	·8820
	S.D.	·1429	·1400	·1306	·1462	·0933	·1633	·0284	·1884
100	Mean	·0000	·0000	·2986	·2970	·5980	·5940	·8991	·8910
	S.D.	·1005	·0995	·0917	·1039	·0650	·1160	·0195	·1339

TABLE XI^b.

β_1 and β_2 for r and v.

Size of Sample		$\rho=0\cdot0$		$\rho=0\cdot3$		$\rho=0\cdot6$		$\rho=0\cdot9$	
		r	v	r	v	r	v	r	v
5	β_1	·0000	·0000	·3077	·6636	1·7207	1·6157	13·0290	1·8847
	β_2	2·0000	4·5000	2·4201	4·9954	4·4027	5·6678	21·7579	5·9835
10	β_1	·0000	·0000	·2317	·2949	1·2002	·7181	5·7475	·8376
	β_2	2·4545	3·6667	2·8292	3·8869	4·4598	4·1857	13·6667	4·3260
15	β_1	·0000	·0000	·1745	·1896	·8473	·4616	3·0956	·5385
	β_2	2·6250	3·4286	2·9265	3·5701	4·1375	3·7622	8·8548	3·8524
20	β_1	·0000	·0000	·1386	·1397	·6464	·3401	2·0603	·3968
	β_2	2·7143	3·3158	2·9623	3·4201	3·9055	3·5616	6·8681	3·6281
25	β_1	·0000	·0000	·1146	1106	·5203	·2693	1·5334	·3141
	β_2	2·7692	3·2500	2·9788	3·3326	3·7453	3·4446	5·8584	3·4972
50	β_1	·0000	·0000	·0611	·0542	·2611	·1319	·5004	·1539
	β_2	2·8824	3·1224	2·9991	3·1629	3·3891	3·2178	3·8731	3·2435
100	β_1	·0000	·0000	·0315	·0268	·1303	·0653	·3115	·0761
	β_2	2·9400	3·0606	3·0021	3·0806	3·1974	3·1078	3·5790	3·1205

TABLE XII.

Table of Gaussian "Tail" Functions, "Tail" larger than "Body."

h'	ψ_1	$(-)\Delta\psi_1$	ψ_2	$(-)\Delta\psi_2$	ψ_3	$(-)\Delta\psi_3$	h'
·00	·571	·002	1·253	·006	2·000	·016	*·00*
·01	·569	·002	1·248	·006	1·984	·016	*·01*
·02	·567	·002	1·242	·006	1·969	·015	*·02*
·03	·565	·002	1·236	·006	1·953	·015	*·03*
·04	·564	·002	1·231	·006	1·938	·015	*·04*
·05	·562	·002	1·225	·006	1·923	·015	*·05*
·06	·560	·002	1·219	·006	1·909	·014	*·06*
·07	·558	·002	1·214	·006	1·894	·014	*·07*
·08	·557	·002	1·208	·006	1·880	·014	*·08*
·09	·555	·002	1·203	·005	1·866	·014	*·09*
·1	·553	·018	1·197	·054	1·852	·126	*·1*
·2	·535	·018	1·143	·053	1·726	·108	*·2*
·3	·516	·019	1·090	·051	1·618	·093	*·3*
·4	·497	·019	1·040	·049	1·526	·080	*·4*
·5	·477	·019	·991	·047	1·446	·068	*·5*
·6	·458	·020	·944	·045	1·378	·059	*·6*
·7	·438	·020	·899	·043	1·319	·050	*·7*
·8	·419	·020	·857	·041	1·269	·043	*·8*
·9	·399	·019	·816	·039	1·226	·037	*·9*
1·0	·380	·019	·777	·037	1·189	·032	*1·0*
1·1	·361	·019	·740	·035	1·157	·027	*1·1*
1·2	·342	·018	·704	·033	1·130	·023	*1·2*
1·3	·323	·018	·671	·033	1·107	·019	*1·3*
1·4	·305	·017	·640	·030	1·088	·016	*1·4*
1·5	·288	·017	·610	·028	1·072	·014	*1·5*
1·6	·271	·016	·582	·026	1·058	·011	*1·6*
1·7	·254	·016	·556	·025	1·047	·009	*1·7*
1·8	·239	·015	·531	·023	1·037	·008	*1·8*
1·9	·224	·014	·508	·022	1·030	·006	*1·9*
2·0	·210	·013	·487	·020	1·023	·005	*2·0*
2·1	·197	·013	·466	·019	1·018	·004	*2·1*
2·2	·184	·012	·447	·018	1·014	·003	*2·2*
2·3	·172	·011	·429	·017	1·011	·003	*2·3*
2·4	·161	·010	·413	·016	1·008	·002	*2·4*
2·5	·151	·010	·397	·015	1·006	·002	*2·5*
2·6	·141	·009	·383	·014	1·005	·001	*2·6*
2·7	·132	·008	·369	·013	1·003	·001	*2·7*
2·8	·124	·008	·356	·012	1·003	·001	*2·8*
2·9	·116	·007	·344	·011	1·002	·001	*2·9*
3·0	·109		·333		1·001		*3·0*

See *Tables for Statisticians and Biometricians*, Part I, Introduction, p. xxvii.

TABLE XIII.

Values of the 11*th and* 12*th Incomplete Normal Moment Function.*

x	$m_{11}(x)$	δ^2	$m_{12}(x)$	δ^2
0·0	·0000000		·0000000	
0·1	·0000000		·0000000	
0·2	·0000000		·0000000	
0·3	·0000000		·0000000	
0·4	·0000000		·0000000	
0·5	·0000000		·0000000	
0·6	·0000000		·0000000	
0·7	·0000001		·0000000	
0·8	·0000005	+ 8	·0000001	+ 4
0·9	·0000017	28	·0000006	7
1·0	·0000057	66	·0000018	30
1·1	·0000163	149	·0000060	68
1·2	·0000418	310	·0000170	152
1·3	·0000983	588	·0000432	315
1·4	·0002136	1037	·0001009	601
1·5	·0004326	1729	·0002187	1072
1·6	·0008245	2708	·0004437	1799
1·7	·0014872	4036	·0008486	2860
1·8	·0025535	5726	·0015395 –	4312
1·9	·0041924	7766	·0026616	6206
2·0	·0066079	10094	·0044043	8544
2·1	·0100328	12591	·0070014	11274
2·2	·0147168	15099	0107259	14287
2·3	·0209107	17416	·0158791	17413
2·4	·0288462	19322	·0227736	20426
2·5	·0387139	20610	·0317107	+ 23061
2·6	·0506426	21100	·0429539	25057
2·7	·0646813	20636	·0567028	26157
2·8	·0807836	19217	·0730674	26170
2·9	·0988076	16820	·0920490	24977
3·0	·1185136	13573	·1135283	22562
3·1	·1395769	9655	·1372638	19005
3·2	·1616057	5298	·1628998	14482
3·3	·1841643	764	·1899840	9265
3·4	·2067993	– 3683	·2179947	3657
3·5	·2290660	7789	·2463711	– 2004
3·6	·2505538	11362	·2745471	7391
3·7	·2709054	14243	·3019840	12221
3·8	·2898327	16353	·3281988	16270
3·9	·3071247	17666	·3527866	19393
4·0	·3226501	18214	·3754351	21516
4·1	·3363541	18081	·3959320	22653
4·2	·3482500	17371	·4141636	22875
4·3	·3584088	16218	·4301077	22306
4·4	·3669458	14752	·4438212	21095
4·5	·3740076	13107	·4554252	19410
4·6	·3797587	11383	·4650882	17426
4·7	·3843715	9684	·4730086	15284
4·8	·3880159	8077	·4794006	13117
4·9	·3908526	6605	·4844809	11030
5·0	·3930288		·4884582	9097
∞	·3989423		·5000000	

For the values of m_0, m_1 and m_2 see Part I, pp. 22—23.

TABLE XIV.

Values of β_3.

β_1.

β_2.	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*
1·8	0	·41440	·78154	1·10667	1·39429	1·64888	1·87200	2·06839
1·9	0	·44892	·84727	1·20075	1·51422	1·79186	2·03730	2·25370
2·0	0	·48493	·91579	1·29873	1·63902	1·94118	2·20909	2·44615
2·1	0	·52250	·98720	1·40077	1·76889	2·09643	2·38759	2·64600
2·2	0	·56169	1·06162	1·50701	1·90400	2·25783	2·57302	2·85348
2·3	0	·60257	1·13918	1·61763	2·04456	2·42561	2·76565	3·06886
2·4	0	·64522	1·22000	1·73280	2·19077	2·60000	2·96571	3·29241
2·5	0	·68971	1·30423	1·85270	2·34286	2·78125	3·17349	3·52442
2·6	0	·73612	1·39200	1·97753	2·50105	2·96962	3·38927	3·76518
2·7	0	·78455	1·48348	2·10750	2·66560	3·16538	3·61333	4·01500
2·8	0	·83508	1·57882	2·24282	2·83676	3·36883	3·84600	4·27422
2·9	0	·88781	1·67821	2·38371	3·01479	3·58026	4·08759	4·54317
3·0	0	·94286	1·78182	2·53043	3·20000	3·80000	4·33846	4·82222
3·1	0	1·00032	1·88985	2·68324	3·39268	4·02838	4·59896	5·11175
3·2	0	1·06033	2·00250	2·84239	3·59314	4·26575	4·86947	5·41215
3·3	0	1·12300	2·12000	3·00818	3·80174	4·51250	5·15040	5·72385
3·4	0	1·18847	2·24258	3·18092	4·01882	4·76901	5·44216	6·04727
3·5	0	1·25690	2·37049	3·36094	4·24478	5·03571	5·74521	6·38289
3·6	0	1·32842	2·50400	3·54857	4·48000	5·31304	6·06000	6·73120
3·7	0	1·40321	2·64339	3·74419	4·72492	5·60147	6·38704	7·09270
3·8	0	1·48145	2·78897	3·94820	4·98000	5·90149	6·72686	7·46795
3·9	0	1·56333	2·94105	4·16100	5·24571	6·21364	7·08000	7·85750
4·0	0	1·64906	3·10000	4·38305	5·52258	6·53846	7·44706	8·26197
4·1	0	1·73885	3·26618	4·61483	5·81115	6·87656	7·82866	8·68200
4·2	0	1·83294	3·44000	4·85684	6·11200	7·22857	8·22545	9·11826
4·3	0	1·93160	3·62189	5·10964	6·42576	7·59516	8·63815	9·57147
4·4	0	2·03510	3·81231	5·37382	6·75310	7·97705	9·06750	10·04239
4·5	0	2·14375	4·01176	5·65000	7·09474	8·37500	9·51429	10·53182
4·6	—	2·25787	4·22080	5·93887	7·45143	8·78983	9·97935	11·04062
4·7	—	—	4·44000	6·24115	7·82400	9·22241	10·46360	11·56969
4·8	—	—	4·67000	6·55765	8·21333	9·67368	10·96800	12·12000
4·9	—	—	—	6·88920	8·62038	10·14464	11·49356	12·69258
5·0	—	—	—	7·23673	9·04615	10·63636	12·04138	13·28852
5·1	—	—	—	—	9·49176	11·15000	12·61263	13·90900
5·2	—	—	—	—	9·95840	11·68679	13·20857	14·55525
5·3	—	—	—	—	—	12·24808	13·83055	15·22862
5·4	—	—	—	—	—	12·83529	14·48000	15·93053
5·5	—	—	—	—	—	—	15·15849	16·66250
5·6	—	—	—	—	—	—	15·86769	17·42618
5·7	—	—	—	—	—	—	—	18·22333
5·8	—	—	—	—	—	—	—	19·05585
5·9	—	—	—	—	—	—	—	—
6·0	—	—	—	—	—	—	—	—
6·1	—	—	—	—	—	—	—	—
6·2	—	—	—	—	—	—	—	—
6·3	—	—	—	—	—	—	—	—
6·4	—	—	—	—	—	—	—	—
6·5	—	—	—	—	—	—	—	—
6·6	—	—	—	—	—	—	—	—
6·7	—	—	—	—	—	—	—	—
6·8	—	—	—	—	—	—	—	—
6·9	—	—	—	—	—	—	—	—
7·0	—	—	—	—	—	—	—	—

*** In the values given for β_5 and β_6 complete reliability beyond the eighth figure is not to be depended on.**

TABLE XIV.—(*continued*).

Values of β_3.

β_1.

·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	β_2.
2·24000	2·38909	2·51765	2·62743	2·72000	2·79676	2·85895	2·90769	1·8
2·44379	2·61000	2·75446	2·87904	2·98542	3·07509	3·14938	3·20948	1·9
2·65532	2·83918	3·00000	3·13981	3·26038	3·36330	3·45000	3·52174	2·0
2·87484	3·07688	3·25455	3·41000	3·54514	3·66167	3·76108	3·84474	2·1
3·10261	3·32337	3·51837	3·68990	3·84000	3·97047	4·08291	4·17876	2·2
3·33890	3·57894	3·79175	3·97980	4·14524	4·29000	4·41578	4·52411	2·3
3·58400	3·84387	4·07500	4·28000	4·46118	4·62057	4·76000	4·88108	2·4
3·83820	4·11848	4·36842	4·59082	4·78812	4·96250	5·11589	5·25000	2·5
4·10182	4·40308	4·67234	4·91258	5·12640	5·31612	5·48377	5·63119	2·6
4·37517	4·69800	4·98710	5·24562	5·47636	5·68176	5·86400	6·02500	2·7
4·65860	5·00360	5·31304	5·59032	5·83837	6·05980	6·25692	6·43178	2·8
4·95247	5·32023	5·65055	5·94702	6·21278	6·45060	6·66291	6·85189	2·9
5·25714	5·64828	6·00000	6·31613	6·60000	6·85455	7·08235	7·28571	3·0
5·57301	5·98814	6·36180	6·69804	7·00042	7·27204	7·51564	7·73365	3·1
5·90049	6·34024	6·73636	7·09319	7·41447	7·70351	7·96320	8·19612	3·2
6·24000	6·70500	7·12414	7·50200	7·84258	8·14938	8·42545	8·67353	3·3
6·59200	7·08289	7·52558	7·92494	8·28522	8·61011	8·90286	9·16634	3·4
6·95696	7·47439	7·94118	8·36250	8·74286	9·08617	9·39588	9·67500	3·5
7·33538	7·88000	8·37143	8·81517	9·21600	9·57806	9·90500	10·20000	3·6
7·72779	8·30025	8·81687	9·28349	9·70517	10·08630	10·43074	10·74184	3·7
8·13474	8·73570	9·27805	9·76800	10·21091	10·61143	10·97362	11·30103	3·8
8·55680	9·18692	9·75556	10·26929	10·73379	11·15400	11·53419	11·87812	3·9
8·99459	9·65455	10·25000	10·78795	11·27442	11·71461	12·11304	12·47368	4·0
9·44877	10·13921	10·76203	11·32463	11·83341	12·29386	12·71077	13·08830	4·1
9·92000	10·64160	11·29231	11·88000	12·41143	12·89241	13·32800	13·72258	4·2
10·40901	11·16243	11·84156	12·45475	13·00916	13·51093	13·96539	14·37717	4·3
10·91657	11·70247	12·41053	13·04962	13·62732	14·15012	14·62364	15·05275	4·4
11·44348	12·26250	13·00000	13·66538	14·26667	14·81071	15·30345	15·75000	4·5
11·99059	12·84338	13·61081	14·30286	14·92800	15·49349	16·00558	16·46966	4·6
12·55881	13·44600	14·24384	14·96289	15·61215	16·19927	16·73082	17·21250	4·7
13·14909	14·07130	14·90000	15·64640	16·32000	16·92889	17·48000	17·97931	4·8
13·76246	14·72029	15·58028	16·35432	17·05247	17·68325	18·25398	18·77093	4·9
14·40000	15·39403	16·28571	17·08767	17·81053	18·46329	19·05366	19·58824	5·0
15·06286	16·09364	17·01739	17·84750	18·59520	19·27000	19·88000	20·43214	5·1
15·75226	16·82031	17·77647	18·63493	19·40757	20·10442	20·73400	21·30361	5·2
16·46951	17·57531	18·56418	19·45143	20·24877	20·96763	21·61671	22·20366	5·3
17·21600	18·36000	19·38182	20·29739	21·12000	21·86080	22·52923	23·13333	5·4
17·99322	19·17581	20·23077	21·17500	22·02254	22·78513	23·47273	24·09375	5·5
18·80276	20·02426	21·11250	22·08537	22·95771	23·74192	24·44842	25·08608	5·6
19·64632	20·90700	22·02857	23·03000	23·92696	24·73250	25·45760	26·11154	5·7
20·52571	21·82576	22·98065	24·01046	24·93176	25·75831	26·50162	27·17143	5·8
21·44291	22·78241	23·97049	25·02844	25·97373	26·82086	27·58192	28·26711	5·9
—	23·77895	25·00000	26·08571	27·05455	27·92174	28·70000	29·40000	6·0
—	24·81750	26·07119	27·18419	28·17600	29·06265	29·85746	30·57162	6·1
—	—	27·18621	28·32590	29·34000	30·24537	31·05600	31·78356	6·2
—	—	28·34737	29·51300	30·54857	31·47182	32·29739	33·03750	6·3
—	—	—	30·74780	31·80387	32·74400	33·58353	34·33521	6·4
—	—	—	32·03276	33·10820	34·06406	34·91642	35·67857	6·5
—	—	—	—	34·46400	35·43429	36·29818	37·06957	6·6
—	—	—	—	35·87390	36·85710	37·73108	38·51029	6·7
—	—	—	—	—	38·33508	39·21750	40·00299	6·8
—	—	—	—	—	39·87100	40·76000	41·55000	6·9
—	—	—	—	—	—	42·36129	43·15385	7·0

TABLE XIV.—(*continued*).

Values of β_4.

β_1.

β_2.	0	·1	·2	·3	·4	·5	·6	·7
1·8	3·85714	4·07037	4·20199	4·26974	4·28739	4·26566	4·21297	4·13599
1·9	4·40244	4·64442	4·79441	4·87269	4·89492	4·87323	4·81715	4·73416
2·0	5·00000	5·27357	5·44352	5·53307	5·55998	5·53802	5·47791	5·38807
2·1	5·65385	5·96205	6·15366	6·25517	6·28681	6·26413	6·19921	6·10151
2·2	6·36842	6·71453	6·92954	7·04376	7·08000	7·05602	6·98537	6·87863
2·3	7·14865	7·53619	7·77640	7·90384	7·94461	7·91858	7·84109	7·72393
2·4	8·00000	8·43274	8·70000	8·84126	8·88615	8·85714	8·77143	8·64228
2·5	8·92857	9·41053	9·70672	9·86955	9·91071	9·87753	9·81065	9·63899
2·6	9·94118	10·47664	10·80364	10·97368	11·02497	10·98615	10·87892	10·71985
2·7	11·04545	11·63897	11·99861	12·18325	12·23629	12·19003	12·06882	11·89115
2·8	12·25000	12·90637	13·30040	13·49946	13·55280	13·49688	13·35901	13·15981
2·9	13·56452	14·28876	14·71881	14·93176	14·98353	14·91525	14·66914	14·53334
3·0	15·00000	15·79734	16·26482	16·49068	16·53846	16·45455	16·27321	16·02004
3·1	16·56897	17·44479	17·95077	18·18802	18·22872	18·12523	17·91578	17·62896
3·2	18·28571	19·24547	19·79058	20·03698	20·06672	19·93875	19·69601	19·37010
3·3	20·16667	21·21577	21·80000	22·05242	22·06630	21·90809	21·62578	21·25445
3·4	22·23077	23·37444	23·99693	24·25111	24·34303	24·04755	23·71830	23·29418
3·5	24·50000	25·74304	26·40178	26·65201	26·61435	26·37315	25·98826	25·50270
3·6	27·00002	28·34641	29·03790	29·27665	29·20000	28·90287	28·45200	27·89494
3·7	29·76087	31·21363	31·93214	32·14962	32·02226	31·65688	31·12780	30·47745
3·8	32·81818	34·37829	35·11555	35·29902	35·10645	34·65795	34·03614	33·29869
3·9	36·21429	37·88011	38·62415	38·75716	38·48143	37·93182	37·20000	36·34923
4·0	40·00002	41·76595	42·50000	42·56138	42·18020	41·50769	40·64530	39·66217
4·1	44·23684	46·09165	46·79249	46·75499	46·24069	45·41884	44·40133	43·26338
4·2	49·00000	50·92418	51·56000	51·38852	50·70667	49·70330	48·50130	47·18203
4·3	54·38235	56·34460	56·87196	56·52129	55·62888	54·40472	52·98300	51·45104
4·4	60·50000	62·45189	62·81163	62·22322	61·06648	59·57347	57·78962	56·10775
4·5	—	69·36821	69·47964	68·57759	67·08882	65·26786	63·27068	61·19457
4·6	—	77·24602	76·99870	75·68397	73·77764	71·55580	69·18323	66·75995
4·7	—	—	85·52000	83·66259	81·23000	78·51680	75·69329	72·85939
4·8	—	—	95·23182	92·65977	89·56191	86·24448	82·87765	79·55676
4·9	—	—	—	102·85541	98·91311	94·84982	90·82608	86·92588
5·0	—	—	—	114·47304	109·45344	104·46524	99·64417	95·05252
5·1	—	—	—	—	121·39118	115·25000	109·45684	104·03682
5·2	—	—	—	—	134·98447	127·39721	120·41296	113·99636
5·3	—	—	—	—	—	141·14317	132·69118	125·07009
5·4	—	—	—	—	—	156·78005	146·50770	137·42323
5·5	—	—	—	—	—	—	162·12647	151·25376
5·6	—	—	—	—	—	—	179·87296	166·80075
5·7	—	—	—	—	—	—	—	184·35534
5·8	—	—	—	—	—	—	—	204·27568
5·9	—	—	—	—	—	—	—	—
6·0	—	—	—	—	—	—	—	—
6·1	—	—	—	—	—	—	—	—
6·2	—	—	—	—	—	—	—	—
6·3	—	—	—	—	—	—	—	—
6·4	—	—	—	—	—	—	—	—
6·5	—	—	—	—	—	—	—	—
6·6	—	—	—	—	—	—	—	—
6·7	—	—	—	—	—	—	—	—
6·8	—	—	—	—	—	—	—	—
6·9	—	—	—	—	—	—	—	—
7·0	—	—	—	—	—	—	—	—

TABLE XIV.—(*continued*).

Values of β_4.

β_1.

·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	β_2
4·04000	3·92924	3·80711	3·67634	3·53913	3·39727	3·25220	3·10510	1·8
4·63021	4·51000	4·37733	4·23523	4·08613	3·93202	3·77448	3·61479	1·9
5·27513	5·14437	5·00000	4·84537	4·68319	4·51562	4·34441	4·17097	2·0
5·97844	5·83588	5·67849	5·51000	5·33338	5·15101	4·96481	4·77632	2·1
6·74410	6·58831	6·41643	6·23257	6·04000	5·84134	5·63869	5·43372	2·2
7·57640	7·40576	7·21771	7·01679	6·80660	6·59000	6·36928	6·14625	2·3
8·48000	8·29265	8·08654	7·86667	7·63697	7·40059	7·16000	6·91718	2·4
9·45993	9·25376	9·02746	8·78650	8·53521	8·27699	8·01455	7·75000	2·5
10·52168	10·29429	10·04538	9·78094	9·50570	9·22337	8·93686	8·64846	2·6
11·67120	11·41986	11·14560	10·85499	10·55318	10·24419	9·93116	9·61657	2·7
12·91498	12·63657	12·33387	12·01406	11·68273	11·34426	11·68273	10·65861	2·8
14·26010	13·95159	13·61641	13·26400	12·89988	12·52874	12·15424	11·77918	2·9
15·71429	15·37056	15·00000	14·61114	14·21053	13·80322	13·39311	12·98319	3·0
17·28600	16·90296	16·49198	16·06234	15·62111	15·17370	14·72426	14·27595	3·1
18·98452	18·55685	18·10036	17·62506	17·13857	16·64667	16·15375	15·66314	3·2
20·82000	20·34167	19·83386	19·30739	18·77043	18·22912	17·68811	17·15037	3·3
22·80364	22·26770	21·70199	21·11814	20·52486	19·92866	19·33441	18·74572	3·4
24·94775	24·34628	23·71517	23·06690	22·41071	21·75348	21·10026	20·45478	3·5
27·26593	26·58983	25·88479	25·16414	24·43765	23·71249	22·99392	22·28571	3·6
29·77323	29·01036	28·22335	27·42130	26·61616	25·81537	25·02430	24·24676	3·7
32·48632	31·62803	30·74459	29·85091	28·95770	28·07261	27·20107	26·34686	3·8
35·42369	34·45448	33·46360	32·46669	31·47479	30·49567	29·53475	28·59568	3·9
38·60597	37·50988	36·39706	35·28370	34·18110	33·09702	32·03672	31·00367	4·0
42·05617	40·81478	39·56337	37·94426	37·09164	35·89027	34·71942	33·58221	4·1
45·80000	44·39200	42·98291	41·58947	40·22286	38·89031	37·59636	36·34362	4·2
49·86636	48·26703	46·67828	45·11667	43·59285	42·11346	40·68231	39·30132	4·3
54·28773	52·46836	50·67464	48·92245	47·22155	45·57759	43·99340	42·46993	4·4
59·10079	57·02793	55·00000	53·03157	51·13095	49·30236	47·54727	45·86538	4·5
64·34706	61·98164	59·68567	57·47152	55·34637	53·30941	51·36330	49·50509	4·6
70·07371	67·37000	64·76674	62·27294	59·89174	57·62259	55·46274	53·40809	4·7
76·33454	73·23883	70·28261	67·47004	64·80000	62·26828	59·86897	57·59525	4·8
83·19114	79·64013	76·27770	73·10111	70·10345	67·27568	64·60777	62·08948	4·9
90·71429	86·63316	82·80220	79·20913	75·83926	72·67717	69·70761	66·91597	5·0
98·98572	94·28567	89·91304	85·84250	82·04900	78·50882	75·20000	72·10244	5·1
108·10025	102·67545	97·67502	93·05590	88·77931	84·81081	81·11987	77·67953	5·2
118·16846	111·89225	106·16215	100·91122	96·08264	91·62805	87·50607	83·68109	5·3
129·32001	122·04000	115·45933	109·47890	104·01818	99·01089	94·40185	90·14466	5·4
141·70781	133·23978	125·66434	118·83929	112·65295	107·01593	101·85554	97·11190	5·5
155·51348	145·63333	136·89033	129·08444	122·06304	115·70695	109·92127	104·62922	5·6
170·95414	159·38758	149·26891	140·32027	132·33522	125·15610	118·65982	112·74843	5·7
188·29143	174·70041	162·95392	152·66919	143·56876	135·44525	128·13965	121·52747	5·8
207·84335	191·80793	178·12626	166·27335	155·87777	146·66761	138·43810	131·03138	5·9
—	210·99415	195·00000	181·29870	169·39394	158·92977	149·64286	141·33333	6·0
—	232·60341	213·83011	197·94009	184·27000	172·35402	161·85366	152·51594	6·1
—	—	234·92263	216·42764	200·68400	187·08139	175·18440	164·67274	6·2
—	—	258·64778	237·03500	218·84465	203·27519	189·76568	177·91006	6·3
—	—	—	260·08994	238·99803	221·12555	205·74781	192·34915	6·4
—	—	—	285·98810	261·43629	240·85495	223·30470	208·12889	6·5
—	—	—	—	286·50857	262·72535	242·63850	225·40894	6·6
—	—	—	—	314·63551	287·04710	263·98543	244·37376	6·7
—	—	—	—	—	314·19047	287·62313	265·23750	6·8
—	—	—	—	—	344·60055	313·88000	288·25000	6·9
—	—	—	—	—	—	343·14704	313·70445	7·0

TABLE XIV.—(*continued*).

Values of β_5.

β_1.

β_2.	*0*	*·1*	*·2*	*·3*	*4*	*·5*	*·6*	*·7*
1·8	0	1·41563	2·55335	3·45274	4·14938	4·67447	5·05504	5·31428
1·9	0	1·68269	3·03698	4·11024	4·94488	5·57799	6·04158	6·36300
2·0	0	1·99086	3·59423	4·86684	5·85930	6·61567	7·17383	7·56603
2·1	0	2·34609	4·23542	5·73605	6·90840	7·80484	8·47016	8·94237
2·2	0	2·75531	4·97250	6·73343	8·11022	9·16522	9·95138	10·51347
2·3	0	3·29646	5·81933	7·87680	9·48543	10·71931	11·64114	12·30359
2·4	0	3·76936	6·79200	9·18694	11·05781	12·49286	13·56632	14·34023
2·5	0	4·39479	7·90935	10·69172	12·85476	14·51538	15·78319	16·65462
2·6	0	5·11605	9·19345	12·40745	14·90800	16·82084	18·25025	19·28231
2·7	0	5·94878	10·67033	14·37849	17·25435	19·44838	21·08439	22·26384
2·8	0	6·91168	12·37077	16·63931	19·93669	22·44332	24·30640	25·64561
2·9	0	8·02724	14·33140	19·23517	23·00517	25·85827	27·87491	29·48081
3·0	0	9·32265	16·59605	22·21964	26·51868	29·75455	32·13621	33·83063
3·1	0	10·83106	19·21744	25·65651	30·54669	34·20394	36·87766	38·76566
3·2	0	12·59314	22·25945	29·62217	35·17151	39·29040	42·27778	44·36758
3·3	0	14·65928	25·80000	34·20857	40·49118	45·11360	48·43448	50·73124
3·4	0	17·09242	29·93481	39·52721	46·62315	51·79124	55·46278	57·96718
3·5	0	19·97203	34·78258	45·71414	53·70889	59·46367	63·49841	66·20474
3·6	0	23·39961	40·49179	52·93674	61·92000	68·29905	72·70228	75·59586
3·7	0	27·50649	47·25012	61·40265	71·46601	78·50005	83·26613	86·30244
3·8	0	32·46494	55·29753	71·37178	82·60477	90·31249	95·41972	98·58916
3·9	0	38·50483	64·94474	83·17295	95·65633	104·03669	109·44000	112·65722
4·0	0	45·93863	76·60000	97·22686	111·02153	120·04231	125·66296	128·82752
4·1	0	55·20045	90·80847	114·07864	129·20765	138·78825	144·49908	147·46592
4·2	0	66·90894	108·31200	134·44499	150·86399	160·84945	166·45371	169·01630
4·3	0	81·97288	130·14217	159·28370	176·83235	186·95369	192·15427	194·02097
4·4	0	101·77708	157·77045	189·89859	208·21978	218·03271	222·14023	223·14757
4·5	0	128·52933	193·36018	228·10415	246·50617	255·29464	258·14675	257·22494
4·6	—	165·95745	240·21033	276·48965	293·70715	300·32869	300·70801	297·29164
4·7	—	—	303·58400	338·86359	352·62801	355·25957	351·72287	344·66229
4·8	—	—	392·37271	421·03600	427·27315	422·98141	413·36471	401·01993
4·9	—	—	—	532·27910	523·53374	507·52256	488·53923	468·54685
5·0	—	—	—	688·26156	650·39838	614·63369	581·20426	550·11337
5·1	—	—	—	—	822·21327	752·77500	696·86837	649·55652
5·2	—	—	—	—	1063·22283	934·85457	843·39459	772·10198
5·3	—	—	—	—	—	1181·47331	1032·34962	925·02170
5·4	—	—	—	—	—	1527·44262	1281·37852	1118·69384
5·5	—	—	—	—	—	—	1618·63791	1368·38182
5·6	—	—	—	—	—	—	2091·69833	1697·36503
5·7	—	—	—	—	—	—	—	2142·78154
5·8	—	—	—	—	—	—	—	2767·36099
5·9	—	—	—	—	—	—	—	—
6·0	—	—	—	—	—	—	—	—
6·1	—	—	—	—	—	—	—	—
6·2	—	—	—	—	—	—	—	—
6·3	—	—	—	—	—	—	—	—
6·4	—	—	—	—	—	—	—	—
6·5	—	—	—	—	—	—	—	—
6·6	—	—	—	—	—	—	—	—
6·7	—	—	—	—	—	—	—	—
6·8	—	—	—	—	—	—	—	—
6·9	—	—	—	—	—	—	—	—
7·0	—	—	—	—	—	—	—	—

TABLE XIV.—(*continued*).

Values of β_4.

β_1.

·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	β_2
5·47200	5·54505	5·54774	5·49223	5·38882	5·21032	5·07194	4·87218	1·8
6·56556	6·66900	6·69008	6·64297	6·53966	6·39032	6·20353	5·98658	1·9
7·81963	7·95777	8·00000	7·96281	7·86015	7·70376	7·50359	7·26805	2·0
9·25357	9·43082	9·49691	9·47100	9·36924	9·20521	8·99040	8·73446	2·1
10·88912	11·10996	11·20249	11·18895	11·08800	10·91533	10·68412	10·40546	2·2
12·75081	13·01968	13·14100	13·14055	13·03987	12·85700	12·60708	12·30280	2·3
14·86629	15·18749	15·33963	15·35250	15·25093	15·05566	14·78400	14·45047	2·4
17·26684	17·64442	17·82888	17·85464	17·75028	17·53956	17·24229	16·87500	2·5
19·98792	20·42546	20·64305	20·68041	20·57039	20·34018	20·01238	19·60577	2·6
23·06977	23·57017	23·82076	23·86733	23·74757	23·49257	23·12805	22·67532	2·7
26·55821	27·12336	27·40557	27·45754	27·32248	27·03588	26·62694	26·11977	2·8
30·50551	31·13665	31·44672	31·49852	31·34075	31·01385	30·55093	29·97924	2·9
34·97143	35·66579	36·00000	36·04377	35·85359	35·47542	34·94677	34·29832	3·0
40·02452	40·77897	41·12872	41·15378	40·91866	40·47551	39·86670	39·12670	3·1
45·74361	46·55101	46·90489	46·89705	46·60097	46·07576	45·36914	44·51979	3·2
52·21964	53·06850	53·41068	53·35129	52·97396	52·34552	51·51961	50·53845	3·3
59·55782	60·43103	60·73997	60·60490	60·12077	59·36297	58·39163	57·25491	3·4
67·88034	68·75344	69·00044	68·75867	68·13571	67·21640	66·06791	64·74368	3·5
77·32958	78·16863	78·31586	77·92779	77·12604	76·00572	74·64162	73·09286	3·6
88·07212	88·82758	88·82894	88·24432	87·21400	85·84425	84·21798	82·40021	3·7
100·30364	100·91991	100·70481	99·86000	98·53927	96·86080	94·91600	92·77596	3·8
114·25501	114·64607	114·13512	112·94981	111·26193	109·20215	106·87064	104·34450	3·9
130·19998	130·25632	129·34314	127·71610	125·56589	123·03600	120·23522	117·24648	4·0
148·46471	148·04207	146·59001	143·45076	141·66316	138·55442	135·18444	131·64135	4·1
169·44000	168·34874	166·18242	163·23621	159·79886	155·97808	151·91782	147·71022	4·2
193·59693	191·58787	188·48207	184·62341	180·25740	175·56124	170·66381	165·65935	4·3
221·50693	218·25251	213·91770	208·87083	203·36995	197·59782	191·68480	185·72423	4·4
253·86810	248·93685	243·00000	236·44133	229·52365	222·42874	215·28302	208·17445	4·5
291·53977	284·36158	276·34066	267·85963	259·17616	250·45088	241·80774	233·31950	4·6
335·58868	325·40700	314·67673	303·75068	292·85347	282·12801	271·66398	261·51581	4·7
387·35126	373·15656	358·90198	344·86280	331·20000	318·00442	305·32303	293·17509	4·8
448·51903	428·95489	410·10784	392·09743	374·96309	358·72156	343·33557	328·77466	4·9
521·25714	494·48636	469·63736	446·54746	425·06230	405·03908	386·34752	368·86975	5·0
608·37258	571·88229	539·15698	509·54711	482·57201	457·86117	435·12000	414·10888	5·1
713·55655	663·87024	620·75355	582·73768	548·81752	518·26993	490·55405	465·25256	5·2
841·74254	773·98556	717·06701	668·15520	625·41017	587·56812	553·72181	523·19655	5·3
999·64805	906·87600	831·47510	768·34849	714·33162	667·33415	625·90596	589·00103	5·4
1196·61837	1068·75185	968·35433	886·54107	818·03932	759·49378	708·65022	663·92692	5·5
1445·98797	1268·06663	1133·45664	1026·85589	939·60867	866·41460	803·82428	749·48239	5·6
1767·36192	1516·57773	1334·46556	1194·63332	1082·92777	991·03145	913·70857	847·48183	5·7
2190·63315	1831·05543	1581·83626	1396·88998	1252·96795	1137·01614	1041·10567	960·12198	5·8
2763·47753	2236·14894	1890·10532	1642·99492	1456·16614	1309·00889	1189·48840	1090·01813	5·9
—	2769·43027	2279·99999	1926·12857	1700·97663	1512·94076	1363·20000	1240·65000	6·0
—	3490·80240	2781·97487	2322·69706	1998·68407	1756·48819	1567·72730	1415·90414	6·1
—	—	3442·43442	2799·25452	2364·63286	2049·72980	1810·08041	1620·93898	6·2
—	—	4335·33729	3412·44751	2820·14136	2406·11294	2099·32960	1862·18916	6·3
—	—	—	4218·75744	3395·58295	2843·91584	2447·37773	2147·87250	6·4
—	—	—	5308·17016	4135·55270	3388·52216	2870·10032	2488·61733	6·5
—	—	—	—	5107·94743	4076·08374	3389·06759	2898·36583	6·6
—	—	—	—	6420·90275	4959·65704	4034·22238	3395·70595	6·7
—	—	—	—	—	6119·99250	4848·19168	4005·88251	6·8
—	—	—	—	—	7685·64544	5893·51196	4763·92498	6·9
—	—	—	—	—	—	7265·32153	5719·68219	7·0

TABLE XIV.—(*continued*).

Values of β_6.

β_1.

·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	β_2
9·51200	8·83433	8·15118	7·47777	6·82451	6·16894	5·60360	5·04289	*1·8*
12·00421	11·17900	10·34692	9·52638	8·72995	7·96593	7·23956	6·55383	*1·9*
15·01475	14·01129	13·00000	12·00305	11·03545	10·10708	9·22407	8·38990	*2·0*
18·63611	17·41688	16·18967	14·98100	13·80869	12·68431	11·61499	10·60464	*2·1*
22·97697	21·49603	20·00831	18·54532	17·12800	15·76982	14·47888	13·25951	*2·2*
28·16526	26·36630	24·56380	22·79495	21·08421	19·44700	17·89242	16·42508	*2·3*
34·35200	32·16574	29·98227	27·84518	25·78270	23·81232	21·94400	20·18247	*2·4*
41·71577	39·05687	36·41153	33·83049	31·34598	28·97749	26·73564	24·62500	*2·5*
50·46839	47·23137	44·02511	40·90805	37·91659	35·07200	32·38521	29·86015	*2·6*
60·86175	56·91597	53·02714	49·26193	45·66075	42·24625	39·02907	36·01182	*2·7*
73·19633	68·37949	63·65838	59·10810	54·77260	50·67518	46·82519	43·22304	*2·8*
87·83176	81·94402	76·20351	70·70058	65·47942	60·56257	55·95689	51·65914	*2·9*
105·20000	97·98379	91·00000	84·33882	78·04766	72·14637	66·63722	61·51151	*3·0*
125·82186	116·96246	108·44918	100·37681	92·79065	85·70487	79·11430	73·00209	*3·1*
150·32793	139·42608	129·02981	119·23414	110·07767	101·56439	93·67759	86·38868	*3·2*
179·48509	166·03608	153·31496	141·40973	130·34509	120·10836	110·66555	101·96895	*3·3*
214·23055	197·59354	181·99321	167·49870	154·11009	141·78858	130·47480	120·09977	*3·4*
255·71562	235·07313	215·89514	198·21347	181·98750	167·13881	153·57131	141·18296	*3·5*
305·36277	279·66656	256·02699	234·41002	214·71069	196·79148	180·50386	165·70000	*3·6*
364·94018	332·82366	303·61339	277·12110	253·15751	231·49838	211·92066	194·21319	*3·7*
436·66063	396·40001	360·15227	327·59804	298·38281	272·15609	248·58964	227·38490	*3·8*
523·31347	472·60352	427·48564	387·36420	351·65936	319·83784	291·42344	265·99719	*3·9*
628·44297	564·27028	507·89191	458·28341	414·52944	375·83325	341·51036	310·97634	*4·0*
756·59211	674·95976	604·20700	538·52748	488·87120	441·69836	400·15311	363·42307	*4·1*
913·64000	809·19917	719·98521	643·29726	576·98306	519·31919	468·91698	424·64982	*4·2*
1107·27652	972·79761	859·71417	763·76288	681·69350	610·99251	549·69077	496·22740	*4·3*
1347·67763	1173·28180	1029·10666	908·47666	806·50403	719·52993	644·76391	580·04326	*4·4*
1648·49012	1420·50928	1235·50000	1083·03746	955·77730	848·39240	756·92502	678·37500	*4·5*
2028·28450	1727·54471	1488·41118	1294·57784	1135·00321	1001·86621	889·58832	793·98353	*4·6*
2512·75884	2111·93585	1800·31916	1552·26683	1351·05386	1185·29254	1046·95774	930·23215	*4·7*
3138·15849	2597·60657	2187·78540	1868·00882	1612·80000	1405·37863	1234·24080	1091·23937	*4·8*
3956·74047	3217·73134	2673·08744	2257·43040	1931·57581	1670·60729	1457·93113	1282·07756	*4·9*
5045·80000	4019·21171	3286·65035	2741·29638	2322·13115	1991·80039	1726·18369	1509·03180	*5·0*
6523·18412	5069·85289	4070·74603	3347·57848	2803·84815	2382·89098	2049·32000	1779·94211	*5·1*
8575·22779	6470·26979	5085·27254	4114·54025	3402·51244	2862·00092	2440·51504	2104·65868	*5·2*
11510·03758	8374·45168	6417·05252	5095·44479	4152·90618	3452·96676	2916·74377	2495·65464	*5·3*
15866·64876	11027·01600	8195·32568	6365·92882	5102·68429	4187·53643	3500·10258	2968·86115	*5·4*
22666·51071	14834·80538	10618·63416	8035·91250	6318·30392	5108·59113	4219·68376	3544·81789	*5·5*
34006·36363	20514·98864	14003·83814	10269·52127	7894·34108	6274·97282	5114·27804	4250·28332	*5·6*
55018·58014	29432·15808	18881·04131	13319·83857	9968·58982	7768·88564	6236·34746	5120·52074	*5·7*
101473·89624	44471·78151	26191·91258	17592·66245	12747·42898	9707·56565	7657·98899	6202·60000	*5·8*
253760·75389	72771·12146	37747·20230	23770·94842	16550·29979	12262·25509	9480·10426	7559·91373	*5·9*
—	137288·89025	57434·99984	32803·61819	21891·83037	15690·22476	11846·90000	9281·23336	*6·0*
—	368137·95820	95110·70470	47889·60904	29643·43991	20391·20888	14969·55326	11488·51177	*6·1*
—	—	183958·54967	73394·60360	41378·15038	27012·30625	19166·32023	14358·25475	*6·2*
—	—	537373·87106	123089·42788	60189·03145	36656·13405	24933·62294	18149·09652	*6·3*
—	—	—	244764·82983	92941·09117	51329·91458	33079·04770	23252·05212	*6·4*
—	—	—	796873·64937	158003·73264	75027·70957	44987·59385	30279·45386	*6·5*
—	—	—	—	324150·69600	116774·84051	63202·70610	40232·52177	*6·6*
—	—	—	—	1217690·26020	201460·19097	92848·88108	54839·83220	*6·7*
—	—	—	—	—	428250·86517	145728·18199	77304·82418	*6·8*
—	—	—	—	—	1965948·20210	255463·29045	114166·67456	*6·9*
—	—	—	—	—	—	565740·80342	180792·85424	*7·0*

TABLE XIV.—(*continued*).

Values of β_6.

β_1.

β_2.	0	·1	·2	·3	·4	·5	·6	·7
1·8	9·00000	10·56988	11·37904	11·65931	11·57571	11·24612	10·75489	10·16245
1·9	11·26008	13·23077	14·24766	14·60515	14·51125	14·11351	13·51686	12·79605
2·0	14·00000	16·46165	17·72924	18·17685	18·06655	17·58286	16·85605	15·97830
2·1	17·31490	20·37698	21·94568	22·49677	22·36051	21·76742	20·87902	19·80872
2·2	21·32037	25·12011	27·00353	27·71253	27·53558	26·80218	25·71216	24·40477
2·3	26·15756	30·98446	33·20564	34·00193	33·76303	32·84853	31·50583	29·90542
2·4	32·00000	37·78431	40·64836	41·58212	41·24961	40·10000	38·43902	36·47547
2·5	39·06250	46·18140	49·64275	50·74739	50·24583	48·78960	46·83136	44·31091
2·6	47·61300	56·36215	60·52268	61·73207	61·05669	59·19886	56·60720	53·64551
2·7	55·66909	68·73087	73·70383	75·02652	74·05525	71·66945	68·44455	64·75897
2·8	70·61765	83·79934	89·70741	91·09765	89·70029	86·61786	82·56030	77·98719
2·9	86·04990	102·22137	109·19212	110·56655	108·55927	104·55444	98·96957	93·73497
3·0	105·00000	124·84101	132·99779	134·21520	131·33846	126·10769	119·60133	112·49223
3·1	128·40949	152·76061	162·20552	163·03622	158·92300	152·05685	143·76373	134·85446
3·2	157·53846	187·43873	198·22205	198·30084	192·43054	183·37199	172·75506	161·54896
3·3	194·10417	230·83408	242·90000	241·65332	233·28402	221·27382	207·61816	193·46858
3·4	240·49650	285·62144	298·71190	295·24380	283·31160	267·30520	249·65531	231·71559
3·5	300·12500	355·52475	369·00857	361·91859	344·88577	323·43535	300·50441	277·65897
3·6	378·00027	445·84514	458·40994	445·49756	421·12000	392·20036	362·24145	333·01035
3·7	481·75409	564·33393	573·41334	551·18736	516·15119	476·89985	437·52021	399·82427
3·8	623·54548	722·67424	723·36878	686·21072	635·55341	581·87572	529·76495	481·13873
3·9	823·87500	939·16548	922·09827	860·79199	786·95638	712·91403	643·44000	580·15336
4·0	1120·00044	1243·83108	1190·70000	1089·74754	980·99234	877·83511	784·43293	701·49500
4·1	1586·99669	1688·93436	1562·65014	1395·14604	1232·78583	1087·37952	960·60823	851·07448
4·2	2401·00000	2372·80866	2093·67200	1810·95208	1564·37061	1356·56923	1182·62312	1036·70173
4·3	4092·27183	3501·41300	2882·34489	2391·55352	2008·75892	1706·85856	1465·15573	1268·83033
4·4	9317·00007	5580·42447	4117·65621	3228·42286	2617·09069	2169·64147	1826·36689	1561·65790
4·5	—	10228·34035	6204·67651	4485·37892	3471·86981	2792·18750	2303·06656	1934·78712
4·6	—	26594·29656	10169·64897	6481·22602	4713·08621	3648·13982	2931·31183	2415·79639
4·7	—	—	19470·30398	9912·98937	6594·13318	4857·09743	3779·10320	3044·33255
4·8	—	—	56371·22036	16599·18193	9614·97614	6623·62278	4949·12279	3878·84348
4·9	—	—	—	32999·08240	14889·79442	9321·73705	6609·16370	5008·09053
5·0	—	—	—	107695·38628	25413·19110	13699·35294	9048·42104	6571·75843
5·1	—	—	—	—	52445·38896	21455·52501	12800·88518	8799·46863
5·2	—	—	—	—	198872·14895	37301·06052	18948·75669	12089·95456
5·3	—	—	—	—	—	80097·49338	29999·60559	17186·73944
5·4	—	—	—	—	—	372908·59530	53139·45765	25617·41462
5·5	—	—	—	—	—	—	119233·63920	40995·34689
5·6	—	—	—	—	—	—	759289·60401	74049·27108
5·7	—	—	—	—	—	—	—	144676·09326
5·8	—	—	—	—	—	—	—	2006409·54750
5·9	—	—	—	—	—	—	—	—
6·0	—	—	—	—	—	—	—	—
6·1	—	—	—	—	—	—	—	—
6·2	—	—	—	—	—	—	—	—
6·3	—	—	—	—	—	—	—	—
6·4	—	—	—	—	—	—	—	—
6·5	—	—	—	—	—	—	—	—
6·6	—	—	—	—	—	—	—	—
6·7	—	—	—	—	—	—	—	—
6·8	—	—	—	—	—	—	—	—
6·9	—	—	—	—	—	—	—	—
7·0	—	—	—	—	—	—	—	—

TABLE XV.

*Ratio of the Standard Error of the Mode to the Standard Error of the Mean**.

β_1.

β_2.	0	·1	·2	·3	·4	·5	·6	·7
1·8	∞	21·3313	4·2009	2·1183	1·2174	·7269	·4193	·2072
1·9	7·7368	457·8417	12·9077	4·3927	2·1953	1·2549	·7466	·4311
2·0	4·3012	33·2972	169·7287	12·4767	4·4553	2·2432	1·2838	·7642
2·1	3·1616	8·4333	84·9902	96·6366	11·7814	4·4488	2·2717	1·3064
2·2	2·5970	4·2726	14·0362	242·9030	65·5132	12·0059	4·4041	2·2867
2·3	2·2634	3·1503	6·5493	22·8026	1167·9192	48·8362	10·3622	4·3384
2·4	2·0460	2·6578	4·2238	9·1310	36·8018	∞	38·6385	9·7353
2·5	1·8957	2·2921	3·1915	5·4143	12·6243	61·2427	1517·6874	31·8420
2·6	1·7881	2·0583	2·6332	3·8779	6·9579	17·4427	108·2317	434·5838
2·7	1·7095	1·8984	2·2922	3·0755	4·7362	8·9118	24·2562	216·1278
2·8	1·6516	1·7842	2·0664	2·6007	3·6263	5·7946	11·4150	34·2005
2·9	1·6103	1·7004	1·9086	2·2942	2·9870	4·2963	7·1814	14·6528
3·0	1·5811	1·6381	1·7942	2·0841	2·5828	3·4550	5·1003	8·6834
3·1	1·5622	1·5918	1·7093	1·9340	2·3105	2·9332	4·0108	6·0586
3·2	1·5520	1·5578	1·6455	1·8238	2·1187	2·5871	3·3476	4·6629
3·3	1·5493	1·5337	1·5977	1·7417	1·9797	2·3467	2·9140	3·8294
3·4	1·5534	1·5180	1·5625	1·6806	1·8776	2·1746	2·6166	3·2922
3·5	1·5637	1·5094	1·5378	1·6359	1·8026	2·0498	2·4061	2·9282
3·6	1·5799	1·5073	1·5223	1·6051	1·7490	1·9595	2·2550	2·6725
3·7	1·6018	1·5114	1·5161	1·5866	1·7133	1·8963	2·1471	2·4899
3·8	1·6293	1·5220	1·5178	1·5803	1·6938	1·8556	2·0726	2·3622
3·9	1·6624	1·5397	1·5301	1·5867	1·6902	1·8351	2·0257	2·2740
4·0	1·7014	1·5665	1·5549	1·6080	1·7033	1·8343	2·0032	2·2188
4·1	1·7464	1·6062	1·5967	1·6477	1·7358	1·8541	2·0041	2·1924
4·2	1·7978	1·6667	1·6633	1·7120	1·7917	1·8969	2·0289	2·1931
4·3	1·8561	1·7653	1·7687	1·8106	1·8777	1·9669	2·0798	2·2207
4·4	1·9221	1·9436	1·9381	1·9588	2·0034	2·0704	2·1558	2·2770
4·5	1·9965	2·3211	2·2203	2·1819	2·1838	2·2167	2·2820	2·3652
4·6	—	3·4126	2·7193	2·5226	2·4412	2·4189	2·4376	2·4905
4·7	—	—	3·7109	3·0601	2·8113	2·6967	2·6538	2·6602
4·8	—	—	6·4341	3·9632	3·3544	3·0796	2·9428	2·8847
4·9	—	—	—	5·7005	4·1910	3·6148	3·3289	3·1786
5·0	—	—	—	10·6664	5·6242	4·3834	3·8501	3·5624
5·1	—	—	—	—	8·1895	5·5415	4·5669	4·0669
5·2	—	—	—	—	16·5324	7·4444	5·5857	4·7390
5·3	—	—	—	—	—	11·1952	7·1126	5·6557
5·4	—	—	—	—	—	24·9391	9·6439	6·9532
5·5	—	—	—	—	—	—	14·7870	8·9040
5·6	—	—	—	—	—	—	38·3578	12·1682
5·7	—	—	—	—	—	—	—	19·0756
5·8	—	—	—	—	—	—	—	20·9345
5·9	—	—	—	—	—	—	—	—
6·0	—	—	—	—	—	—	—	—
6·1	—	—	—	—	—	—	—	—
6·2	—	—	—	—	—	—	—	—
6·3	—	—	—	—	—	—	—	—
6·4	—	—	—	—	—	—	—	—
6·5	—	—	—	—	—	—	—	—
6·6	—	—	—	—	—	—	—	—
6·7	—	—	—	—	—	—	—	—
6·8	—	—	—	—	—	—	—	—
6·9	—	—	—	—	—	—	—	—
7·0	—	—	—	—	—	—	—	—

* For large samples.

TABLE XV.—(*continued*).

Ratio of the Standard Error of the Mode to the Standard Error of the Mean.

β_1.

·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	β_2
0	—	—	—	—	—	—	—	1·8
·2137	0	—	—	—	—	—	—	1·9
·4418	·2199	0	—	—	—	—	—	2·0
·7794	·4516	·2257	0	—	—	—	—	2·1
1·3238	·7927	·4608	·2313	0	—	—	—	2·2
2·2924	1·3375	·8044	·4693	·2366	0	—	—	2·3
4·2616	2·2914	1·3481	·8148	·4772	·2417	0	—	2·4
9·2167	4·1795	2·2856	1·3563	·8241	·4846	·2466	0	2·5
27·3963	8·6715	4·0960	2·2766	1·3627	·8324	·4916	·2514	2·6
214·2686	23·4630	8·2243	4·0130	2·2652	1·3675	·8399	·4982	2·7
536·8306	132·4970	20·7275	7·8248	3·9320	2·2521	1·3711	·8468	2·8
49·3159	2365·9521	92·5373	18·5702	7·4670	3·8536	2·2381	1·3737	2·9
18·8973	73·5471	∞	69·7007	16·6666	7·1439	3·7785	2·2233	3·0
10·6407	24·5570	115·3008	2797·9031	55·2575	15·3999	6·8551	3·7067	3·1
7·1985	13·0637	32·2652	195·0629	754·5445	45·4504	14·2059	6·5923	3·2
5·4232	8·5553	16·0888	43·0412	373·6907	360·1882	38·4326	13·1965	3·3
4·3841	6·3070	10·1749	19·9059	58·6048	902·3059	216·7873	33·2041	3·4
3·7238	5·0188	7·3339	12·1171	24·7849	82·0317	3859·0983	147·8862	3·5
3·2808	4·2123	5·7431	8·5285	14·4603	31·1179	119·2455	∞	3·6
2·9731	3·6767	4·7652	6·5690	9·9220	17·3081	39·4906	182·8220	3·7
2·7556	3·3080	4·1186	5·3807	7·5111	11·5534	20·7994	50·8071	3·8
2·6024	3·0487	3·6782	4·6092	6·0748	8·5876	13·4722	25·1232	3·9
2·4975	2·8664	3·3701	4·0854	5·1532	6·8542	9·8206	15·7414	4·0
2·4316	2·7414	3·1538	3·6557	4·5324	5·7559	7·7303	11·2373	4·1
2·3991	2·6619	3·0049	3·4647	4·1019	5·0222	6·4239	8·7171	4·2
2·3972	2·6207	2·9087	3·2876	3·7999	4·5157	5·5588	7·1650	4·3
2·4252	2·6139	2·8560	3·1713	3·5899	4·1606	4·9647	6·1470	4·4
2·4841	2·6398	2·8417	3·1043	3·4497	3·9126	4·5484	5·4516	4·5
2·5767	2·6988	2·8630	3·0798	3·3655	3·7440	4·2566	4·9654	4·6
2·7072	2·7928	2·9196	3·0943	3·3282	3·6396	4·0565	4·6235	4·7
2·8822	2·9256	3·0127	3·1462	3·3334	3·5871	3·9275	4·3865	4·8
3·1106	3·1026	3·1451	3·2360	3·3784	3·5806	3·8567	4·2298	4·9
3·4051	3·3318	3·3217	3·3659	3·4629	3·6166	3·8362	4·1379	5·0
3·7831	3·6239	3·5490	3·5398	3·5883	3·6938	3·8611	4·1008	5·1
4·2700	3·9939	3·8366	3·7633	3·7576	3·8129	3·9289	4·1125	5·2
4·9030	4·4629	4·1971	4·0446	3·9757	3·9760	4·0402	4·1696	5·3
5·7402	5·0710	4·6485	4·3947	4·2495	4·1872	4·1957	4·2711	5·4
6·8793	5·8339	5·2155	4·8287	4·5884	4·4523	4·3988	4·4175	5·5
8·4860	6·8516	5·9343	5·3673	5·0054	4·7796	4·6543	4·6113	5·6
10·9159	8·2317	6·6993	6·0399	5·5178	5·1798	4·9694	4·8565	5·7
15·0461	10·1883	8·0738	6·8654	6·1501	5·6681	5·3533	5·1589	5·8
24·2232	13·1659	9·7223	7·9782	6·9362	6·2646	5·8189	5·5274	5·9
—	18·3208	12·0456	9·4138	7·9259	6·9971	6·3809	5·9709	6·0
—	30·4688	15·6688	11·3534	9·1941	7·9053	7·0692	6·5057	6·1
—	—	22·0403	14·1326	10·8607	9·0461	7·9092	7·1508	6·2
—	—	38·1802	18·4461	13·1310	10·5089	8·9484	7·9325	6·3
—	—	—	26·2704	16·3951	12·4328	10·2534	8·8874	6·4
—	—	—	47·9585	21·5227	15·0620	11·9257	10·0672	6·5
—	—	—	—	31·0936	18·8677	14·1298	11·5483	6·6
—	—	—	—	60·8817	24·9280	17·1544	13·4480	6·7
—	—	—	—	—	36·6168	21·5651	15·9472	6·8
—	—	—	—	—	79·1531	28·6967	19·4168	6·9
—	—	—	—	—	—	42·9814	24·5042	7·0

TABLE XVI.

Standard Error of a Correlation Coefficient found from a Bi-serial Table.*

$\frac{1}{2}(1-\alpha)$	λ_1	λ_2^2	λ_3	$\frac{1}{2}(1-\alpha)$	λ_1	λ_2^2	λ_3
·50	·0354	1·5708	2·5000	·20	− ·0871	2·0414	2·8578
·49	·0353	1·5711	2·5003	·19	− ·1001	2·0898	2·8951
·48	·0350	1·5722	2·5011	·18	− ·1146	2·1437	2·9364
·47	·0346	1·5741	2·5024	·17	− ·1308	2·2035	2·9825
·46	·0339	1·5766	2·5043	·16	− ·1490	2·2703	3·0341
·45	·0331	1·5799	2·5068	·15	− ·1696	2·3453	3·0923
·44	·0321	1·5839	2·5098	·14	− ·1931	2·4303	3·1582
·43	·0309	1·5886	2·5134	·13	− ·2201	2·5272	3·2337
·42	·0295	1·5943	2·5177	·12	− ·2513	2·6389	3·3208
·41	·0279	1·6007	2·5225	·11	− ·2880	2·7687	3·4224
·40	·0260	1·6079	2·5279	·10	− ·3317	2·9221	3·5427
·39	·0240	1·6161	2·5341	·095	− ·3568	3·0095	3·6115
·38	·0217	1·6251	2·5409	·090	− ·3844	3·1057	3·6873
·37	·0191	1·6351	2·5484	·085	− ·4153	3·2119	3·7713
·36	·0163	1·6461	2·5568	·080	− ·4499	3·3299	3·8648
·35	·0132	1·6582	2·5659	·075	− ·4887	3·4620	3·9696
·34	·0098	1·6714	2·5759	·070	− ·5324	3·6110	4·0879
·33	·0062	1·6858	2·5868	·065	− ·5822	3·7806	4·2224
·32	·0021	1·7015	2·5986	·060	− ·6403	3·9748	4·3777
·31	− ·0023	1·7186	2·6115	·055	− ·7083	4·2002	4·5584
·30	− ·0070	1·7371	2·6256	·050	− ·7897	4·4652	4·7723
·29	− ·0122	1·7573	2·6409	·045	− ·8868	4·7829	5·0283
·28	− ·0179	1·7791	2·6575	·040	−1·0053	5·1715	5·3410
·27	− ·0241	1·8028	2·6755	·035	−1·1577	5·6568	5·7362
·26	− ·0308	1·8286	2·6952	·030	−1·3556	6·2859	6·2485
·25	− ·0382	1·8567	2·7166	·025	−1·6308	7·1347	6·9481
·24	− ·0462	1·8874	2·7399	·020	−2·0272	8·3600	7·9572
·23	− ·0550	1·9208	2·7654	·015	−2·5263	10·3024	9·4275
·22	− ·0647	1·9574	2·7933	·010	−3·8889	13·9393	12·6086
·21	− ·0753	1·9974	2·8240				

The mean is given by:

$$\bar{r} = r\left\{1 + \frac{1}{n}(\lambda_1 + \tfrac{1}{2}r^2)\right\}.$$

The bi-serial value of the correlation coefficient has the standard error

$$\sigma_r = \sqrt{(\lambda_2^2 - \lambda_3 r^2 + r^4)}/\sqrt{N},$$

whilst that of the product moment value* is

$$\sigma_r = (1 - r^2)/\sqrt{N}.$$

In table XVI*bis* a comparison of the values of the numerator is made for five values of r, for divisions at 0, ·5, ... 2·5 times the standard deviation from the mean of the ungraded character.

TABLE XVI *bis.*

r	Values of $(1-r^2)$	Values of $\sqrt{(\lambda_2^2-\lambda_3 r^2+r^4)}$ for $\frac{1}{2}(1-\alpha)=$ ·500	·309	·159	·067	·023	·006
·00	1·00	1·25	1·31	1·51	1·93	2·76	4·5
·25	·9375	1·19	1·25	1·45	1·86	2·68	4·3
·50	·750	1·00	1·06	1·26	1·65	2·42	4·0
·75	·4375	·69	·75	·94	1·30	1·95	3·2
1·00	·00	·27	·33	·49	·74	1·13	1·8

* For large samples.

TABLE XVII.

Values of the Constants of the Frequency Distribution of the Standard Deviations of Samples drawn at random from a Normal Population.

Size of Sample n	Mode $\check{\Sigma}/\sigma$	Mean $\bar{\Sigma}/\sigma$	Standard Deviation		Measures of Deviation from Normality		
			σ_{Σ}/σ	$\sigma_{\Sigma}/(\sigma/\sqrt{2n})$	Skewness	β_1	β_2
2	0·0000	·5642	·4263	·8525	1·3236	·9906	3·8692
3	·5774	·7236	·3782	·9265	·3867	·3983	3·2451
4	·7071	·7979	·3367	·9524	·2696	·2359	3·1082
5	·7746	·8407	·3052	·9651	·2168	·1646	3·0593
6	·8165	·8686	·2808	·9725	·1857	·1255	3·0370
7	·8452	·8882	·2612	·9774	·1648	·1011	3·0251
8	·8660	·9027	·2452	·9808	·1495	·0845	3·0181
9	·8819	·9139	·2318	·9834	·1378	·0725	3·0136
10	·8944	·9227	·2203	·9853	·1285	·0634	3·0106
11	·9045	·9300	·2104	·9868	·1209	·0564	3·0085
12	·9129	·9359	·2017	·9881	·1144	·0507	3·0070
13	·9199	·9410	·1940	·9891	·1088	·0461	3·0059
14	·9258	·9453	·1871	·9900	·1041	·0422	3·0049
15	·9309	·9490	·1809	·9907	·0998	·0390	3·0042
16	·9354	·9523	·1752	·9914	·0961	·0362	3·0036
17	·9393	·9551	·1701	·9919	·0927	·0337	3·0032
18	·9428	·9576	·1654	·9924	·0897	·0316	3·0028
19	·9459	·9599	·1611	·9928	·0869	·0297	3·0025
20	·9487	·9619	·1570	·9932	·0844	·0281	3·0022
25	·9592	·9696	·1407	·9948	·0745	·0219	3·0014
30	·9661	·9748	·1285	·9956	·0674	·0180	3·0009
35	·9710	·9784	·1191	·9963	·0620	·0153	3·0007
40	·9747	·9811	·1114	·9967	·0577	·0132	3·0005
45	·9775	·9832	·1051	·9977	·0541	·0117	3·0004
50	·9798	·9849	·0997	·9974	·0512	·0105	3·0003
55	·9816	·9863	·0951	·9977	·0488	·0095	3·0004
60	·9832	·9874	·0911	·9979	·0467	·0087	3·0002
65	·9845	·9884	·0875	·9980	·0447	·0080	3·0002
70	·9856	·9892	·0844	·9982	·0430	·0074	3·0002
75	·9866	·9900	·0815	·9983	·0415	·0069	3·0001
80	·9874	·9906	·0789	·9984	·0402	·0064	3·0001
85	·9882	·9911	·0766	·9985	·0389	·0060	3·0001
90	·9888	·9916	·0744	·9986	·0378	·0057	3·0001
95	·9894	·9921	·0725	·9987	·0367	·0054	3·0001
100	·9899	·9925	·0706	·9987	·0358	·0051	3·0000

TABLE XVIII.

Values of the Constants of the Frequency Distributions of the intervals between the first three Individuals in Samples from a Normal Population.

n	$p=1$		$p=2$	
	h/σ	Σ/σ	h/σ	Σ/σ
2	·00	1·414	—	—
3	·52	1·271	·52	1·271
10	1·29	1·095	1·61	·878
20	1·72	1·082	1·91	·822
30	1·91	1·072	2·06	·802
40	2·04	1·065	2·20	·793
50	2·13	1·060	2·30	·785
60	2·20	1·055	2·37	·782
70	2·26	1·051	2·43	·779
80	2·31	1·048	2·49	·777
90	2·35	1·047	2·54	·775
100	2·38	1·046	2·59	·774
200	2·63	1·038	2·80	·765
300	2·76	1·033	2·92	·758
400	2·84	1·030	3·01	·752
500	2·90	1·027	3·07	·748
600	2·95	1·026	3·11	·745
700	3·00	1·025	3·13	·742
800	3·04	1·025	3·15	·739
900	3·08	1·025	3·16	·736
1000	3·12	1·025	3·17	·733

TABLE XIX.

Values of $P_1(\lambda)$, or of the Probability that the First and Second Individuals in a Random Sample of n differ by more than λ times the Standard-Deviation of the Original Population.*

n	λ = ·1	·2	·3	·4	·5	·6	·7	·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	1·6	1·7	1·8	1·9	2·0	2·1	2·2	2·3	2·4	2·5
2	·944	·888	·832	·777	·724	·671	·621	·572	·524	·480	·437	·396	·358	·322	·289	·258	·229	·203	·179	·157	·138	·120	·104	·090	·077
3	·917	·836	·760	·687	·618	·553	·493	·437	·386	·339	·296	·257	·222	·191	·163	·139	·118	·099	·083	·069	·057	·047	·039	·031	·025
10	·855	·727	·613	·513	·427	·353	·289	·235	·190	·152	·121	·096	·075	·059	·045	·035	·026	·020	·015	·011	·008	·007	·004	·003	·002
20	·827	·679	·553	·447	·359	·285	·226	·177	·138	·107	·082	·062	·047	·035	·026	·019	·014	·010	·007	·005	·004	·003	·002	·001	·001
30	·813	·656	·525	·417	·328	·257	·199	·153	·117	·089	·068	·050	·037	·027	·020	·014	·010	·007	·005	·004	·003	·002	·001	·001	·001
40	·803	·639	·505	·396	·308	·238	·182	·138	·104	·078	·058	·042	·031	·022	·016	·011	·008	·006	·004	·003	·002	·001	·001	·001	
50	·796	·628	·491	·382	·294	·225	·170	·128	·096	·071	·052	·038	·027	·019	·014	·010	·007	·005	·003	·002	·001	·001	·001		
60	·790	·619	·481	·371	·283	·215	·161	·120	·089	·065	·048	·034	·025	·017	·012	·009	·006	·004	·003	·002	·001	·001	·001		
70	·785	·611	·471	·361	·274	·206	·154	·114	·084	·061	·044	·032	·022	·016	·011	·008	·005	·004	·002	·002	·001	·001			
80	·780	·604	·464	·353	·267	·200	·148	·109	·080	·058	·041	·030	·021	·015	·010	·007	·005	·003	·002	·001	·001	·001			
90	·778	·600	·459	·348	·262	·195	·144	·106	·077	·055	·040	·028	·020	·014	·010	·007	·004	·003	·002	·001	·001	·001			
100	·775	·596	·454	·343	·257	·191	·141	·103	·075	·054	·038	·027	·019	·013	·009	·006	·004	·003	·002	·001	·001	·001			
200	·757	·567	·422	·311	·227	·165	·118	·084	·060	·042	·029	·020	·014	·009	·006	·004	·003	·002	·001	·001					
300	·746	·552	·405	·294	·212	·152	·107	·075	·052	·036	·025	·017	·011	·007	·005	·003	·002	·001	·001	·001					
400	·740	·543	·394	·284	·203	·144	·101	·070	·048	·033	·022	·015	·010	·007	·004	·003	·002	·001	·001						
500	·735	·536	·387	·277	·197	·138	·096	·067	·045	·031	·021	·014	·009	·006	·004	·002	·002	·001	·001						
600	·731	·530	·381	·271	·191	·134	·093	·064	·043	·029	·020	·013	·009	·005	·004	·002	·001	·001	·001						
700	·727	·525	·375	·266	·187	·130	·090	·061	·041	·028	·019	·012	·008	·005	·003	·002	·001	·001	·001						
800	·725	·521	·371	·262	·183	·127	·087	·059	·040	·027	·018	·012	·008	·005	·003	·002	·001	·001							
900	·722	·517	·367	·258	·180	·124	·085	·058	·039	·026	·017	·011	·007	·005	·003	·002	·001	·001							
1000	·720	·514	·364	·255	·177	·122	·083	·056	·038	·025	·016	·011	·007	·005	·003	·002	·001	·001							

n	λ = 2·6	2·7	2·8	2·9	3·0	3·1	3·2	3·3	3·4	3·5	3·6	3·7	3·8	3·9	4·0	4·1	4·2	4·3	4·4	4·5	4·6	4·7	4·8	4·9	5·0
2	·066	·056	·048	·040	·034	·028	·024	·020	·016	·013	·011	·009	·007	·006	·005	·004	·003	·002	·002	·001	·001	·001	·001	·001	—
3	·021	·016	·013	·010	·008	·006	·005	·004	·003	·002	·002	·001	·001	·001	·001										
10	·002	·001	·001	·001																					
20	·001																								

* This table applies equally well to the difference between the last and last but one individuals.

TABLE XX.

Values of P_2 (λ), or of the Probability that the Second and Third Individuals in a Random Sample of n differ by more than λ times the Standard-Deviation of the Original Population.*

	λ																			
n	·1	·2	·3	·4	·5	·6	·7	·8	·9	1·0	1·1	1·2	1·3	1·4	1·5	1·6	1·7	1·8	1·9	2·0
3	·917	·836	·760	·687	·618	·553	·493	·437	·386	·339	·296	·257	·222	·191	·163	·139	·118	·099	·083	·069
10	·772	·589	·444	·331	·244	·177	·128	·091	·064	·044	·030	·021	·014	·009	·006	·004	·002	·002	·001	
20	·718	·509	·356	·246	·167	·112	·074	·049	·031	·020	·012	·008	·005	·003	·002	·001	·001			
30	·693	·473	·319	·211	·138	·089	·057	·035	·022	·013	·008	·004	·003	·001	·001					
40	·674	·447	·293	·189	·120	·075	·046	·028	·017	·010	·006	·003	·002	·001	·001					
50	·659	·428	·274	·172	·107	·065	·039	·023	·014	·008	·004	·002	·001	·001						
60	·650	·416	·262	·163	·099	·060	·035	·021	·012	·007	·004	·002	·001	·001						
70	·642	·406	·252	·155	·093	·056	·032	·019	·011	·006	·003	·002	·001							
80	·635	·397	·244	·148	·088	·052	·029	·017	·010	·005	·003	·002	·001							
90	·628	·388	·237	·142	·084	·049	·027	·016	·009	·005	·003	·001	·001							
100	·623	·382	·230	·137	·080	·046	·026	·015	·008	·004	·002	·001	·001							
200	·596	·349	·201	·114	·064	·035	·019	·010	·005	·003	·001	·001								
300	·579	·329	·184	·101	·055	·029	·015	·008	·004	·002	·001									
400	·565	·314	·172	·092	·049	·025	·013	·006	·003	·002	·001									
500	·557	·305	·164	·086	·045	·023	·012	·006	·003	·001	·001									
600	·550	·297	·158	·082	·042	·021	·011	·005	·002	·001	·001									
700	·545	·292	·154	·080	·041	·020	·010	·005	·002	·001										
800	·541	·288	·150	·077	·039	·019	·009	·005	·002	·001										
900	·537	·284	·147	·075	·038	·018	·009	·004	·002	·001										
1000	·533	·280	·144	·073	·036	·017	·008	·004	·002	·001										

	λ																			
n	2·1	2·2	2·3	2·4	2·5	2·6	2·7	2·8	2·9	3·0	3·1	3·2	3·3	3·4	3·5	3·6	3·7	3·8	3·9	4·0
3	·057	·047	·039	·031	·025	·020	·016	·013	·010	·008	·006	·005	·004	·003	·002	·002	·001	·001	·001	·001

* This table applies equally well to the difference between the last but one and last but two individuals.

TABLE XXI.

Probability Integral of Distribution of Largest Individual in Samples of Size n taken from Normal Population.

u	*n*=3	*n*=5	*n*=10	*u*	*n*=20	*n*=30	*n*=50
−2·6	·00000 01	—	—	−0·1	·00000 01	—	—
−2·4	·00000 06	—	—	0·0	·00000 10	—	—
−2·2	·00000 27	—	—	0·1	·00000 44	·00000 00	—
−2·0	·00001 18	·00000 00	—	0·2	·00001 81	·00000 01	—
−1·8	·00004 61	·00000 01	—	0·3	·00006 58	·00000 05	—
−1·6	·00016 46	·00000 05	—	0·4	·00021 40	·00000 31	—
−1·4	·00052 67	·00000 34	—	0·5	·00062 43	·00001 56	·00000 00
−1·2	·00152 36	·00002 02	—	0·6	·00164 32	·00006 66	·00000 01
−1·0	·00399 36	·00010 05	·00000 00	0·7	·00392 45	·00024 59	·00000 10
−0·8	·00950 86	·00042 68	·00000 02	0·8	·00855 30	·00079 10	·00000 68
−0·6	·02062 79	·00155 15	·00000 24	0·9	·01710 66	·00223 74	·00003 83
−0·4	·04091 32	·00485 78	·00002 36	1·0	·03158 49	·00561 33	·00017 73
−0·2	·07448 05	·01318 47	·00017 38	1·1	·05415 41	·01260 22	·00068 25
0·0	·12500 00	·03125 00	·00097 66	1·2	·08673 24	·02554 30	·00221 54
+0·2	·19436 59	·06521 79	·00425 34	1·3	·13051 91	·04715 32	·00615 44
+0·4	·28155 45	·12094 95	·01462 88	1·4	·18561 36	·07996 77	·01484 31
+0·6	·38225 71	·20133 81	·04053 70	1·5	·25085 78	·12564 39	·03151 87
+0·8	·48957 33	·30410 92	·09248 24	1·6	·32395 21	·18438 31	·05973 13
+1·0	·59555 51	·42157 02	·17772 15	1·7	·40180 81	·25470 01	·10234 03
+1·2	·69299 04	·54268 20	·29450 37	1·8	·48102 59	·33362 05	·16048 01
+1·4	·77676 83	·65637 57	·43082 90	1·9	·55836 69	·41723 38	·23296 96
+1·6	·84444 64	·75443 22	·56916 79	2·0	·63112 07	·50138 19	·31643 25
+1·8	·89603 56	·83280 27	·69356 03	2·1	·69731 48	·58229 54	·40604 32
+2·0	·93329 05	·89130 86	·79443 10	2·2	·75576 85	·65702 70	·49656 03
+2·2	·95886 69	·93238 91	·86934 95	2·3	·80602 50	·72364 03	·58327 22
+2·4	·97560 85	·95967 88	·92098 35	2·4	·84821 05	·78118 79	·66261 18
+2·6	·98608 15	·97691 03	·95435 38	2·5	·88286 71	·82955 08	·73238 31
+2·8	·99235 42	·98728 95	·97474 05	2·6	·91079 11	·86921 69	·79167 51
+3·0	·99595 58	·99326 87	·98658 27	2·7	·93289 10	·90105 41	·84059 12
+3·2	·99794 00	·99656 90	·99314 98	2·8	·95011 90	·92611 95	·87992 38
+3·4	·99898 95	·99831 65	·99663 58	2·9	·96333 78	·94551 29	·91084 93
+3·6	·99952 27	·99920 47	·99841 01	3·0	·97334 55	·96028 58	·93468 99
+3·8	·99978 30	·99963 83	·99927 65	3·1	·98082 48	·97137 55	·95274 92
+4·0	·99990 50	·99984 17	·99968 33	3·2	·98634 66	·97958 99	·96621 52
+4·2	·99996 00	·99993 10	·99986 66	3·3	·99037 58	·98559 85	·97611 29
+4·4	·99998 38	·99997 29	·99994 59	3·4	·99328 29	·98994 13	·98329 19
+4·6	·99999 37	·99998 94	·99997 89	3·5	·99535 77	·99304 46	·98843 46
+4·8	·99999 76	·99999 60	·99999 21	3·6	·99682 26	·99523 77	·99207 55
+5·0	·99999 91	·99999 86	·99999 71	3·7	·99784 62	·99677 11	·99462 42
+5·2	·99999 96	·99999 95	·99999 90	3·8	·99855 40	·99783 18	·99638 90
+5·4	·99999 99	·99999 98	·99999 97	3·9	·99903 85	·99855 81	·99759 80
+5·6	1·00000 00	·99999 99	·99999 99	4·0	·99936 68	·99905 03	·99841 77
+5·8	—	1·00000 00	1·00000 00	4·1	·99958 69	·99938 05	·99896 76
				4·2	·99973 31	·99959 97	·99933 29
				4·3	·99982 92	·99974 38	·99957 31
				4·4	·99989 18	·99983 76	·99972 94
				4·5	·99993 21	·99989 81	·99983 01
				4·6	·99995 78	·99993 66	·99989 44
				4·7	·99997 40	·99996 10	·99993 50
				4·8	·99998 41	·99997 62	·99996 03
				4·9	·99999 04	·99998 56	·99997 60
				5·0	·99999 43	·99999 14	·99998 57
				5·1	·99999 66	·99999 49	·99999 15
				5·2	·99999 80	·99999 70	·99999 50
				5·3	·99999 89	·99999 83	·99999 71
				5·4	·99999 93	·99999 90	·99999 83
				5·5	·99999 96	·99999 94	·99999 91
				5·6	·99999 98	·99999 97	·99999 95
				5·7	·99999 99	·99999 98	·99999 97
				5·8	·99999 99	·99999 99	·99999 98
				5·9	1·00000 00	·99999 99	·99999 99
				6·0	—	1·00000 00	1·00000 00

TABLE XXI.—*(continued).*

Probability Integral of Distribution of Largest Individual in Samples of Size n taken from Normal Population.

u	*n* = 100	*n* = 200	*n* = 300	*n* = 400	*n* = 500	*n* = 600	*n* = 700	*n* = 800	*n* = 900	*n* = 1000
1·0	·00000 00	—	—	—	—	—	—	—	—	—
1·1	·00000 05	—	—	—	—	—	—	—	—	—
1·2	·00000 49	—	—	—	—	—	—	—	—	—
1·3	·00003 79	—	—	—	—	—	—	—	—	—
1·4	·00022 03	·00000 00	—	—	—	—	—	—	—	—
1·5	·00099 34	·00000 10	—	—	—	—	—	—	—	—
1·6	·00356 78	·00001 27	·00000 00	—	—	—	—	—	—	—
1·7	·01047 35	·00010 97	·00000 11	·00000 00	—	—	—	—	—	—
1·8	·02575 39	·00066 33	·00001 71	·00000 04	·00000 00	—	—	—	—	—
1·9	·05427 48	·00294 58	·00015 99	·00000 87	·00000 05	·00000 00	·00000 00	—	—	—
2·0	·10012 95	·01002 59	·00100 39	·00010 05	·00001 01	·00000 10	·00000 01	·00000 00	·00000 00	—
2·1	·16487 11	·02718 25	·00448 16	·00073 88	·00012 18	·00002 01	·00000 33	·00000 05	·00000 01	·00000 00
2·2	·24657 22	·06079 78	·01499 11	·00369 64	·00091 14	·00022 47	·00005 54	·00001 37	·00000 34	·00000 08
2·3	·34020 64	·11574 04	·03937 56	·01339 58	·00455 74	·00155 04	·00052 75	·00017 94	·00006 10	·00002 08
2·4	·43905 44	·19276 87	·08463 60	·03715 98	·01631 52	·00716 32	·00314 51	·00138 08	·00060 63	·00026 61
2·5	·53638 50	·28770 89	·15432 27	·08277 66	·04440 01	·02381 56	·01277 43	·00685 20	·00367 53	·00197 14
2·6	·62674 94	·39281 48	·24619 64	·15430 35	·09670 96	·06061 27	·03798 90	·02380 96	·01492 26	·00935 27
2·7	·70659 35	·49927 43	·35278 40	·24927 49	·17613 60	·12445 66	·08794 02	·06213 81	·04390 63	·03102 39
2·8	·77426 58	·59948 76	·46416 27	·35938 53	·27825 98	·21544 71	·16681 33	·12915 78	·10000 25	·07742 85
2·9	·82964 65	·68831 33	·57105 67	·47377 51	·39306 59	·32610 57	·27055 25	·22446 29	·18622 48	·15450 08
3·0	·87364 51	·76325 58	·66681 48	·58255 95	·50895 03	·44464 19	·38845 93	·33937 55	·29649 38	·25903 00
3·1	·90773 10	·82397 56	·74794 82	·67893 58	·61629 11	·55942 66	·50780 89	·46095 38	·41842 21	·37981 48
3·2	·93357 18	·87155 63	·81366 04	·75961 04	·70915 08	·66204 32	·61806 49	·57700 79	·53867 83	·50289 49
3·3	·95279 63	·90782 09	·86496 84	·82413 87	·78523 64	·74817 03	·71285 40	·67920 46	·64714 37	·61659 60
3·4	·96686 29	·93482 38	·90384 64	·87389 55	·84493 72	·81693 84	·78986 74	·76369 34	·73838 68	·71391 22
3·5	·97700 29	·95453 48	·93258 33	·91113 66	·89018 31	·86971 15	·84971 07	·83016 99	·81107 84	·79242 60
3·6	·98421 38	·96867 68	·95338 51	·93833 48	·92352 20	·90894 31	·89459 44	·88047 22	·86657 28	·85289 29
3·7	·98927 73	·97866 44	·96817 57	·95779 43	·94752 42	93736 43	·92731 33	·91737 00	·90753 33	·89780 22
3·8	·99279 10	·98563 41	·97852 87	·97147 45	·96447 12	·95751 83	·95061 57	·94376 27	·93695 92	·93020 46
3·9	·99520 18	·99042 66	·98567 44	·98094 49	·97623 81	97155 39	·96689 22	·96225 29	·95763 58	·95304 09
4·0	·99683 78	·99368 57	·99054 35	·98741 12	·98428 88	·98117 64	·97807 37	·97498 09	·97189 79	·96882 45
4·1	·99793 64	·99587 70	·99382 18	·99177 10	·98972 43	·98768 19	·98564 36	·98360 96	·98157 98	·97955 42
4·2	·99866 63	·99733 44	·99600 43	·99467 59	·99334 93	·99202 45	·99070 14	·98938 01	·98806 06	·98674 28
4·3	·99914 64	·99829 35	·99744 13	·99658 99	·99573 91	·99488 91	·99403 99	·99319 13	·99234 35	·99149 64
4·4	·99945 89	·99891 81	·99837 75	·99783 73	·99729 74	·99675 78	·99621 84	·99567 93	·99514 05	·99460 21
4·5	·99966 03	·99932 07	99898 12	·99864 19	·99830 26	·99796 35	·99762 45	·99728 56	·99694 68	·99660 81
4·6	·99978 88	·99957 76	·99936 65	·99915 54	·99894 43	·99873 33	·99852 24	·99831 15	·99810 06	·99788 98
4·7	·99986 99	·99973 99	·99960 98	·99947 98	·99934 97	·99921 98	·99908 98	·99895 99	·99883 00	·99870 00
4·8	·99992 07	·99984 13	·99976 20	·99968 27	·99960 34	·99952 41	·99944 48	·99936 55	·99928 62	·99920 70
4·9	·99995 21	·99990 42	·99985 63	·99980 83	·99976 04	·99971 25	·99966 46	·99961 67	·99956 88	·99952 09
5·0	·99997 13	·99994 27	·99991 40	·99988 53	·99985 67	·99982 80	·99979 94	·99977 07	·99974 21	·99971 34
5·1	·99998 30	·99996 60	·99994 91	·99993 21	·99991 51	·99989 81	·99988 11	·99986 42	·99984 72	·99983 02
5·2	·99999 00	·99998 01	·99997 01	·99996 01	·99995 02	·99994 02	·99993 03	·99992 03	·99991 03	·99990 04
5·3	·99999 42	·99998 84	·99998 26	·99997 67	·99997 11	·99996 53	·99995 95	·99995 37	·99994 79	·99994 21
5·4	·99999 67	·99999 33	·99999 00	·99998 67	·99998 33	·99998 00	·99997 67	·99997 33	·99997 00	·99996 67
5·5	·99999 81	·99999 62	·99999 43	·99999 24	·99999 05	·99998 86	·99998 68	·99998 48	·99998 29	·99998 10
5·6	·99999 89	·99999 79	·99999 68	·99999 57	·99999 46	·99999 36	·99999 25	·99999 14	·99999 03	·99998 93
5·7	·99999 94	·99999 88	·99999 82	·99999 76	·99999 70	·99999 64	·99999 64	·99999 52	·99999 46	·99999 40
5·8	·99999 97	·99999 93	·99999 90	·99999 87	·99999 83	·99999 80	·99999 77	·99999 74	·99999 70	·99999 67
5·9	·99999 98	·99999 96	·99999 95	·99999 93	·99999 91	·99999 89	·99999 87	·99999 85	·99999 84	·99999 82
6·0	·99999 99	·99999 98	·99999 97	·99999 96	·99999 96	·99999 94	·99999 93	·99999 92	·99999 91	·99999 90
6·1	·99999 99	·99999 99	·99999 98	·99999 98	·99999 98	·99999 97	·99999 96	·99999 96	·99999 95	·99999 95
6·2	1·00000 00	1·00000 00	·99999 99	·99999 99	·99999 99	·99999 98	·99999 98	·99999 98	·99999 98	·99999 98
6·3	—	—	1·00000 00	·99999 99	·99999 99	·99999 99	·99999 99	·99999 99	·99999 99	·99999 99
6·4	—	—	—	1·00000 00	1·00000 00	1·00000 00	1·00000 00	·99999 99	·99999 99	·99999 99
6·5	—	—	—	—	—	—	—	1·00000 00	1·00000 00	1·00000 00

TABLE XXI *bis*.

Magnitude in terms of the Parent-Population Standard Deviation of the Individual in Samples of various sizes, which will only be exceeded in the following percentage of cases.*

N	10 °/₀	Δ,	δ²	5 °/₀	δ²	1 °/₀	δ²	0·5 °/₀	Δ	δ²
1	1·282	•	•	1·645	• •	2·326	• •	2·576	•	•
2	1·632	•	•	1·955	• •	2·575	• •	2·807	•	•
3	1·818	•	•	2·121	• •	2·712	• •	2·935	•	•
4	1·943	•	•	2·234	• •	2·806	• •	3·023	•	•
5	2·036	•	•	2·319	• •	2·877	• •	3·090	•	•
6	2·111	•	•	2·386	• •	2·934	• •	3·143	•	•
7	2·172	•	•	2·442	• •	2·981	• •	3·188	•	•
8	2·224	•	•	2·490	• •	3·022	• •	3·227	•	•
9	2·269	•	•	2·531	• •	3·057	• •	3·260	•	•
10	2·309	•	•	2·568	• •	3·089	• •	3·290	•	•
11	2·344	•	•	2·601	• •	3·117	• •	3·317	•	•
12	2·376	•	•	2·630	• •	3·143	• •	3·341	•	•
13	2·406	•	•	2·657	• •	3·166	• •	3·363	•	•
14	2·433	•	•	2·682	• •	3·187	• •	3·383	•	•
15	2·457	•	•	2·705	• •	3·207	• •	3·402	•	•
16	2·480	•	•	2·726	• •	3·226	• •	3·420	•	•
17	2·502	•	•	2·746	• •	3·243	• •	3·436	•	•
18	2·522	•	•	2·765	• •	3·259	• •	3·452	•	•
19	2·541	•	•	2·783	• •	3·275	• •	3·466	•	•
20	2·559	•	•	2·799	• •	3·289	• •	3·480	•	•
21	2·576	•	•	2·815	• •	3·303	• •	3·493	•	•
22	2·592	•	•	2·830	• •	3·316	• •	3·506	•	•
23	2·607	•	•	2·844	• •	3·328	• •	3·518	•	•
24	2·621	•	•	2·858	• •	3·340	• •	3·529	•	•
25	2·635	•	•	2·870	• •	3·351	• •	3·539	•	•
30	2·696	—	42	2·928	— 41	3·402	— 36	3·587	—	32
40	2·791	—	24	3·016	— 21	3·479	— 17	3·662	—	19
50	2·862	—	14	3·083	— 13	3·539	— 12	3·718	—	10
60	2·919	—	9	3·137	— 9	3·587	— 8	3·764	—	7
70	2·967	—	7	3·182	— 7	3·627	— 6	3·803	—	6
80	3·008	—	6	3·220	— 4	3·661	— 4	3·836	—	5
90	3·043	—	3	3·254	— 5	3·691	— 3	3·864	—	2
100	3·075	28	4	3·283	— 2	3·718	— 3	3·890	—	3
110	3·103	26	•	3·310	— 2	3·742	— 2	3·913	—	2
120	3.129	23	•	3·335	— 3	3·764	— 2	3·934	—	2
130	3·152	22	•	3·357	— 2	3·784	— 2	3·953	—	1
140	3·174	20	•	3·377	— 1	3·802	— 1	3·971	—	2
150	3·194		•	3·396	0	3·819	0	3·987		0
200	3·276	—	88	3·474	— 84	3·889	— 73	4·055	—	71
300	3·389	—	35	3·581	— 32	3·987	— 30	4·149	—	29
400	3·467	—	19	3·656	— 18	4·055	— 17	4·214	—	15
500	3·526	—	11	3·713	— 12	4·106	— 9	4·264	—	9
600	3·574	—	8	3·758	— 6	4·148	— 7	4·305	—	7
700	3·614	—	5	3·797	— 6	4·183	— 5	4·339	—	5
800	3·649	—	5	3·830	— 4	4·213	— 3	4·368	—	3
900	3·679	—	3	3·859	— 4	4·240	— 3	4·394	—	3
1000	3·706		0	3·884	0	4·264	— 0	4·417		0

* Prepared by E. S. Pearson.

TABLE XXII.

Mean Range of Samples of Size n taken from Normal Population (given in terms of Standard Deviation).

n	*0*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*n*
0	—	—	1·12838	1·69257	2·05875+	2·32593	2·53441	2·70436	2·84720	2·97003	*0*
10	3·07751	3·17287	3·25846	3·33598	3·40676	3·47183	3·53198	3·58788	3·64006	3·68896	*10*
20	3·73495+	3·77834	3·81938	3·85832	3·89535-	3·93063	3·96432	3·99654	4·02741	4·05704	*20*
30	4·08552	4·11293	4·13934	4·16482	4·18943	4·21322	4·23625-	4·25855+	4·28018	4·30117	*30*
40	4·32156	4·34136	4·36063	4·37938	4·39764	4·41544	4·43279	4·44972	4·46624	4·48238	*40*
50	4·49815-	4·51356	4·52864	4·54339	4·55783	4·57197	4·58582	4·59939	4·61270	4·62575+	*50*
60	4·63856	4·65112	4·66346	4·67557	4·68747	4·69916	4·71065-	4·72194	4·73305-	4·74397	*60*
70	4·75472	4·76530	4·77570	4·78595+	4·79604	4·80598	4·81578	4·82543	4·83494	4·84431	*70*
80	4·85355-	4·86266	4·87165-	4·88051	4·88926	4·89789	4·90641	4·91481	4·92312	4·93131	*80*
90	4·93940	4·94739	4·95529	4·96309	4·97079	4·97841	4·98593	4·99337	5·00073	5·00800	*90*
100	5·01519	5·02230	5·02933	5·03628	5·04316	5·04997	5·05670	5·06337	5·06996	5·07649	*100*
110	5·08295-	5·08934	5·09568	5·10195-	5·10815+	5·11430	5·12039	5·12642	5·13239	5·13831	*110*
120	5·14417	5·14998	5·15573	5·16144	5·16709	5·17269	5·17824	5·18374	5·18919	5·19460	*120*
130	5·19996	5·20528	5·21055-	5·21578	5·22096	5·22610	5·23120	5·23625+	5·24127	5·24624	*130*
140	5·25118	5·25608	5·26094	5·26576	5·27054	5·27529	5·28000	5·28468	5·28932	5·29392	*140*
150	5·29849	5·30303	5·30754	5·31201	5·31645-	5·32086	5·32523	5·32958	5·33389	5·33818	*150*
160	5·34244	5·34666	5·35086	5·35503	5·35917	5·36328	5·36737	5·37142	5·37545+	5·37946	*160*
170	5·38344	5·38739	5·39132	5·39522	5·39910	5·40295+	5·40678	5·41059	5·41437	5·41812	*170*
180	5·42186	5·42557	5·42926	5·43293	5·43657	5·44019	5·44380	5·44738	5·45093	5·45447	*180*
190	5·45799	5·46149	5·46497	5·46842	5·47186	5·47528	5·47868	5·48206	5·48542	5·48876	*190*
200	5·49209	5·49539	5·49868	5·50195-	5·50520	5·50843	5·51165+	5·51485+	5·51803	5·52120	*200*
210	5·52435-	5·52748	5 53060	5·53370	5·53678	5·53985+	5·54291	5·54594	5·54897	5·55197	*210*
220	5·55497	5·55794	5·56091	5·56385+	5·56679	5·56971	5·57261	5·57550	5·57838	5·58124	*220*
230	5·58409	5·58692	5·58975-	5·59255+	5·59535-	5·59813	5·60090	5·60366	5·60640	5·60913	*230*
240	5·61185-	5·61456	5·61725-	5·61993	5·62260	5·62526	5·62790	5·63054	5·63316	5·63577	*240*
250	5·63837	5·64096	5·64353	5·64610	5·64865+	5·65119	5·65373	5·65625-	5·65876	5·66126	*250*
260	5·66375-	5·66623	5·66869	5·67115+	5·67360	5·67604	5·67847	5·68088	5·68329	5·68569	*260*
270	5·68808	5·69046	5·69282	5·69518	5·69753	5·69987	5·70221	5·70453	5·70684	5·70914	*270*
280	5·71144	5·71372	5·71600	5·71827	5·72053	5·72278	5·72502	5·72725+	5·72948	5·73170	*280*
290	5·73390	5·73610	5·73829	5·74048	5·74265+	5·74482	5·74698	5·74913	5·75127	5·75341	*290*
300	5·75553	5·75765+	5·75977	5·76187	5·76397	5·76605+	5·76814	5·77021	5·77228	5·77434	*300*
310	5·77639	5·77843	5·78047	5·78250	5·78453	5·78654	5·78855+	5·79055+	5·79255+	5·79454	*310*
320	5·79652	5·79850	5·80046	5·80243	5·80438	5·80633	5·80827	5·81021	5·81214	5·81406	*320*
330	5·81598	5·81789	5·81979	5·82169	5·82358	5·82546	5·82734	5·82922	5·83108	5·83294	*330*
340	5·83480	5·83665-	5·83849	5·84033	5·84216	5·84398	5·84580	5·84762	5·84942	5·85123	*340*
350	5·85302	5·85482	5·85660	5·85838	5·86016	5·86192	5·86369	5·86545-	5·86720	5·86895-	*350*
360	5·87069	5·87243	5·87416	5·87588	5·87761	5·87932	5·88103	5·88274	5·88444	5·88614	*360*
370	5·88783	5·88951	5·89119	5·89287	5·89454	5·89621	5·89787	5·89952	5·90118	5·90282	*370*
380	5·90447	5·90610	5·90774	5·90936	5·91099	5·91261	5·91422	5·91583	5·91744	5·91904	*380*
390	5·92063	5·92223	5·92381	5·92540	5·92697	5·92855-	5·93012	5·93168	5·93325-	5·93480	*390*
400	5·93636	5·93790	5·93945-	5·94099	5·94253	5·94406	5·94558	5·94711	5·94863	5·95014	*400*
410	5·95166	5·95316	5·95467	5·95617	5·95766	5·95915+	5·96064	5·96212	5·96360	5·96508	*410*
420	5·96655+	5·96802	5·96949	5·97095-	5·97240	5·97386	5·97531	5·97675+	5·97820	5·97963	*420*
430	5·98107	5·98250	5·98393	5·98535+	5·98677	5·98819	5·98960	5·99101	5·99242	5·99382	*430*
440	5·99522	5·99662	5·99801	5·99940	6·00079	6·00217	6·00355-	6·00492	6·00630	6·00766	*440*
450	6·00903	6·01039	6·01175+	6·01311	6·01446	6·01581	6·01716	6·01850	6·01984	6·02117	*450*
460	6·02251	6·02384	6·02516	6·02649	6·02781	6·02913	6·03044	6·03175+	6·03306	6·03437	*460*
470	6·03567	6·03697	6·03826	6·03956	6·04085-	6·04214	6·04342	6·04470	6·04598	6·04726	*470*
480	6·04853	6·04980	6·05107	6·05233	6·05359	6·05485+	6·05611	6·05736	6·05861	6·05986	*480*
490	6·06110	6·06234	6·06358	6·06482	6·06605+	6·06728	6·06851	6·06974	6·07096	6·07218	*490*

The column headings provide the last digit in the value of n. For example: Mean Range for $n = 147$ is 5·28468 × parent population S.D.

TABLE XXII.—(*continued*).

Mean Range of Samples of Size n taken from Normal Population (given in terms of Standard Deviation).

n	0	1	2	3	4	5	6	7	8	9	*n*
500	6·07340	6·07461	6·07583	6·07703	6·07824	6·07945−	6·08065−	6·08185−	6·08304	6·08424	500
510	6·08543	6·08662	6·08781	6·08899	6·09017	6·09135+	6·09253	6·09370	6·09487	6·09604	510
520	6·09721	6·09837	6·09953	6·10069	6·10185+	6·10301	6·10416	6·10531	6·10646	6·10760	520
530	6·10874	6·10988	6·11102	6·11216	6·11329	6·11442	6·11555+	6·11668	6·11780	6·11892	530
540	6·12004	6·12116	6·12228	6·12339	6·12450	6·12561	6·12672	6·12782	6·12892	6·13002	540
550	6·13112	6·13222	6·13331	6·13440	6·13549	6·13658	6·13766	6·13874	6·13982	6·14090	550
560	6·14198	6·14305+	6·14413	6·14520	6·14626	6·14733	6·14839	6·14946	6·15052	6·15157	560
570	6·15263	6·15368	6·15474	6·15579	6·15683	6·15788	6·15892	6·15996	6·16101	6·16204	570
580	6·16308	6·16411	6·16515−	6·16618	6·16720	6·16823	6·16926	6·17028	6·17130	6·17232	580
590	6·17333	6·17435+	6·17536	6·17638	6·17738	6·17839	6·17940	6·18040	6·18140	6·18241	590
600	6·18340	6·18440	6·18540	6·18639	6·18738	6·18837	6·18936	6·19034	6·19133	6·19231	600
610	6·19329	6·19427	6·19525−	6·19623	6·19720	6·19817	6·19914	6·20011	6·20108	6·20204	610
620	6·20301	6·20397	6·20493	6·20589	6·20685−	6·20780	6·20876	6·20971	6·21066	6·21161	620
630	6·21255+	6·21350	6·21444	6·21539	6·21633	6·21727	6·21820	6·21914	6·22007	6·22101	630
640	6·22194	6·22287	6·22379	6·22472	6·22565−	6·22657	6·22749	6·22841	6·22933	6·23025−	640
650	6·23116	6·23208	6·23299	6·23390	6·23481	6·23572	6·23662	6·23753	6·23843	6·23934	650
660	6·24024	6·24113	6·24203	6·24293	6·24382	6·24472	6·24561	6·24650	6·24739	6·24827	660
670	6·24916	6·25005−	6·25093	6·25181	6·25269	6·25357	6·25445−	6·25532	6·25620	6·25707	670
680	6·25794	6·25881	6·25968	6·26055+	6·26142	6·26228	6·26315−	6·26401	6·26487	6·26573	680
690	6·26659	6·26744	6·26830	6·26915+	6·27001	6·27086	6·27171	6·27256	6·27340	6·27425+	690
700	6·27510	6·27594	6·27678	6·27762	6·27846	6·27930	6·28014	6·28097	6·28181	6·28264	700
710	6·28347	6·28430	6·28513	6·28596	6·28679	6·28762	6·28844	6·28926	6·29009	6·29091	710
720	6·29173	6·29254	6·29336	6·29418	6·29499	6·29581	6·29662	6·29743	6·29824	6·29905−	720
730	6·29985+	6·30066	6·30147	6·30227	6·30307	6·30387	6·30467	6·30547	6·30627	6·30707	730
740	6·30786	6·30866	6·30945+	6·31024	6·31103	6·31182	6·31261	6·31340	6·31419	6·31497	740
750	6·31576	6·31654	6·31732	6·31810	6·31888	6·31966	6·32044	6·32121	6·32199	6·32276	750
760	6·32353	6·32431	6·32508	6·32585−	6·32661	6·32738	6·32815−	6·32891	6·32968	6·33044	760
770	6·33120	6·33197	6·33273	6·33348	6·33424	6·33500	6·33575+	6·33651	6·33726	6·33802	770
780	6·33877	6·33952	6·34027	6·34102	6·34176	6·34251	6·34325+	6·34400	6·34474	6·34548	780
790	6·34623	6·34697	6·34771	6·34844	6·34918	6·34992	6·35065+	6·35139	6·35212	6·35285+	790
800	6·35358	6·35431	6·35504	6·35577	6·35650	6·35722	6·35795−	6·35867	6·35940	6·36012	800
810	6·36084	6·36156	6·36228	6·36300	6·36372	6·36433	6·36515+	6·36587	6·36658	6·36729	810
820	6·36800	6·36872	6·36942	6·37013	6·37084	6·37155−	6·37226	6·37296	6·37367	6·37437	820
830	6·37507	6·37577	6·37647	6·37717	6·37787	6·37857	6·37927	6·37997	6·38066	6·38136	830
840	6·38205−	6·38274	6·38343	6·38412	6·38482	6·38550	6·38619	6·38688	6·38757	6·38825+	840
850	6·38894	6·38962	6·39031	6·39099	6·39167	6·39235−	6·39303	6·39371	6·39438	6·39506	850
860	6·39574	6·39641	6·39709	6·39776	6·39843	6·39911	6·39978	6·40045−	6·40112	6·40179	860
870	6·40245+	6·40312	6·40379	6·40445+	6·40512	6·40578	6·40644	6·40711	6·40777	6·40843	870
880	6·40909	6·40975−	6·41040	6·41106	6·41172	6·41237	6·41303	6·41368	6·41433	6·41499	880
890	6·41564	6·41629	6·41694	6·41759	6·41824	6·41889	6·41953	6·42018	6·42082	6·42147	890
900	6·42211	6·42276	6·42340	6·42404	6·42468	6·42532	6·42596	6·42660	6·42723	6·42787	900
910	6·42851	6·42914	6·42978	6·43041	6·43104	6·43168	6·43231	6·43294	6·43357	6·43420	910
920	6·43483	6·43546	6·43608	6·43671	6·43734	6·43796	6·43858	6·43921	6·43983	6·44045+	920
930	6·44108	6·44170	6·44232	6·44294	6·44355+	6·44417	6·44479	6·44540	6·44602	6·44664	930
940	6·44725+	6·44786	6·44848	6·44909	6·44970	6·45031	6·45092	6·45153	6·45214	6·45275−	940
950	6·45335+	6·45396	6·45457	6·45517	6·45578	6·45638	6·45698	6·45759	6·45819	6·45879	950
960	6·45939	6·45999	6·46059	6·46119	6·46178	6·46238	6·46298	6·46357	6·46417	6·46476	960
970	6·46536	6·46595−	6·46654	6·46714	6·46773	6·46832	6·46891	6·46950	6·47008	6·47067	970
980	6·47126	6·47185−	6·47243	6·47302	6·47360	6·47419	6·47477	6·47535+	6·47594	6·47652	980
990	6·47710	6·47768	6·47826	6·47884	6·47942	6·47999	6·48057	6·48115−	6·48172	6·48230	990
1000	6·48287	—	—	—	—	—	—	—	—	—	1000

TABLE XXIII.

Distribution Constants of Range in Samples from Symmetrical Curves.

Size of Sample.

β_2	—	2	3	4	5	10	20
1·80	Range Mean	*1·155*	*1·732*	*2·078*	*2·309*	*2·834*	*3·134*
	Range S.E.	*·816*	*·775*	*·693*	*·617*	*·386*	*·217*
	Range β_1	*·320*	*·000*	*·082*	*·219*	*·773*	*1·265*
	Range β_2	*2·400*	*2·143*	*2·357*	*2·625*	*3·648*	*4·569*
	Centre: S.E.	*1·000*	*·949*	*·894*	*·845*	*·674*	*·510*
	Median: S.E.	*1·000*	*1·342*	*1·265*	*1·464*	*1·508*	*1·612*
2·50	Range Mean	1·158	—	—	2·343	3·024	3·604
	Range S.E.	·850	—	—	·786	·713	·549
	Range β_1	—	—	—	·110	·008	·039
	Range β_2	—	—	—	2·869	2·884	2·705
	Centre: S.E.	*1·000*	—	—	1·062	1·101	1·266
	Median: S.E.	*1·000*	—	—	1·319	1·231	1·312
3·00	Range Mean	*1·128*	*1·693*	*2·059*	*2·326*	*3·078*	*3·735*
	Range S.E.	*·852*	*·888*	*·880*	*·864*	*·797*	*·729*
	Range β_1	*·991*	*·417*	*·273*	*·217*	*·156*	*·161*
	Range β_2	*3·869*	*3·286*	*3·188*	*3·169*	*3·22*	*3·26*
	Centre: S.E.	*1·000*	*1·042*	*1·092*	*1·142*	*1·362*	*1·691*
	Median: S.E.	*1·000*	*1·160*	*1·092*	*1·198*	—	(→*1·253*)
4·12	Range Mean	1·118	—	—	2·360	3·085	3·961
	Range S.E.	·890	—	—	1·010	·893	1·029
	Range β_1	—	—	—	·614	·335	·603
	Range β_2	—	—	—	4·748	3·377	3·693
	Centre: S.E.	*1·000*	—	—	1·182	1·569	2·411
	Median: S.E.	*1·000*	—	—	1·145	1·126	1·141
7·07	Range Mean	1·020	—	—	2·245	3·034	3·905
	Range S.E.	·892	—	—	1·100	1·229	1·300
	Range β_1	—	—	—	9·042	2·228	2·633
	Range β_2	—	—	—	19·280	6·898	7·970
	Centre: S.E.	*1·000*	—	—	1·372	2·015	2·947
	Median: S.E.	*1·000*	—	—	1·049	·979	·970

N.B. The Mean and Standard Error of Range are expressed in terms of the Population Standard Deviation, σ. The Standard Errors of Centre and Median are given as multiples of the Standard Error of the Mean, $\sigma/\sqrt{n}$. Figures in italics are theoretical, the others are obtained from experimental sampling.

Constants of Distribution of Range in Samples from a Type III Curve.

Size of Sample.

Population		2	5	10	20
Normal	Range Mean	*1·128*	*2·326*	*3·078*	*3·725*
	Range S.E.	*·852*	*·864*	*·797*	*·729*
Type III ($\beta_1 = 0·50$)	Range Mean	1·117	2·292	2·975	3·759
	Range S.E.	·867	·893	·817	·831

N.B.—The preceding footnote applies here.

TABLE XXIV.

Permille of Samples from Symmetrical Curves with Range greater than Multiples of Population Standard Deviation.

Range greater than

Size of Sample	Population β_2	1σ	2σ	3σ	4σ	5σ	6σ	7σ	8σ	9σ	10σ	11σ
2	1·80	*506*	*179*	*18*	—	—	—	—	—	—	—	—
	2·50	501	174	27	3	—	—	—	—	—	—	—
	3·00	*480*	*157*	*34*	*5*	—	—	—	—	—	—	—
	4·12	468	154	36	8	3	1	—	—	—	—	—
	7·07	396	119	37	10	3	2	—	—	—	—	—
5	1·80	*973*	*701*	*136*	—	—	—	—	—	—	—	—
	2·50	968	646	190	34	—	—	—	—	—	—	—
	3·00	*956*	*619*	*211*	*38*	*4*	—	—	—	—	—	—
	4·12	922	609	240	62	8	4	2	2	—	—	—
	7·07	922	521	201	72	16	4	3	2	2	1	1
10	1·80	*1000*	*966*	*396*	—	—	—	—	—	—	—	—
	2·50	998	926	495	90	2	—	—	—	—	—	—
	3·00	*1000*	*922*	*515*	*127*	*15*	*1*	—	—	—	—	—
	4·12	1000	898	501	154	28	6	—	—	—	—	—
	7·07	994	831	436	154	68	30	16	4	2	2	—
20	1·80	*1000*	*1000*	*769*	—	—	—	—	—	—	—	—
	2·50	1000	1000	861	235	4	—	—	—	—	—	—
	3·00	*1000*	*998*	*856*	*349*	*55*	*4*	—	—	—	—	—
	4·12	1000	998	833	421	156	44	8	2	—	—	—
	7·07	1000	995	775	422	170	74	21	14	8	6	2

N.B. Figures in italics are theoretical, the others are obtained from experimental sampling.

Permille of Samples from a Type III Curve with Ranges in excess of certain values.

Range greater than

Size of Sample	Population	1σ	2σ	3σ	4σ	5σ	6σ	7σ
2	Normal	*480*	*157*	*34*	*5*	—	—	—
	Type III ($\beta_1 = 0{\cdot}50$)	450	135	39	9	2	—	—
5	Normal	*956*	*619*	*211*	*38*	*4*	—	—
	Type III	944	590	211	42	3	—	—
10	Normal	*1000*	*922*	*515*	*127*	*15*	*1*	—
	Type III	1000	901	444	128	9	—	—
20	Normal	*1000*	*998*	*856*	*349*	*55*	*4*	—
	Type III	1000	997	827	346	77	12	2

TABLE XXV. *Values of $P_x(n)$.*

	$n =$ $\frac{1}{2}(n-1) =$	2 0·5	3 1·0	4 1·5	5 2·0	6 2·5	7 3·0	8 3·5
	$B(\frac{1}{2}, \frac{1}{2}(n-1)) =$	3·1415,9265^{+}	2·0000,0000	1·5707,9633	1·3333,3333	1·1780,9725^{-}	1·0666,6667	·9817,4770
x	z^2							
·00	·00000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000
·01	·01010	·531,8843	·550,0000	·563,5557	·574,7500^{e}	·584,4589	·593,1269	·601,0142
·02	·02041	·545,1672	·570,7107	·589,7306	·605,3589	·618,8454	·630,8254	·641,6713
·03	·03093	·555,4123	·586,6025^{+}	·609,7119	·628,6048	·644,8257	·659,1614	·672,0739
·04	·04167	·564,0942	·600,0000	·626,4700	·648,0000	·666,3904	·682,5600	·697,0494
·05	·05263	·571,7831	·611,8034	·641,1572	·664,9100	·685,0941	·702,7485^{-}	·718,4861
·06	·06383	·578,7712	·622,4745^{-}	·654,3656	·680,0375^{-}	·701,7381	·720,6194	·737,3622
·07	·07527	·585,2317	·632,2876	·666,4475^{+}	·693,8013	·716,8013	·736,7071	·754,2646
·08	·08696	·591,2774	·641,4214	·677,6328	·706,4752	·730,5973	·751,3623	·769,5793
·09	·09890	·596,9867	·650,0000	·688,0812	·718,2500^{e}	·743,3452	·764,8306	·783,5773
·10	·11111	·602,4164	·658,1139	·697,9093	·729,2651	·755,2051	·777,2922	·796,4581
·11	·12360	·607,6095^{+}	·665,8312	·707,2054	·739,6261	·766,2990	·788,8842	·808,3736
·12	·13636	·612,5995^{-}	·673,2051	·716,0379	·749,4153	·776,7218	·799,7141	·819,4433
·13	·14943	·617,4127	·680,2776	·724,4614	·758,6983	·786,5497	·809,8678	·829,7631
·14	·16279	·622,0709	·687,0829	·732,5203	·767,5285^{+}	·795,8446	·819,4159	·839,4117
·15	·17647	·626,5917	·693,6492	·740,2510	·775,9501	·804,6580	·828,4168	·848,4547
·16	·19048	·630,9899	·700,0000	·747,6842	·784,0000	·813,0330	·836,9200	·856,9474
·17	·20482	·635,2781	·706,1553	·754,8458	·791,7097	·821,0065^{+}	·844,9674	·864,9373
·18	·21951	·639,4672	·712,1320	·761,7578	·799,1062	·828,6101	·852,5953	·872,4651
·19	·23457	·643,5663	·717,9449	·768,4395^{+}	·806,2127	·835,8711	·859,8353	·879,5668
·20	·25000^{e}	·647,5836	·723,6068	·774,9076	·813,0495^{+}	·842,8137	·866,7151	·886,2736
·21	·26582	·651,5263	·729,1288	·781,1765^{+}	·819,6347	·849,4585^{+}	·873,2594	·892,6135^{-}
·22	·28205^{+}	·655,4006	·734,5208	·787,2593	·825,9839	·855,8258	·879,4898	·898,6113
·23	·29870	·659,2121	·739,7916	·793,1673	·832,1113	·861,9309	·885,4260	·904,2893
·24	·31579	·662,9660	·744,9490	·798,9108	·838,0296	·867,7894	·891,0855^{+}	·909,6677
·25	·33333	·666,6667	·750,0000	·804,4989	·843,7500^{e}	·873,4150^{+}	·896,4844	·914,7647
·26	·35135^{+}	·670,3183	·754,9510	·809,9399	·849,2828	·878,8199	·901,6370	·919,5969
·27	·36986	·673,9247	·759,8076	·815,2414	·854,6374	·884,0155^{+}	·906,5567	·924,1796
·28	·38889	·677,4892	·764,5751	·820,4100	·859,8222	·889,0120	·911,2556	·928,5267
·29	·40845^{+}	·681,0150^{+}	·769,2582	·825,4520	·864,8449	·893,8788	·915,7448	·932,6512
·30	·42857	·684,5051	·773,8613	·830,3730	·869,7127	·898,4447	·920,0347	·936,5648
·31	·44928	·687,9620	·778,3882	·835,1782	·874,4322	·902,8976	·924,1349	·940,2787
·32	·47059	·691,3883	·782,8427	·839,8723	·879,0092	·907,1850^{+}	·928,0542	·943,8032
·33	·49254	·694,7865^{-}	·787,2281	·844,4598	·883,4496	·911,3139	·931,8008	·947,1477
·34	·51515^{+}	·698,1585^{+}	·791,5476	·848,9447	·887,7583	·915,2906	·935,3826	·950,3213
·35	·53846	·701,5067	·795,8040	·853,3308	·891,9403	·919,1213	·938,8067	·953,3323
·36	·56250^{e}	·704,8328	·800,0000	·857,6215^{+}	·896,0000	·922,8114	·942,0800	·956,1886
·37	·58730	·708,1387	·804,1381	·861,8201	·899,9416	·926,3663	·945,2088	·958,8976
·38	·61290	·711,4263	·808,2207	·865,9296	·903,7691	·929,7909	·948,1991	·961,4662
·39	·63934	·714,6971	·812,2499	·869,9528	·907,4861	·933,0900	·951,0567	·963,9010
·40	·66667	·717,9529	·816,2278	·873,8923	·911,0961	·936,2680	·953,7868	·966,2084
·41	·69492	·721,1951	·820,1562	·877,7505^{+}	·914,6023	·939,3290	·956,3947	·968,3940
·42	·72414	·724,4253	·824,0370	·881,5298	·918,0078	·942,2769	·958,8850^{+}	·970,4636
·43	·75439	·727,6449	·827,8719	·885,2324	·921,3154	·945,1156	·961,2625^{+}	·972,4224
·44	·78571	·730,8553	·831,6625^{-}	·888,8601	·924,5280	·947,8486	·963,5315^{-}	·974,2755^{-}
·45	·81818	·734,0579	·835,4102	·892,4150^{+}	·927,6480	·950,4793	·965,6961	·976,0276
·46	·85185^{+}	·737,2540	·839,1165^{-}	·895,8988	·930,6780	·953,0110	·967,7603	·977,6834
·47	·88679	·740,4450^{-}	·842,7827	·899,3132	·933,6202	·955,4466	·969,7280	·979,2472
·48	·92308	·743,6321	·846,4102	·902,6597	·936,4768	·957,7892	·971,6028	·980,7231
·49	·96078	·746,8167	·850,0000	·905,9398	·939,2500^{e}	·960,0417	·973,3881	·982,1152
·50	1·00000	·750,0000	·853,5534	·909,1549	·941,9417	·962,2061	·975,0874	·983,4272

TABLE XXV.—(*continued*).

x	$n=$ / $\frac{1}{2}(n-1)=$	2 / 0·5	3 / 1·0	4 / 1·5	5 / 2·0	6 / 2·5	7 / 3·0	8 / 3·5
	$B(\frac{1}{2},\frac{1}{2}(n-1))=$	3·1415,9265+	2·0000,0000	1·5707,9633	1·3333,3333	1·1780,9725−	1·0666,6667	·9817,4770
x	z^2							
·50	1·0000	·750,000	·853,5534	·909,1549	·941,9417	·962,2061	·975,0874	·983,4272
·51	1·04081	·753,1833	·857,0714	·912,3064	·944,5539	·964,2866	·976,7037	·984,6629
·52	1·08333	·756,3679	·860,5551	·915,3955−	·947,0884	·966,2843	·978,2403	·985,8256
·53	1·12766	·759,5550+	·864,0055−	·918,4232	·949,5468	·968,2019	·979,7001	·986,9187
·54	1·17391	·762,7460	·867,4235−	·921,3908	·951,9309	·970,0419	·981,0859	·987,9455+
·55	1·22222	·765,9421	·870,8099	·924,2993	·954,2422	·971,8065−	·982,4005+	·988,9090
·56	1·27273	·769,1447	·874,1657	·927,1496	·956,4822	·973,4977	·983,6466	·289,8122
·57	1·32558	·772,3551	·877,4917	·929,9426	·958,6524	·975,1177	·984,8268	·990,6580
·58	1·38095+	·775,5747	·880,7887	·932,6793	·960,7543	·976,6685+	·985,9434	·991,4489
·59	1·43902	·778,8049	·884,0573	·935,3603	·962,7890	·978,1521	·986,9990	·992,1878
·60	1·50000	·782,0471	·887,2983	·937,9865−	·964,7580	·979,5703	·987,9959	·992,8771
·61	1·56410	·785,3029	·890,5125−	·940,5585−	·966,6624	·980,9250−	·988,9363	·993,5193
·62	1·63158	·788,5737	·893,7004	·943,0770	·968,5035−	·982,2179	·989,8223	·994,1167
·63	1·70270	·791,8613	·896,8627	·945,5427	·970,2823	·983,4507	·990,6562	·994,6715+
·64	1·77778	·795,1672	·900,0000	·947,9560	·972,0000	·984,6253	·991,4400	·995,1860
·65	1·85714	·798,4933	·903,1129	·950,3175−	·973,6576	·985,7431	·992,1756	·995,6623
·66	1·94118	·801,8415−	·906,2019	·952,6276	·975,2562	·986,8058	·992,8651	·996,1023
·67	2·03030	·805,2135+	·909,2676	·954,8869	·976,7968	·987,8150+	·993,5103	·996,5081
·68	2·12500	·808,6117	·912,3106	·957,0956	·978,2803	·988,7722	·994,1130	·996,8814
·69	2·22581	·812,0380	·915,3312	·959,2542	·979,7075+	·989,6789	·994,6750+	·997,2242
·70	2·33333	·815,4949	·918,3300	·961,3629	·981,0795+	·990,5364	·995,1982	·997,5381
·71	2·44828	·818,9850−	·921,3075−	·963,4219	·982,3971	·991,3464	·995,6841	·997,8249
·72	2·57143	·822,5108	·924,2641	·965,4316	·983,6610	·992,1101	·996,1344	·998,0861
·73	2·70370	·826,0753	·927,2002	·967,3920	·984,8722	·992,8290	·996,5508	·998,3234
·74	2·84615+	·829,6817	·930,1163	·969,3033	·986,0314	·993,5044	·996,9348	·998,5382
·75	3·00000	·833,3333	·933,0127	·971,1656	·987,1393	·994,1376	·997,2880	·998,7320
·76	3·16667	·837,0340	·935,8899	·972,9788	·988,1967	·994,7300	·997,6119	·998,9062
·77	3·34783	·840,7879	·938,7482	·974,7430	·989,2043	·995,2828	·997,9079	·999,0621
·78	3·54545+	·844,5994	·941,5880	·976,4581	·990,1627	·995,7974	·998,1776	·999,2011
·79	3·76190	·848,4737	·944,4097	·978,1240	·991,0727	·996,2750+	·998,4222	·999,3244
·80	4·00000	·852,4164	·947,2136	·979,7403	·991,9350−	·996,7169	998,6432	·999,4331
·81	4·26316	·856,4337	·950,0000	·981,3070	·992,7500+	·997,1242	·998,8419	·999,5285−
·82	4·55556	·860,5328	·952,7693	·982,8235−	·993,5185−	·997,4984	·999,0196	·999,6116
·83	4·88235+	·864,7219	·955,5217	·984,2895+	·994,2410	·997,8405+	·999,1777	·999,6834
·84	5·25000	·869,0101	·958,2576	·985,7045−	·994,9182	·998,1518	·999,3174	·999,7451
·85	5·66667	·873,4083	·960,9772	·987,0677	·995,5505+	·998,4336	·999,4400	·999,7976
·86	6·14286	·877,9291	·963,6809	·988,3785+	·996,1386	·998,6871	·999,5466	·999,8417
·87	6·69231	·882,5873	·966,3690	·989,6360	·996,6829	·998,9135+	·999,6385+	·999,8784
·88	7·33333	·887,4005+	·969,0416	.990,8390	·997,1841	·999,1141	·999,7169	·999,9085+
·89	8·09091	·892,3905−	·971,6991	·991,9864	·997,6425+	·999,2901	·999,7828	·999,9328
·90	9·00000	·897,5836	·974,3416	·993,0766	·998,0587	·999,4428	·999,8375+	·999,9521
·91	10·11111	·903,0133	·976,9696	·994,1078	·998,4332	·999,5735−	·999,8820	·999,9670
·92	11·50000	·908,7226	·979,5832	·995,0779	·998,7665−	·999,6835−	·999,9175−	·999,9782
·93	13·28571	·914,7683	·982,1825+	·995,9841	·999,0589	·999,7742	·999,9449	·999,9864
·94	15·66667	·921,2288	·984,7680	·996,8232	·999,3110	·999,8470	·999,9655−	·999,9921
·95	19·00000	·928,2169	·987,3397	·997,5909	·999,5232	·999,9034	·999,9801	·999,9959
·96	24·00000	·935,9058	·989,8979	·998,2815+	·999,6959	·999,9449	·999,9898	·999,9981
·97	32·33333	·944,5877	·992,4429	·998,8873	·999,8295+	·999,9732	·999,9957	·999,9993
·98	49·00000	·954,8328	·994,9747	·999,3961	·999,9245−	·999,9903	·999,9987	·999,9998
·99	99·00000	·968,1157	·997,4937	·999,7872	·999,9812	·999,9983	·999,9998	1·000,0000
1·00	∞	1·000,0000	1·000,0000	1·000,0000	1·000,0000	1·000,0000	1·000,0000	

TABLE XXV.—(*continued*).

$n=$		9	10	11	12	13	14	15
$\frac{1}{2}(n-1)=$		4·0	4·5	5·0	5·5	6·0	6·5	7·0
$B(\frac{1}{2}, \frac{1}{2}(n-1))=$		·9142,8571	·8590,2924	·8126,9841	·7731,2632	·7388,1674	·7086,9912	·6819,8468
x	z^2							
·00	·00000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000
·01	·01010	·608,2878	·615,0625^{+}	·621,4209	·627,4250^{+}	·633,1226	·638,5513	·643,7418
·02	·02041	·651,6230	·660,8451	·669,4569	·677,5476	·685,1864	·692,4281	·699,3168
·03	·03093	·683,8613	·694,7289	·704,8254	·714,2626	·723,1270	·731,4877	·739,4002
·04	·04167	·710,2080	·722,2773	·733,4323	·743,8051	·753,4981	·762,5930	·771,1560
·05	·05263	·732,7039	·745,6768	·757,6044	·768,6378	·778,8943	·788,4677	·797,4342
·06	·06383	·752,4086	.766,0651	·778,5552	·790,0479	·800,6752	·810,5424	·819,7353
·07	·07527	·769,9591	·784,1281	·797,0179	·808,8153	·819,6662	·829,6872	·838,9738
·08	·08696	·785,7758	·800,3193	·813,4786	·825,4578	·836,4166	·846,4828	·855,7609
·09	·09890	·800,1543	·814,9584	·828,2807	·840,3423	·851,3163	·861,3416	·870,5318
·10	·11111	·813,3125^{+}	·828,2818	·841,6785^{+}	·853,7408	·864,6550^{+}	·874,5708	·883,6106
·11	·12360	·825,4173	·840,4705^{+}	·853,8675^{-}	·865,8628	·876,6560	·886,4074	·895,2477
·12	·13636	·836,5998	·851,6675^{-}	·865,0019	·876,8740	·887,4963	·897,0391	·905,6418
·13	·14943	·846,9657	·861,9880	·875,2065^{+}	·886,9085^{+}	·897,3191	·906,6184	·914,9538
·14	·16279	·856,6019	·871,5270	·884,5844	·896,0772	·906,2428	·915,2711	·923,3169
·15	·17647	·865,5809	·880,3638	·893,2216	·904,4729	·914,3668	·923,1026	·930,8424
·16	·19048	·873,9640	·888,5658	·901,1913	·912,1742	·921,7752	·930,2024	·937,6248
·17	·20482	·881,8039	·896,1908^{5}	·908,5564	·919,2491	·928,5406	·936,6475^{+}	·943,7452
·18	·21951	·889,1461	·903,2890	·915,3714	·925,7561	·934,7256	·942,5044	·949,2736
·19	·23457	·896,0306	·909,9040	·921,6840	·931,7469	·940,3853	·947,8311	·954,2710
·20	·25000^{e}	·902,4922	·916,0747	·927,5362	·937,2666	·945,5678	·952,6788	·958,7911
·21	·26582	·908,5623	·921,8353	·932,9655^{-}	·942,3554	·950,3161	·957,0926	·962,8809
·22	·28205^{+}	·914,2687	·927,2165^{-}	·938,0052	·947,0494	·954,6683	·961,1127	·966,5824
·23	·29870	·919,6362	·932,2459	·942,6854	·951,3806	·958,6584	·964,7748^{5}	·969,9328
·24	·31579	·924,6876	·936,9484	·947,0330	·955,3780	·962,3173	·968,1112	·972,9653
·25	·33333	·929,4434	·941,3466	·951,0727	·959,0679	·965,6725^{-}	·971,1506	·975,7099
·26	·35135^{+}	·933,9221	·945,4611	·954,8267	·962,4741	·968,7491	·973,9191	·978,1932
·27	·36986	·938,1410	·949,3108	·958,3154	·965,6182	·971,5700	·976,4404	·980,4395^{+}
·28	·38889	·942,1156	·952,9130	·961,5575^{-}	·968,5201	·974,1558	·978,7358	·982,4706
·29	·40845^{+}	·945,8606	·956,2834	·964,5700	·971,1980	·976,5253	·980,8247	·984,3063
·30	·42857	·949,3892	·959,4369	·967,3689	·973,6684	·978,6960	·982,7249	·985,9643
·31	·44928	·952,7140	·962,3870	·969,9686	·975,9467	·980,6837	·984,4524	·987,4610
·32	·47059	·955,8463	·965,1463	·972,3826	·978,0471	·982,5028	·986,0221	·988,8111
·33	·49254	·958,7969	·967,7266	·974,6234	·979,9824	·984,1668	·987,4473	·990,0280
·34	·51515^{+}	·961,5760	·970,1386	·976,7026	·981,7648	·985,6879	·988,7405^{+}	·991,1239
·35	·53846	·964,1927	·972,3927	·978,6310	·983,4054	·987,0774	·989,9129	·992,1100
·36	·56250^{e}	·966,6560	·974,4984	·980,4186	·984,9146	·988,3458	·990,9750^{-}	·992,9964
·37	·58730	·968,9741	·976,4644	·982,0747	·986,3019	·989,5027	·991,9361	·993,7924
·38	·61290	·971,1546	·978,2993	·983,6080	·987,5762	·990,5570	·992,8050^{+}	·994,5063
·39	·63934	·973,2051	·980,0108	·985,0268	·988,7459	·991,5169	·993,5898	·995,1459
·40	·66667	·975,1322	·981,6063	·986,3385^{+}	·989,8185^{-}	·992,3900	·994,2979	·995,7182
·41	·69492	·976,9426	·983,0926	·987,5505^{-}	·990,8012	·993,1833	·994,9358	·996,2296
·42	·72414	·978,6424	·984,4764	·988,6692	·991,7008	·993,9033	·995,5100	·996,6860
·43	·75439	·980,2374	·985,7637	·989,7011	·992,5233	·994,5560	·996,0260	·997,0927
·44	·78571	·981,7331	·986,9604	·990,6519	·993,2746	·995,1470	·996,4891	·997,4545^{-}
·45	·81818	·983,1348	·988,0718	·991,5272	·993,9601	·995,6814	·996,9042	·997,7758
·46	·85185^{+}	·984,4474	·989,1032	·992,3321	·994,5847	·996,1640	·997,2756	·998,0608
·47	·88679	·985,6757	·990,0594	·993,0714	·995,1532	·996,5992	·997,6075^{-}	·998,3131
·48	·92308	·986,8241	·990,9451	·993,7497	·995,6699	·996,9909	·997,9035^{-}	·998,5359
·49	·96078	·987,8968	·991,7645	·994,3713	·996,1389	·997,3431	·998,1670	·998,7325^{-}
·50	1·00000	·988,8980	·992,5218	·994,9402	·996,5638	·997,6592	·998,4011	·998,9054

TABLE XXV.—(*continued*).

	$n=$ $\frac{1}{2}(n-1)=$	9 4·0	10 4·5	11 5·0	12 5·5	13 6·0	14 6·5	15 7·0
	$B(\frac{1}{2}, \frac{1}{2}(n-1))=$	·9142,8571	·8590,2924	·8126,9841	·7731,2632	·7388,1674	·7086,9912	·6819,8468
x	z^2							
·50	1·00000	·988,8980	·992,5218	·994,9402	·996,5638	·997,6592	·998,4011	·998,9054
·51	1·04081	·989,8316	·993,2209	·995,4601	·996,9484	·997,9423	·998,6088	·999,0573
·52	1·08333	·990,7011	·993,8654	·995,9346	·997,2958	·998,1955+	·998,7927	·999,1903
·53	1·12766	·991,5101	·994,4589	·996,3670	·997,6091	·998,4215−	·998,9550+	·999,3066
·54	1·17391	·992,2620	·995,0047	·996,7604	·997,8911	·998,6227	·999,0981	·999,4080
·55	1·22222	·992,9599	·995,5057	·997,1177	·998,1444	·998,8016	·999,2239	·999,4962
·56	1·27273	·993,6069	·995,9651	·997,4416	·998,3716	·998,9602	·999,3342	·999,5727
·57	1·32558	·994,2059	·996,3856	·997,7348	·998,5749	·999,1005−	·999,4307	·999,6388
·58	1·38095+	·994,7597	·996,7699	·997,9996	·998,7564	·999,2243	·999,5148	·999,6958
·59	1·43902	·995,2708	·997,1204	·998,2383	·998,9180	·999,3333	·999,5880	·999,7448
·60	1·50000	·995,7419	·997,4395−	·998,4530	·999,0616	·999,4289	·999,6515+	·999,7868
·61	1·56410	·996,1753	·997,7294	·998,6456	·999,1889	·999,5127	·999,7064	·999,8226
·62	1·63158	·996,5733	·997,9923	·998,8180	·999,3014	·999,5857	·999,7536	·999,8531
·63	1·70270	·996,9382	·998,2301	·998,9720	·999,4005+	·999,6492	·999,7942	·999,8789
·64	1·77778	·997,2720	·998,4448	·999,1091	·999,4876	·999,7043	·999,8289	·999,9007
·65	1·85714	·997,5767	·998,6380	·999,2308	·999,5638	·999,7518	·999,8584	·999,9190
·66	1·94118	·997,8543	·998,8116	·999,3386	·999,6304	·999,7927	·999,8835−	·999,9343
·67	2·03030	·998,1065−	·998,9669	·999,4336	·999,6882	·999,8278	·999,9046	·999,9470
·68	2·12500	·998,3350+	·999,1057	·999,5172	·999,7383	·999,8577	·999,9224	·999,9576
·69	2·22581	·998,5416	·999,2291	·999,5904	·999,7815+	·999,8831	·999,9372	·999,9662
·70	2·33333	·998,7278	·999,3385+	·999,6543	·999,8186	·999,9045+	·999,9496	·999,9733
·71	2·44828	·998,8951	·999,4352	·999,7099	·999,8503	·999,9225+	·999,9598	·999,9791
·72	2·57143	·999,0449	·999,5203	·999,7579	·999,8773	·999,9376	·999,9682	·999,9837
·73	2·70370	·999,1785−	·999,5949	·999,7993	·999,9001	·999,9501	·999,9750+	·999,9875−
·74	2·84615+	·999,2972	·999,6600	·999,8347	·999,9193	·999,9604^5	·999,9806	·999,9904
·75	3·00000	·999,4023	·999,7165+	·999,8649	·999,9353	·999,9689	·999,9850+	·999,9928
·76	3·16667	·999,4949	·999,7653	·999,8904	·999,9486	·999,9758	·999,9886	·999,9946
·77	3·34783	·999,5761	·999,8072	·999,9119	·999,9595+	·999,9814	·999,9914	·999,9960
·78	3·54545+	·999,6469	·999,8430	·999,9298	·999,9685−	·999,9858	·999,9936	·999,9971
·79	3·76190	·999,7083	·999,8733	·999,9446	·999,9757	·999,9893	·999,9953	·999,9979
·80	4·00000	·999,7612	·999,8988	·999,9568	·999,9815+	·999,9921	·999,9966	·999,9985+
·81	4·26316	·999,8064	·999,9200	·999,9668	·999,9861	·999,9942	·999,9976	·999,9990
·82	4·55556	·999,8448	·999,9376	·999,9748	·999,9898	·999,9958	·999,9983	·999,9993
·83	4·88235+	·999,8771	·999,9520	·999,9811	·999,9926	·999,9971	·999,9988	·999,9995+
·84	5·25000	·999,9040	·999,9636	·999,9861	·999,9947	·999,9980	·999,9992	·999,9997
·85	5·66667	·999,9262	·999,9729	·999,9900	·999,9963	·999,9986	·999,9995−	·999,9998
·86	6·14286	·999,9443	·999,9802	·999,9930	·999,9975−	·999,9991	·999,9997	·999,9999
·87	6·69231	·999,9587	·999,9859	·999,9952	·999,9983	·999,9994	·999,9998	·999,9999
·88	7·33333	·999,9702	·999,9902	·999,9968	·999,9989	·999,9996	·999,9999	1·000,0000
·89	8·09091	·999,9790	·999,9934	·999,9979	·999,9993	·999,9998	·999,9999	
·90	9·00000	·999,9857	·999,9957	·999,9987	·999,9996	·999,9999	1·000,0000	
·91	10·11111	·999,9907	·999,9974	·999,9992	·999,9998	·999,9999		
·92	11·50000	·999,9942	·999,9984^5	·999,9996	·999,9999	1·000,0000		
·93	13·28571	·999,9966	·999,9992	·999,9998	·999,9999			
·94	15·66667	·999,9982	·999,9996	·999,9999	1·000,0000			
·95	19·00000	·999,9991	·999,9998	1·000,0000				
·96	24·00000	·999,9996	·999,9999					
·97	32·33333	·999,9999	1·000,0000					
·98	49·00000	1·000,0000						
·99	99·00000							
1·00	∞							

TABLE XXV.—(*continued*).

	$n=$ $\frac{1}{2}(n-1)=$	16 7·5	17 8·0	18 8·5	19 9·0	20 9·5	21 10·0	22 10·5
$B(\frac{1}{2}, \frac{1}{2}(n-1))=$		·6580,7776	·6365,1904	·6169,4790	·5990,7674	·5826,7301^5	·5675,4639	·5535,3936
x ·00	z^2 ·00000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000
·01	·01010	·648,7191	·653,5039	·658,1140	·662,5644	·666,8679	·671,0359	·675,0782
·02	·02041	·705,8891	·712,1754	·718,2015+	·723,9893	·729,5579	·734,9237	·740,1014
·03	·03093	·746,9108	·754,0578	·760,8738	·767,3869	·773,6213	·779,5979	·785,3355−
·04	·04167	·779,2420	·786,8968	·794,1595−	·801,0635+	·807,6379	·813,9080	·819,8961
·05	·05263	·805,8570	·813,7891	·821,2756	·828,3552	·835,0616	·841,4242	·847,4690
·06	·06383	·828,3252	·836,3720	·843,9267	·851,0331	·857,7294	·864,0489	·870,0211
·07	·07527	·847,6050−	·855,6473	·863,1575+	·870,1845+	·876,7706	·882,9530	·888,7645−
·08	·08696	·864,3378	·872,2865+	·879,6693	·886,5399	·892,9446	·898,9244	·904,5151
·09	·09890	·878,9811	·886,7689	·893,9628	·900,6211	·906,7943	·912,5264	·917,8563
·10	·11111	·891,8758	·899,4520	·906,4120	·912,8183	·918,7250+	·924,1795+	·929,2235−
·11	·12360	·903,2856	·910,6124	·917,3057^5	·923,4323	·929,0497	·934,2081^5	·938,9517
·12	·13636	·913,4195−	·920,4692	·926,8732	·932,7019	·938,0160	·942,8686	·947,3056
·13	·14943	·922,4470	·929,2002	·935,2998	·940,8199	·945,8240	·950,3674	·954,4981
·14	·16279	.930,5081	·936,9517	·942,7383	·947,9448	·952,6376	·956,8737	·960,7029
·15	·17647	·937,7198	·943,8463	·949,3160	·954,2088	·958,5931	·962,5276	·966,0635+
·16	·19048	·944,1812	·949,9875−	·955,1406	·959,7231	·963,8050−	·967,4466	·970,7000
·17	·20482	·949,9774	·955,4636	·960,3036	·964,5820	·968,3702	·971,7298	·974,7131
·18	·21951	·955,1815+	·960,3508	·964,8837	·968,8664	·972,3716	·975,4613	·978,1884
·19	·23457	·959,8572	·964,7151	·968,9489	·972,6460	·975,8800	·978,7132	·981,1987
·20	·25000$^\bullet$	·964,0602	·968,6140	·972,5583	·975,9812	·978,9569	·981,5476	·983,8063
·21	·26582	·967,8395−	·972,0980	·975,7635−	·978,9245−	·981,6552	·984,0178	·986,0647
·22	·28205+	·971,2383	·975,2116	·978,6098	·981,5217	·984,0213	·986,1701	·988,0201
·23	·29870	·974,2951	·977,9939	·981,1370	·983,8130	·986,0953	·988,0448	·989,7123
·24	·31579	·977,0440	·980,4798	·983,3803	·985,8338	·987,9127	·989,6769	·991,1760
·25	·33333	·979,5155+	·982,7002	·985,3710	·987,6152	·989,5042	·991,0967	·992,4410
·26	·35135+	·981,7370	·984,6826	·987,1365+	·989,1847	·990,8971	·992,3311	·993,5335+
·27	·36986	·983,7329	·986,4518	·988,7015−	·990,5665−	·992,1152	·993,4033	·994,4761
·28	·38889	·985,5252	·988,0297	·990,0877	·991,7821	·993,1795+	·994,3337	·995,2884
·29	·40845+	·987,1339	·989,4361	·991,3148	·992,8507	·994,1086	·995,1403	·995,4878
·30	·42857	·988,5767	·990,6887	·992,3999	·993,7891	·994,9187	·995,8387	·996,5891
·31	·44928	·989,8698	·991,8033	·993,3587	·994,6123	·995,6244	·996,4428	·997,1054
·32	·47059	·991,0279	·992,7943	·994,2049	·995,3336	·996,2383	·996,9644	·997,5481
·33	·49254	·992,0641	·993,6745+	·994,9511	·995,9650−	·996,7716	·997,4143	·997,9272
·34	·51515+	·992,9903	·994,4555−	·995,6082	·996,5169	·997,2344	·997,8018	·998,2512
·35	·53846	·993,8174	·995,1476	·996,1862	·996,9986	·997,6353	·998,1349	·998,5276
·36	·56250$^\bullet$	·994,5552	·995,7602^5	·996,6938	·997,4185+	·997,9820	·998,4209	·998,7631
·37	·58730	·995,2126	·996,3019	·997,1392	·997,7840	·998,2815+	·998,6659	·998,9633
·38	·61290	·995,7975+	·996,7800	·997,5292	·998,1016	·998,5397	·998,8754	·999,1332
·39	·63934	·996,3174	·997,2015+	·997,8703	·998,3771	·998,7618	·999,0543	·999,2770
·40	·66667	·996,7787	·997,5726	·998,1680	·998,6156	·998,9526	·999,2067	·999,3985+
·41	·69492	·997,1876	·997,8986	·998,4276	·998,8218	·999,1161	·999,3362	·999,5010
·42	·72414	·997,5494	·998,1847	·998,6534	·998,9997	·999,2560	·999,4461	·999,5871
·43	·75439	·997,8689	·998,4353	·998,8494	·999,1528	·999,3754	·999,5390	·999,6594
·44	·78571	·998,1508	·998,6544	·999,0193	·999,2843	·999,4770	·999,6175−	·999,7199
·45	·81818	·998,3989	·998,8455−	·999,1662	·999,3970	·999,5634	·999,6885+	·999,7704
·46	·85185+	·998,6170	·999,0119	·999,2920	·999,4934	·999,6366	·999,7390	·999,8123
·47	·88679	·998,8082	·999,1565+	·999,4021	·999,5756	·999,6984	·999,7854	·999,8472
·48	·92308	·998,9756	·999,2819	·999,4959	·999.6456	·999,7505+	·999,8242	·999,8760
·49	·96078	·999,1217	·999,3904	·999,5762	·999,7050−	·999,7944	·999,8565−	·999,8998
·50	1·00000	·999,2491	·999,4840	·999,6448	·999,7552	·999,8311	·999,8833	·999,9193

TABLE XXV.—(*continued*).

$n=$		16	17	18	19	20	21	22
$\frac{1}{2}(n-1)=$		7·5	8·0	8·5	9·0	9·5	10·0	10·5
$B(\frac{1}{2}, \frac{1}{2}(n-1))=$		·6580,7776	·6365,1904	·6169,4790	·5990,7674	·5826,7301^{5}	·5675,4639	·5535,3936
x	z^2							
·50	1·00000	·999,2491	·999,4840	·999,6448	·999,7552	·999,8311	·999,8833	·999,9193
·51	1·04081	·999,3599	·999,5645+	·999,7033	·999,7976	·999,8617	·999,9054	·999,9353
·52	1·08333	·999,4559	·999,6337	·999,7530	·999,8332	·999,8872	·999,9237	·999,9483
·53	1·12766	·999,5390	·999,6929	·999,7951	·999,8631	·999,9084	·999,9387	·999,9589
·54	1·17391	·999,6106	·999,7434	·999,8307	·999,8881	·999,9259	·999,9509	·999,9675−
·55	1·22222	·999,6723	·999,7864	·999,8606	·999,9089	·999,9404	·999,9609	·999,9744
·56	1·27273	·999,7252	·999,8229	·999,8857	·999,9261	·999,9522	·999,9690	·999,9799
·57	1·32558	·999,7704	·999,8537	·999,9067	·999,9404	·999,9619	·999,9756	·999,9843
·58	1·38095+	·999,8089	·999,8797	·999,9242	·999,9521	·999,9697	·999,9808	·999,9879
·59	1·43902	·999,8416	·999,9015+	·999,9387	·999,9617	·999,9761	·999,9851	·999,9906
·60	1·50000	·999,8693	·999,9197	·999,9506	·999,9696	·999,9812	·999,9884	·999,9928
·61	1·56410	·999,8927	·999,9349	·999,9605−	·999,9759	·999,9853	·999,9911	·999,9945+
·62	1·63158	·999,9123	·999,9475−	·999,9685+	·999,9811	·999,9886	·999,9932	·999,9959
·63	1·70270	·999,9286	·999,9579	·999,9751	·999,9852	·999,9912	·999,9948	·999,9969
·64	1·77778	·999,9423	·999,9664	·999,9804	·999,9885+	·999,9933	·999,9961	·999,9977
·65	1·85714	·999,9536	·999,9733	·999,9847	·999,9912	·999,9949	·999,9971	·999,9983
·66	1·94118	·999,9629	·999,9790	·999,9881	·999,9932	·999,9962	·999,9978	·999,9988
·67	2·03030	·999,9705+	·999,9836	·999,9908	·999,9949	·999,9971	·999,9984	·999,9991
·68	2·12500	·999,9767	·999,9872	·999,9930	·999,9961	·999,9979	·999,9988	·999,9993
·69	2·22581	·999,9818	·999,9902	·999,9947	·999,9971	·999,9984	·999,9991	·999,9995
·70	2·33333	·999,9858	·999,9925−	·999,9960	·999,9979	·999,9989	·999,9994	·999,9997
·71	2·44828	·999,9891	·999,9943	·999,9970	·999,9984	·999,9992	·999,9996	·999,9998
·72	2·57143	·999,9917	·999,9957	·999,9978	·999,9989	·999,9994	·999,9997	·999,9998
·73	2·70370	·999,9937	·999,9968	·999,9984	·999,9992	·999,9996	·999,9998	·999,9999
·74	2·84615+	·999,9953	·999,9977	·999,9988	·999,9994	·999,9997	·999,9999	·999,9999
·75	3·00000	·999,9965−	·999,9983	·999,9992	·999,9996	·999,9998	·999,9999	1·000,0000
·76	3·16667	·999,9974	·999,9988	·999,9994	·999,9997	·999,9999	·999,9999	
·77	3·34783	·999,9981	·999,9991	·999,9996	·999,9998	·999,9999	1·000,0000	
·78	3·54545+	·999,9987	·999,9994	·999,9997	·999,9999	·999,9999		
·79	3·76190	·999,9991	·999,9996	·999,9998	·999,9999	1·000,0000		
·80	4·00000	·999,9994	·999,9997	·999,9999	·999,9999			
·81	4·26316	·999,9996	·999,9998	·999,9999	1·000,0000			
·82	4·55556	·999,9997	·999,9999	1·000,0000				
·83	4·88235+	·999,9998	·999,9999					
·84	5·25000	·999,9999	1·000,0000					
·85	5·66667	·999,9999						
·86	6·14286	1·000,0000						
·87	6·69231							
·88	7·33333							
·89	8·09091							
·90	9·00000							
·91	10·11111							
·92	11·50000							
·93	13·28571							
·94	15·66667							
·95	19·00000							
·96	24·00000							
·97	32·33333							
·98	49·00000							
·99	99·00000							
1·00	∞							

TABLE XXV.—(*continued*).

	$n=$ $\frac{1}{2}(n-1)=$	23 11·0	24 11·5	25 12·0	26 12·5	27 13·0	28 13·5	29 14·0
	$B(\frac{1}{2}, \frac{1}{2}(n-1))=$	·5405,2037	·5283,7848	·5170,1948	·5063,6271	·4963,3870	·4868,8722	·4779,5579
x	z^2							
·00	·00000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000	·500,0000
·01	·01010	·679,0034	·682,8193	·686,5326	·690,1497	·693,6760	·697,1166	·700,4760
·02	·02041	·745,1036	·749,9419	·754,6265−	·759,1664	·763,5700	·767,8448	·771,9976
·03	·03093	·790,8504	·796,1572	·801,2691	·806,1979	·810,9542	·815,5477	·819,9874
·04	·04167	·825,6221	·831,1037	·836,3566	·841,3951	·846,2322	·850,8797	·855,3482
·05	·05263	·853,2190	·858,6947	·863,9147	·868,8955+	·873,6523	·878,1986	·882,5472
·06	·06383	·875,6721	·881,0251	·886,1012	·890,9191	·895,4961	·899,8475+	·903,9876
·07	·07527	·894,2340	·899,3876	·904,2485−	·908,8376	·913,1738	·917,2745−	·921,1552
·08	·08696	·909,7485+	·914,6530	·919,2540	·923,5744	·927,6348	·931,4538	·935,0485−
·09	·09890	·922,8185−	·927,4435−	·931,7586	·935,7884	·939,5551	·943,0786	·946,3770
·10	·11111	·933,8934	·938,2221	·942,2386	·945,9688	·949,4362	·952,6619	·955,6650−
·11	·12360	·943,3191	·947,3448	·951,0593	·954,4899	·957,6611	·960,5947	·963,3106
·12	·13636	·951,3679	·955,0912	·958,5074	·961,6446	·964,5283	·967,1810	·969,6230
·13	·14943	·958,2584	·961,6852	·964,8115+	·967,6662	·970,2752	·972,6615−	·974,8457
·14	·16279	·964,1685+	·967,3087	·970,1570	·972,7428	·975,0924	·977,2291	·979,1737
·15	·17647	·969,2451	·972,1110	·974,6954	·977,0279	·979,1351	·981,0401	·982,7637
·16	·19048	·973,6101	·976,2160	·978,5520	·980,6480	·982,5303	·984,2219	·985,7435−
·17	·20482	·977,3658	·979,7270	·981,8311	·983,7077	·985,3828	·986,8794	·988,2174
·18	·21951	·980,5987	·982,7311	·984,6198	·986,2942	·987,7798	·989,0990	·990,2713
·19	·23457	·983,3819	·985,3017	·986,9917	·988,4807	·989,7937	·990,9526	·991,9761
·20	·25000^{6}	·985,7780	·987,5011	·989,0085+	·990,3284	·991,4852	·992,4998	·993,3904
·21	·26582	·987,8403	·989,3823	·990,7228	·991,8893	·992,9051	·993,7906	·994,5629
·22	·28205+	·989,6146	·990,9906	·992,1792	·993,2069	·994,0963	·994,8665−	·995,5340
23	·29870	·991,1404	·992,3648	·993,4156	·994,3184	·995,0946	·995,7625−	·996,3376
·24	·31579	·992,4515+	·993,5380	·994,4644	·995,2551	·995,9305−	·996,5079	·997,0018
·25	·33333	·993,5773	·994,5388	·995,3532	·996,0436	·996,6346	·997,1271	·997,5500+
·26	·35135+	·994,5430	·995,3915+	·996,1055−	·996,7067	·997,2135−	·997,6410	·998,0019
·27	·36986	·995,3706	·996,1174	·996,7415+	·997,2635+	·997,7006	·998,0667	·998,3737
·28	·38889	·996,0791	·996,7345+	·997,2786	·997,7305−	·998,1062	·998,4189	·998,6792
·29	·40845+	·996,6847	·997,2585−	·997,7314	·998,1215−	·998,4435+	·998,7097	·998,9297
·30	·42857	·997,2018	·997,7027	·998,1126	·998,4483	·998,7235+	·998,9493	·999,1347
·31	·44928	·997,6426	·998,0787	·998,4329	·998,7210	·998,9555+	·999,1465+	·999,3022
·32	·47059	·998,0179	·998,3964	·998,7017	·998,9482	·999,1474	·999,3084	·999,4387
·33	·49254	·998,3869	·998,6645+	·998,9268^{5}	·999,1371	·999,3057	·999,4410	·999,5497
·34	·51515+	·998,6075−	·998,8903	·999,1150+	·999,2938	·999,4360	·999,5494	·999,6398
·35	·53846	·998,8366	·999,0800	·999,2720	·999,4235−	·999,5432	·999,6378	·999,7127
·36	·56250^{6}	·999,0303	·999,2392	·999,4026	·999,5306	·999,6310	·999,7097	·999,7715−
·37	·58730	·999,1937	·999,3724	·999,5111	·999,6189	·999,7027	·999,7680	·999,8188
·38	·61290	·999,3312	·999,4836	·999,6010	·999,6915−	·999,7613	·999,8152	·999,8568
·39	·63934	·999,4468	·999,5763	·999,6753	·999,7510	·999,8089	·999,8532	·999,8872
·40	·66667	·999,5436	·999,6534	·999,7365+	·999,7996	·999,8475−	·999,8839	·999,9115+
·41	·69492	·999,6245+	·999,7172	·999,7869	·999,8393	·999,8787	·999,9084	·999,9308
·42	·72414	·999,6920	·999,7700	·999,8282	·999,8715+	·999,9039	·999,9280	·999,9461
·43	·75439	·999,7481^{5}	·999,8136	·999,8619	·999,8977	·999,9241	·999,9437	·999,9582
·44	·78571	·999,7947	·999,8494	·999,8895−	·999,9188	·999,9403	·999,9561	·999,9677
·45	·81818	·999,8332	·999,8788	·999,9118	·999,9358	·999,9532	·999,9659	·999,9751
·46	·85185+	·999,8650−	·999,9027	·999,9299	·999,9494	·999,9635+	·999,9736	·999,9809
·47	·88679	·999,8911	·999,9223	·999,9445−	·999,9603	·999,9716	·999,9797	·999,9855−
·48	·92308	·999,9124	·999,9381	·999,9562	·999,9690	·999,9781	·999,9845−	·999,9890
·49	·96078	·999,9299	·999,9509	·999,9656	·999,9759	·999,9831	·999,9881	·999,9917
·50	1·00000	·999,9441	·999,9613	·999,9731	·999,9814	·999,9871	·999,9910	·999,9937

TABLE XXV.—(*continued*).

	$n=$ / $\frac{1}{2}(n-1)=$	23 / 11·0	24 / 11·5	25 / 12·0	26 / 12·5	27 / 13·0	28 / 13·5	29 / 14·0
	$B(\frac{1}{2}, \frac{1}{2}(n-1))=$	·5405,2037	·5283,7848	·5170,1948	·5063,6271	·4963,3870	·4868,8722	·4779,5579
x	z^2							
·50	1·00000	·999,9441	·999,9613	·999,9731	·999,9814	·999,9871	·999,9910	·999,9937
·51	1·04081	·999,9556	·999,9696	·999,9791	·999,9856	·999,9901	·999,9932	·999,9958
·52	1·08333	·999,9649	·999,9762	·999,9838	·999,9890	·999,9925+	·999,9949	·999,9965+
·53	1·12766	·999,9724	·999,9815−	·999,9875+	·999,9916	·999,9944	·999,9962	·999,9974
·54	1·17391	·999,9784	·999,9856	·999,9905−	·999,9936	·999,9958	·999,9972	·999,9981
·55	1·22222	·999,9832	·999,9889	·999,9927	·999,9952	·999,9968	·999,9979	·999,9986
·56	1·27273	·999,9870	·999,9915+	·999,9945−	·999,9964	·999,9977	·999,9985−	·999,9990
·57	1·32558	·999,9899	·999,9935+	·999,9958	·999,9973	·999,9983	·999,9989	·999,9993
·58	1·38095+	·999,9923	·999,9951	·999,9969	·999,9980	·999,9987	·999,9992	·999,9995−
·59	1·43902	·999,9941	·999,9963	·999,9977	·999,9985+	·999,9991	·999,9994	·999,9996
·60	1·50000	·999,9956	·999,9973	·999,9983	·999,9989	·999,9993	·999,9996	·999,9997
·61	1·56410	·999,9967	·999,9980	·999,9988	·999,9992	·999,9995+	·999,9997	·999,9998
·62	1·63158	·999,9975+	·999,9985	·999,9991	·999,9995−	·999,9997	·999,9998	·999,9999
·63	1·70270	·999,9982	·999,9989	·999,9993	·999,9996	·999,9998	·999,9999	·999,9999
·64	1·77778	·999,9986	·999,9992	·999,9995+	·999,9997	·999,9998	·999,9999	1·000,0000
·65	1·85714	·999,9990	·999,9994	·999,9997	·999,9998	·999,9999	·999,9999	
·66	1·94118	·999,9993	·999,9996	·999,9998	·999,9999	·999,9999	1·000,0000	
·67	2·03030	·999,9995−	·999,9997	·999,9998	·999,9999	·999,9999		
·68	2·12500	·999,9996	·999,9998	·999,9999	·999,9999	1·000,0000		
·69	2·22581	·999,9997	·999,9999	·999,9999	1·000,0000			
·70	2·33333	·999,9998	·999,9999	·999,9999				
·71	2·44828	·999,9999	·999,9999	1·000,0000				
·72	2·57143	·999,9999	1·000,0000					
·73	2·70370	·999,9999						
·74	2·84615+	1·000,0000						
·75	3·00000							
·76	3·16667							
·77	3·34783							
·78	3·54545+							
·79	3·76190							
·80	4·00000							
·81	4·26316							
·82	4·55556							
·83	4·88235+							
·84	5·25000							
·85	5·66667							
·86	6·14286							
·87	6·69231							
·88	7·33333							
·89	8·09091							
·90	9·00000							
·91	10·11111							
·92	11·50000							
·93	13·28571							
·94	15·66667							
·95	19·00000							
·96	24·00000							
·97	32·33333							
·98	49·00000							
·99	99·00000							
1·00	∞							

TABLE XXV.—(*continued*).

$n=$ / $\frac{1}{2}(n-1)=$		30 / 14·5	31 / 15·0	Normal Curve
$B(\frac{1}{2}, \frac{1}{2}(n-1))=$		·4694,9840	·4614,7455+	S.D. $= \frac{1}{\sqrt{28}}$
x	z^2			
·00	·00000	·500,0000	·500,0000	·500,0000
·01	·01010	·703,7584	·706,9675+	·702,5733
·02	·02041	·776,0346	·779,9617	·775,1541
·03	·03093	·824,2812	·828,4366	·823,9646
·04	·04167	·859,6477	·863,7871	·859,9564
·05	·05263	·886,7093	·890,6955+	·887,6174
·06	·06383	·907,9293	·911,6846	·909,3682
·07	·07527	·924,8302	·928,3127	·926,7120
·08	·08696	·938,4343	·941,6255−	·940,6649
·09	·09890	·949,4669	·952,3633	·951,9538
·10	·11111	·958,4627	·961,0707	·961,1200
·11	·12360	·965,8267	·968,1592	·968,5777
·12	·13636	·971,8725+	·973,9461	·974,6504
·13	·14943	·976,8464	·978,6801	·979,5952
·14	·16279	·980,9445−	·982,5582	·983,6187
·15	·17647	·984,3242	·985,7378	·986,8879
·16	·19048	·987,1129	·988,3462	·989,5393
·17	·20482	·989,4145−	·990,4861	·991,6847
·18	·21951	·991,3138	·992,2414	·993,4158
·19	·23457	·992,8807	·993,6807	·994,8083
·20	·25000e	·994,1726	·994,8601	·995,9245−
·21	·26582	·995,2369	·995,8257	·996,8159
·22	·28205+	·996,1130	·996,6154	·997,5248
·23	·29870	·996,8333	·997,2606	·998,0860
·24	·31579	·997,4247	·997,7870	·998,5282
·25	·33333	·997,9097	·998,2157	·998,8749
·26	·35135+	·998,3068	·998,5645−	·999,1452
·27	·36986	·998,6313	·998,8476	·999,3547
·28	·38889	·998,8961	·999,0770	·999,5163
·29	·40845+	·999,1118	·999,2626	·999,6400
·30	·42857	·999,2871	·999,4123	·999,7340
·31	·44928	·999,4292	·999,5329	·999,8050−
·32	·47059	·999,5443	·999,6298	·999,8583
·33	·49254	·999,6371	·999,7074	·999,8979
·34	·51515+	·999,7119	·999,7694	·999,9271
·35	·53846	·999,7719	·999,8189	·999,9484

$n=$ / $\frac{1}{2}(n-1)=$		30 / 14·5	31 / 15·0	Normal Curve
$B(\frac{1}{2}, \frac{1}{2}(n-1))=$		·4694,9840	·4614,7455+	S.D. $= \frac{1}{\sqrt{28}}$
x	z^2			
·35	·53846	·999,7719	·999,8189	·999,9484
·36	·56250e	·999,8200	·999,8582	·999,9639
·37	·58730	·999,8584	·999,8893	·999,9750−
·38	·61290	·999,8890	·999,9140	·999,9828
·39	·63934	·999,9133	·999,9333	·999,9884
·40	·66667	·999,9325+	·999,9485+	·999,9922
·41	·69492	·999,9477	·999,9604	·999,9948
·42	·72414	·999,9596	·999,9697	·999,9966
·43	·75439	·999,9689	·999,9769	·999,9978
·44	·78571	·999,9762	·999,9825−	·999,9986
·45	·81818	·999,9819	·999,9867	·999,9992
·46	·85185+	·999,9862	·999,9900	·999,9995−
·47	·88679	·999,9896	·999,9925+	·999,9997
·48	·92308	·999,9922	·999,9944	·999,9998
·49	·96078	·999,9942	·999,9959	·999,9999
·50	1·00000	·999,9957	·999,9970	·999,9999
·51	1·04081	·999,9968	·999,9978	1·000,0000
·52	1·08333	·999,9976	·999,9984	
·53	1·12766	·999,9983	·999,9988	
·54	1·17391	·999,9987	·999,9992	
·55	1·22222	·999,9991	·999,9994	
·56	1·27273	·999,9994	·999,9996	
·57	1·32558	·999,9995+	·999,9997	
·58	1·38095+	·999,9997	·999,9998	
·59	1·43902	·999,9998	·999,9999	
·60	1·50000	·999,9998	·999,9999	
·61	1·56410	·999,9999	·999,9999	
·62	1·63158	·999,9999	1·000,0000	
·63	1·70270	1·000,0000	1·000,0000	

TABLE XXV*bis*. *Values of* $\mathscr{P}_x(n)$ *and* $\delta^2\mathscr{P}_x(n)$ *from* $x=\cdot 00$ *to* ·10.

x	$n=2$	δ^2	$n=3$	δ^2	$n=4$	δ^2	$n=5$	δ^2	$n=6$	δ^2	$n=7$	δ^2
·00	·318,3099	46	·500,0000	0	·636,6198	−32	·750,0000	0	·848,8264	128	·937,5000	375
·01	·318,8428	48	·500,0000	0	·635,5572	−32	·747,5000	0	·844,5886	128	·931,2688	375
·02	·319,3806	50	·500,0000	0	·634,4913	−33	·745,0000	0	·840,3636	128	·925,0750	375
·03	·319,9233	50	·500,0000	0	·633,4222	−33	·742,5000	0	·836,1515−	129	·918,9188	375
·04	·320,4711	51	·500,0000	0	·632,3498	−33	·740,0000	0	·831,9522	129	·912,8000	375
·05	·321,0240	52	·500,0000	0	·631,2741	−34	·737,5000	0	·827,7658	130	·906,7188	375
·06	·321,5821	53	·500,0000	0	·630,1950+	−34	·735,0000	0	·823,5924	130	·900,6750	375
·07	·322,1456	54	·500,0000	0	·629,1125+	−34	·732,5000	0	·819,4320	131	·894,6688	375
·08	·322,7145+	55	·500,0000	0	·628,0266	−35	·730,0000	0	·815,2847	131	·888 7000	375
·09	·323,2889	57	·500,0000	0	·626,9372	−35	·727,5000	0	·811,1505+	132	·882,7688	375
·10	·323,8690	58	·500,0000	0	·625,8443	−36	·725,0000	0	·807,0295−	132	·876,8750	375

x	$n=8$	δ^2	$n=9$	δ^2	$n=10$	δ^2	$n=11$	δ^2	$n=12$	δ^2	$n=13$	δ^2
·00	1·018,5916	763	1·093,7500	1312	1·164,1047	2037	1·230,4688	2953	1·293,4497	4075−	1·353,5156	5415
·01	1·010,1415+	761	1·082,8780	1303	1·150,6250	2015+	1·214,2095−	2911	1·274,2505−	4002	1·331,2258	5299
·02	1·001,7675+	759	1·072,1362	1294	1·137,3468	1994	1·198,2413	2869	1·255,4514	3931	1·309,4659	5186
·03	·993,4694	756	1·061,5239	1284	1·124,2680	1972	1·182,5600	2828	1·237,0455−	3860	1·288,2246	5074
·04	·985,2468	753	1·051,0400	1275	1·111,3864	1951	1·167,1616	2787	1·219,0255	3790	1·267,4907	4964
·05	·977,0995+	750	1·040,6836	1266	1·098,6998	1929	1·152,0419	2746	1·201,3846	3721	1·247,2532	4856
·06	·969,0273	747	1·030,4538	1256	1·086,2062	1908	1·137,1968	2706	1·184,1157	3653	1·227,5014	4750+
·07	·961,0297	745	1·020,3495+	1247	1·073,9033	1887	1·122,6223	2666	1·167,2122	3586	1·208,2245+	4645+
·08	·953,1067	742	1·010,3700	1237	1·061,7891	1865+	1·108,3144	2626	1·150,6672	3519	1·189,4123	4543
·09	·945,2578	739	1·000,5142	1228	1·049,8615−	1844	1·094,2690	2587	1·134,4742	3454	1·171,0543	4441
·10	·937,4828	736	·990,7812	1219	1·038,1182	1823	1·080,4824	2548	1·118,6265+	3389	1·153,1404	4342

x	$n=14$	δ^2	$n=15$	δ^2	$n=16$	δ^2	$n=17$	δ^2	$n=18$	δ^2	$n=19$	δ^2
·00	1·411,0360	6986	1·446,3086	8799	1·519,5773	10866	1·571,0449	13198	1·620,8824	15808	1·669,2352	18698
·01	1·385,5134	6812	1·437,4182	8550−	1·487,1906	10521	1·535,0392	12734	1·581,1403	15195+	1·625,6438	17912
·02	1·360,6719	6642	1·409,3827	8307	1·455,8560	10186	1·500,3070	12284	1·542,9177	14606	1·583,8437	17156
·03	1·336,4947	6476	1·382,1780	8070	1·425,5400	9860	1·466,8031	11848	1·506,1557	14038	1·543,7591	16430
·04	1·312,9651	6313	1·355,7802	7839	1·396,2100	9543	1·434,4841	11426	1·470,7975−	13489	1·505,3176	15731
·05	1·290,0668	6153	1·330,1664	7613	1·367,8343	9234	1·403,3077	11017	1·436,7882	12960	1·468,4491	15060
·06	1·267,7839	5997	1·305,3138	7392	1·340,3820	8934	1·373,2330	10621	1·404,0749	12449	1·433,0868	14416
·07	1·246,1006	5843	1·281,2005−	7177	1·313,8232	8643	1·344,2204	10238	1·372,6065−	11957	1·399,1659	13797
·08	1·225,0017	5693	1·257,8049	6967	1·288,1287	8360	1·316,2317	9867	1·342,3338	11483	1·366,6248	13202
·09	1·204,4720	5546	1·235,1059	6762	1·263,2702	8085−	1·289,2296	9508	1·313,2094	11025+	1·335,4038	12631
·10	1·184,4970	5402	1·213,0832	6562	1·239,2201	7817	1·263,1782	9160	1·285,1876	10585−	1·305,4459	12083

x	$n=20$	δ^2	$n=21$	δ^2	$n=22$	δ^2	$n=23$	δ^2	$n=24$	δ^2	$n=25$	δ^2
·00	1·716,2284	21886	1·761,9705+	25379	1·806,5563	29182	1·850,0690	33310	1·892,5827	37768	1·934,1631	42566
·01	1·668,6793	20891	1·710,3591	24138	1·750,7817	27658	1·790,0339	31458	1·828,1926	35541	1·865,3265−	39913
·02	1·623,2193	19938	1·661,1615+	22955−	1·697,7730	26209	1·733,1444	29704	1·767,3564	33440	1·800,4812	37421
·03	1·579,7531	19026	1·614,2594	21827	1·647,3852	24833	1·679,2253	28044	1·709,8644	31460	1·739,3779	35081
·04	1·538,1894	18152	1·569,5399	20751	1·599,4806	23525+	1·628,1107	26473	1·655,5183	29594	1·681,7828	32884
·05	1·498,4410	17316	1·526,8955−	19725+	1·553,9286	22283	1·579,6433	24988	1·604,1316	27835+	1·627,4760	30822
·06	1·460,4243	16516	1·486,2236	18747	1 510,6049	21104	1·533,6748	23583	1·555,5285	26178	1·576,2515−	28887
·07	1·424,0591	15751	1·447,4264	17816	1·469,3916	19985+	1·490,0645+	22255−	1·509,5432	24619	1·527,9156	27072
·08	1·389,2691	15019	1 410,4108	16928	1·430,1769	18924	1·448,6798	21000	1·466,0199	23150+	1·482,2869	25370
·09	1·355,9809	14319	1·375,0880	16083	1·392,8545−	17917	1·409,3950−	19814	1·424,8115+	21768	1·439,1953	23775+
·10	1·324,1247	13650+	1·341,3735−	15278	1·357,3237	16961	1·372,0916	18693	1·385,7800	20468	1·398,4812	22280

x	$n=26$	δ^2	$n=27$	δ^2	$n=28$	δ^2	$n=29$	δ^2	$n=30$	δ^2	$n=31$	δ^2
·00	1·974,8689	47711	2·014,7532	53212	2·053,8637	59075−	2·092,2437	65310	2·129,9327	71925−	2·166,9667	78923
·01	1·901,4972	44578	1·936,7603	49541	1·971,1660	54805+	2·004,7599	60375−	2·037,5836	66252	2·069,6752	72442
·02	1·832,5834	41647	1·863,7216	46120	1·893,9489	50840	1·923,3135+	55809	1·951,8597	61026	1·979,6279	66493
·03	1·767,8342	38905+	1·795,2948	42932	1·821,8157	47160	1·847,4480	51587	1·872,2384	56213	1·896,2299	61034
·04	1·706,9755+	36341	1·731,1612	39962	1·754,3985−	43744	1·776,7412	47685−	1·798,2384	51780	1·818,9353	56028
·05	1·649,7509	33943	1·671,0237	37196	1·691,3557	40576	1·710,8029	44079	1·729,4164	47701	1·747,2434	51437
·06	1·595,9207	31703	1·614,6059	34622	1·632,3706	37638	1·649,2725+	40748	1·665,3645+	43947	1·680,6952	47229
·07	1·545,2607	29609	1·561,6503	32225+	1·577,1493	34915−	1·591,8169	37672	1·605,7073	40493	1·618,8699	43372
·08	1·497,5617	27654	1·511,9172	29996	1·525,4195−	32390	1·538,1286	34832	1·550,0994	37316	1·561,3818	39838
·09	1·452,6281	25828	1·465,1836	27921	1·476,9286	30050+	1·487,9234	32210	1·498,2231	34395+	1·507,8776	36601
·10	1·410,2772	24123	1·421,2422	25992	1·431,4428	27883	1·440,9392	29799	1·449,7862	31709	1·458,0335−	33636

TABLE XXVI.

To assist in computing the Modal Ordinate of Pearson Types II and VII Curves, and also the Constants of Curves of Frequency in the case of the Correlation Coefficient.

Values of the Integral $q_n = \int_0^{\frac{\pi}{2}} \sin^{n-1}\phi \, d\phi = \int_0^{\frac{\pi}{2}} \cos^{n-1}\phi \, d\phi.$

n	q_n	n	I_n	n	I_n
1	1·5707,9632,68	36	·2103,4114,55	71	·1492,6566,48
2	1·0000,0000,00	37	·2074,4030,47	72	·1482,1822,53
3	·7853,9816,34	38	·2046,5624,97	73	·1471,9253,06
4	·6666,6666,67	39	·2019,8134,93	74	·1461,8783,86
5	·5890,4862,25	40	·1994,0865,35	75	·1452,0344,23
6	·5333,3333,33	41	·1969,3181,56	76	·1442,3866,74
7	·4908,7385,21	42	·1945,4502,78	77	·1432,9287,07
8	·4571,4285,71	43	·1922,4296,29	78	·1423,6543,80
9	·4295,1462,06	44	·1900,2072,49	79	·1414,5578,26
10	·4063,4920,63	45	·1878,7380,46	80	·1405,6334,38
11	·3865,6315,85	46	·1857,9804,21	81	·1396,8758,53
12	·3694,0836,94	47	·1837,8959,15	82	·1388,2799,39
13	·3543,4956,20	48	·1818,4489,23	83	·1379,8407,82
14	·3409,9234,10	49	·1799,6064,16	84	·1371,5536,75
15	·3290,3887,90	50	·1781,3377,19	85	·1363,4141,06
16	·3182,5951,83	51	·1763,6142,88	86	·1355,4177,49
17	·3084,7394,91	52	·1746,4095,29	87	·1347,5604,54
18	·2995,3837,01	53	·1729,6986,29	88	·1339,8382,35
19	·2913,3650,74	54	·1713,4584,06	89	·1332,2472,67
20	·2837,7319,28	55	·1697,6671,73	90	·1324,7838,73
21	·2767,6968,21	56	·1682,3046,16	91	·1317,4445,19
22	·2702,6018,36	57	·1667,3516,87	92	·1310,2258,08
23	·2641,8924,20	58	·1652,7905,00	93	·1303,1244,70
24	·2585,0974,08	59	·1638,6042,44	94	·1296,1373,58
25	·2531,8135,69	60	·1624,7771,02	95	·1289,2614,44
26	·2481,6935,12	61	·1611,2941,74	96	·1282,4938,07
27	·2434,4361,24	62	·1598,1414,12	97	·1275,8316,37
28	·2389,7789,37	63	·1585,3055,58	98	·1269,2722,22
29	·2347,4919,77	64	·1572,7740,88	99	·1262,8129,47
30	·2307,3727,67	65	·1560,5351,59	100	·1256,4512,90
31	·2269,2422,44	66	·1548,5775,63	101	·1250,1848,17
32	·2232,9413,87	67	·1536,8906,87	102	·1244,0111,78
33	·2198,3284,24	68	·1525,4644,65	103	·1237,9281,04
34	·2165,2764,98	69	·1514,2893,53	104	·1231,9334,00
35	·2133,6717,06	70	·1503,3562,85	105	·1226,0249,49

TABLE XXVII. *Values of the Correlation of Standard Deviations in Samples for Different Values of Variates Correlation in a Sampled Normal Population.*

Values of ρ.

n	·0	·1	·2	·3	·4	·5	·6	·7	·8	·9	1·0
2	·0000	·0088	·0352	·0796	·1421	·2239	·3261	·4501	·5988	·7772	1·0000
3	·0000	·0092	·0367	·0828	·1479	·2326	·3376	·4642	·6141	·7905−	1·0000
4	·0000	·0094	·0375+	·0846	·1510	·2371	·3435−	·4712	·6216	·7965+	1·0000
5	·0000	·0095−	·0380	·0857	·1528	·2398	·3470	·4754	·6258	·7999	1·0000
6	·0000	·0096	·0383	·0864	·1540	·2415+	·3493	·4783	·6285−	·8019	1·0000
7	·0000	·0096	·0386	·0870	·1549	·2428	·3510	·4799	·6304	·8032	1·0000
8	·0000	·0097	·0388	·0873	·1556	·2438	·3522	·4813	·6317	·8042	1·0000
9	·0000	·0097	·0389	·0876	·1561	·2445−	·3531	·4823	·6327	·8050−	1·0000
10	·0000	·0097	·0390	·0879	·1565−	·2451	·3538	·4832	·6335+	·8055+	1·0000
11	·0000	·0098	·0391	·0881	·1568	·2455+	·3544	·4838	·6342	·8060	1·0000
12	·0000	·0098	·0392	·0882	·1571	·2459	·3549	·4844	·6347	·8064	1·0000
13	·0000	·0098	·0392	·0884	·1573	·2462	·3553	·4848	·6351	·8067	1·0000
14	·0000	·0098	·0393	·0885+	·1575+	·2465−	·3557	·4852	·6355+	·8069	1·0000
15	·0000	·0098	·0393	·0886	·1577	·2467	·3560	·4856	·6358	·8072	1·0000
16	·0000	·0098	·0394	·0887	·1578	·2469	·3562	·4859	·6361	·8074	1·0000
17	·0000	·0099	·0394	·0888	·1580	·2471	·3564	·4861	·6364	·8075+	1·0000
18	·0000	·0099	·0395−	·0888	·1581	·2473	·3566	·4863	·6366	·8077	1·0000
19	·0000	·0099	·0395−	·0889	·1582	·2474	·3568	·4865+	·6368	·8078	1·0000
20	·0000	·0099	·0395+	·0890	·1583	·2476	·3570	·4867	·6369	·8079	1·0000
21	·0000	·0099	·0395+	·0890	·1584	·2477	·3571	·4869	·6371	·8080	1·0000
22	·0000	·0099	·0396	·0891	·1584	·2478	·3573	·4870	·6372	·8081	1·0000
23	·0000	·0099	·0396	·0891	·1585+	·2479	·3574	·4871	·6374	·8082	1·0000
24	·0000	·0099	·0396	·0891	·1586	·2480	·3575−	·4872	·6375−	·8083	1·0000
25	·0000	·0099	·0396	·0892	·1586	·2481	·3576	·4873	·6376	·8084	1·0000
50	·0000	·0100	·0398	·0896	·1593	·2490	·3588	·4887	·6388	·8092	1·0000
100	·0000	·0100	·0399	·0898	·1597	·2495+	·3594	·4894	·6394	·8096	1·0000
400	·0000	·0100	·0400	·0900	·1599	·2499	·3599	·4899	·6399	·8099	1·0000
ρ^2	·0000	·0100	·0400	·0900	·1600	·2500	·3600	·4900	·6400	·8100	1·0000

TABLE XXVIII. *Values of the Correlation of the Standard Deviation of One Variate with the Correlation of both Variates in Samples of Different Sizes taken from a Normal Population.*

Values of ρ.

Size of Sample.	·0	·1	·2	·3	·4	·5	·6	·7	·8	·9	1·0
2	·0000	·0481	·0958	·1431	·1893	·2340	·2762	·3141	·3438	·3532	·0000
3	·0000	·0581	·1156	·1726	·2284	·2822	·3328	·3779	·4122	·4188	·0000
4	·0000	·0620	·1237	·1847	·2445+	·3026	·3575+	·4073	·4469	·4608	·0000
5	·0000	·0641	·1279	·1911	·2533	·3138	·3717	·4250−	·4696	·4931	·0000
6	·0000	·0654	·1305+	·1952	·2586	·3210	·3809	·4369	·4857	·5179	·4134
7	·0000	·0663	·1323	·1979	·2626	·3260	·3874	·4455−	·4976	·5368	·5069
8	·0000	·0669	·1336	·1998	·2653	·3297	·3922	·4519	·5067	·5512	·5550−
9	·0000	·0674	·1345+	·2013	·2674	·3325−	·3959	·4569	·5137	·5624	·5845+
10	·0000	·0677	·1353	·2025−	·2691	·3347	·3989	·4609	·5194	·5712	·6045+
11	·0000	·0680	·1359	·2034	·2704	·3365−	·4013	·4642	·5240	·5783	·6189
12	·0000	·0683	·1364	·2042	·2715−	·3380	·4033	·4669	·5278	·5841	·6298
13	·0000	·0685−	·1368	·2048	·2724	·3392	·4050−	·4692	·5310	·5888	·6383
14	·0000	·0686	·1372	·2054	·2732	·3403	·4064	·4712	·5338	·5928	·6452
15	·0000	·0688	·1375−	·2059	·2739	·3412	·4077	·4729	·5361	·5962	·6508
16	·0000	·0689	·1377	·2063	·2744	·3420	·4088	·4743	·5381	·5992	·6554
17	·0000	·0690	·1380	·2066	·2750−	·3427	·4097	·4756	·5399	·6017	·6594
18	·0000	·0691	·1382	·2069	·2754	·3434	·4106	·4767	·5414	·6040	·6628
19	·0000	·0692	·1383	·2072	·2758	·3439	·4113	·4777	·5428	·6058	·6657
20	·0000	·0693	·1385+	·2075−	·2762	·3444	·4120	·4786	·5441	·6076	·6683
21	·0000	·0694	·1386	·2077	·2765−	·3448	·4127	·4795−	·5452	·6092	·6706
22	·0000	·0694	·1388	·2079	·2768	·3452	·4131	·4802	·5462	·6105+	·6726
23	·0000	·0695−	·1389	·2081	·2771	·3456	·4136	·4809	·5470	·6118	·6744
24	·0000	·0695+	·1390	·2083	·2773	·3460	·4141	·4815−	·5479	·6130	·6761
25	·0000	·0696	·1391	·2085−	·2775+	·3463	·4145−	·4820	·5487	·6140	·6775+
50	·0000	·0701	·1403	·2104	·2802	·3500+	·4195+	·4886	·5576	·6258	·6936
100	·0000	·0704	·1409	·2112	·2815+	·3518	·4219	·4919	·5617	·6314	·7007
400	·0000	·0706	·1413	·2119	·2825+	·3531	·4237	·4942	·5647	·6350+	·7055
$\rho/\sqrt{2}$	·0000	·0707	·1414	·2121	·2828	·3536	·4243	·4950	·5657	·6364	·7071

TABLE XXIX.

Ratio of Mean S.D. of Arrays in Samples to Array S.D. in Sampled Population.

Size of Sample	Ratio $\bar{\sigma}_{a_1}/\Sigma_{A_1}$	Size of Sample	Ratio $\bar{\sigma}_{a_1}/\Sigma_{A_1}$	Size of Sample	Ratio $\bar{\sigma}_{a_1}/\Sigma_{A_1}$	Size of Sample	Ratio $\bar{\sigma}_{a_1}/\Sigma_{A_1}$
2	·0000	*9*	·8511	*16*	·9189	*23*	·9442
3	·4607	*10*	·8670	*17*	·9238	*24*	·9466
4	·6267	*11*	·8798	*18*	·9282	*25*	·9488
5	·7136	*12*	·8904	*19*	·9321	*50*	·9747
6	·7675⁻	*13*	·8992	*20*	·9356	*100*	·9874
7	·8042	*14*	·9068	*21*	·9388	*200*	·9937
8	·8308	*15*	·9132	*22*	·9416	*400*	·9969

TABLE XXX.

Values of the Ratio $\sigma_{\sigma_{a_1}}/(\sigma_{\sigma_{a_1}})_L$ for Various Sized Samples.

Size of Sample	Ratio	Size of Sample	Ratio	Size of Sample	Ratio	Size of Sample	Ratio
2	·0000	*9*	·9808	*16*	·9907	*23*	·9939
3	·8525⁺	*10*	·9834	*17*	·9914	*24*	·9942
4	·9265⁺	*11*	·9853	*18*	·9919	*25*	·9944
5	·9524	*12*	·9868	*19*	·9924	*50*	·9974
6	·9651	*13*	·9881	*20*	·9928	*100*	·9987
7	·9725⁺	*14*	·9891	*21*	·9932	*200*	·9990
8	·9774	*15*	·9900	*22*	·9936	*400*	·9997

$\bar{\sigma}_{a_1}$ = Mean Standard Deviation of Arrays in Samples.

$\sigma_{\sigma_{a_1}}$ = Standard Deviation of Standard Deviations of Arrays in Samples.

Σ_{A_1} = Standard Deviation of Array in Parent Population $= \Sigma_1\sqrt{1-\rho^2}$.

$(\sigma_{\sigma_{a_1}})_L$ = the value of $\sigma_{\sigma_{a_1}}$ in large Samples $= \Sigma_1\sqrt{1-\rho^2}/\sqrt{2n}$.

TABLE XXXI. *Constants of the Coefficient of Correlation Curves.*

TABLE XXXI[a]. *Samples of Two.*

ρ, value of correlation in sampled population	$\bar{r}$, mean correlation of samples	σ_r	β_1	β_2	Number of positive correlations per 1000 samples	Number of negative correlations per 1000 samples
0·0	0	1	0	1	500·000	500·000
0·1	·063,7686	·997,965	·016,332	1·016,332	531·884	468·116
0·2	·128,1884	·991,750	·066,827	1·066,827	564·094	435·906
0·3	·193,9734	·981,007	·156,387	1·156,387	596·987	403·013
0·4	·261,9798	·965,007	·294,764	1·294,764	630·990	369·010
0·5	·333,3333	·942,809	·500,000	1·500,000	666·667	333·333
0·6	·409,6655	·912,236	·806,686	1·806,686	704·833	295·167
0·7	·493,6334	·869,670	1·288,724	2·288,724	746·817	253·183
0·8	·590,3345	·807,164	2·139,534	3·139,534	795·167	204·833
0·9	·712,8674	·701,299	4·133,056	5·133,056	856·434	143·566
1·0	1·000,0000	·000,000	∞	∞	1,000·000	·000,000

TABLE XXXI[b]. *Samples of Three.*

ρ, value of correlation in sampled population	$\bar{r}$, mean correlation of samples	$\check{r}$, antimode of samples	σ_r	β_1	β_2	Number of positive correlations per 1000 samples	Number of negative correlations per 1000 samples
0·0	·0000,0000	·000,0000	·707,1068	·000,0000	1·500,0000	500	500
0·1	·0786,3836	−·151,2541	·704,5029	·028,0136	1·532,3082	550	450
0·2	·1578,7706	−·275,5141	·696,5708	·115,2406	1·632,9424	600	400
0·3	·2383,6407	−·367,9037	·682,9273	·272,2374	1·814,1763	650	350
0·4	·3208,5431	−·435,4082	·662,8536	·520,5707	2·101,1480	700	300
0·5	·4062,9889	−·485,5321	·635,1363	·901,7817	2·542,3242	750	250
0·6	·4960,0160	−·523,8811	·597,7313	1·500,1840	3·236,2938	800	200
0·7	·5919,3885	−·553,8751	·546,9866	2·510,5375	4·411,4204	850	150
0·8	·6975,5118	−·577,9216	·475,4818	4·503,0667	6·738,8238	900	100
0·9	·8204,3635	−·597,5916	·363,4654	10·222,6204	13·467,2160	950	50
0·95	·8742,5455	−·606,1358	·268,4676	21·078,0376	26·340,9890	975	25
1·00	1·0000,0000	−·613,9616	·000,0000	∞	∞	1,000	0

TABLE XXXI[c]. *Samples of Four.*

ρ, value of correlation of sampled population	$\bar{r}$, mean value of correlation in samples	μ_3, 3rd moment coefficient	σ_r	Usual value assumed for σ_r, i.e. $\dfrac{1-\rho^2}{\sqrt{n-1}}$	β_1	β_2	β_2/β_1
0·0	0	0	·577,3503	·577,3503	0	1·800,000	∞
0·1	·084,9678	−·033,6268	·574,5653	·571,5768	·031,429	1·839,929	58·5418
0·2	·170,4532	−·065,2863	·566,0965	·554,2563	·129,510	1·964,665	15·1700
0·3	·257,0089	−·092,9620	·551,5835	·525,3887	·306,862	2·190,708	7·1391
0·4	·345,2652	−·114,5383	·530,3576	·484,9742	·589,510	2·552,205	4·3294
0·5	·435,9911	−·127,7520	·501,3081	·433,0127	1·028,270	3·116,256	3·0306
0·6	·530,1976	−·130,1567	·462,6087	·369,5042	1·728,423	4·022,982	2·3275
0·7	·629,3378	−·119,1407	·411,1087	·294,4486	2·940,226	5·609,288	1·9078
0·8	·735,7362	−·092,1708	·340,7311	·207,8461	5·428,946	8·922,221	1·6435
0·9	·853,9806	−·048,1281	·236,6586	·109,6966	13·184,043	19·571,006	1·4844
0·95	·920,8889	−·021,4678	·157,7942	·056,2917	29·8558	43·4082	1·4539
0·98	·965,7599	−·006,4363	·088,2666	·022,8631	87·5994	130·1935	1·4862
0·99	·982,1321	−·002,4358	·055,4859	·011,4893	203·3250	311·7316	1·5332
1·00	1	0	0	0	∞	∞	1·8305†

TABLE XXXI[d]. *Values of the Frequency Constants for the Correlation in Samples of* 25.

ρ	$\bar{r}$ mean	Actual $\check{r}$ mode	$\check{r}$ from Pearson's formula*	Actual σ	$\frac{1-\rho^2}{\sqrt{n-1}}$	β_1	β_2
0·0	0	0	0	·2041,241	·2041,241	0	2·769,2305
0·1	·0979,577	·11173	·11127	·2022,954	·2020,829	·012,3106	2·791,6002
0·2	·1960,288	·22258	·22177	·1967,883	·1959,592	·049,8655	2·860,0511
0·3	·2943,287	·33172	·33090	·1875,386	·1857,530	·114,6242	2·978,8302
0·4	·3929,765	·43840	·43758	·1744,356	·1714,643	·210,1771	3·155,8537
0·5	·4920,974	·54197	·54149	·1573,152	·1530,931	·342,3386	3·404,2283
0·6	·5918,251	·64194	·64190	·1359,499	·1306,395	·520,2635	3·745,3432
0·7	·6923,054	·73792	·73826	·1100,322	·1041,033	·758,5549	4·214,8982
0·8	·7937,001	·82966	·83025	·0791,481	·0734,847	1·081,1286	4·869,2635
0·9	·8961,933	·91703	·91736	·0427,345	·0387,836	1·533,4124	5·858,3872
1·0	1	1	1	0	0	∞	∞

TABLE XXXI[e]. *Values of the Frequency Constants for the Correlation in Samples of* 50.

ρ	$\bar{r}$ mean	Actual $\check{r}$ mode	$\check{r}$ from Pearson's formula*	Actual σ	$\frac{1-\rho^2}{\sqrt{n-1}}$	β_1	β_2
0·0	0	0	0	·142,857	·142,857	0	2·88236
0·1	·098,995	·1054	·1053	·141,505	·141,429	·00666	2·89184
0·2	·198,047	·2104	·2102	·137,439	·137,143	·02683	2·93350
0·3	·297,218	·3147	·3144	·130,634	·130,000	·06107	2·99909
0·4	·396,565	·4180	·4177	·121,049	·120,000	·11041	3·09417
0·5	·496,150	·5198	·5196	·108,620	·107,143	·17635	3·22240
0·6	·596,038	·6201	·6199	·093,260	·091,429	·26110	3·38912
0·7	·696,295	·7184	·7183	·074,878	·072,857	·36774	3·60222
0·8	·796,989	·8146	·8146	·053,324	·051,429	·50037	3·87312
0·9	·898,198	·9085	·9085	·028,434	·027,143	·66608	4·22186
1·0	1	1	1	0	0	∞	∞

TABLE XXXI[f]. *Values of the Frequency Constants for the Correlation in Samples of* 100.

ρ	$\bar{r}$ mean	Actual $\check{r}$ mode	$\check{r}$ from Pearson's formula*	Actual σ	$\frac{1-\rho^2}{\sqrt{n-1}}$	β_1	β_2
0·0	0	0	0	·100,5038	·100,5038	0	2·94060
0·1	·099,5016	·10258	·10255	·099,5260	·099,4987	·00346	2·94736
0·2	·199,0319	·20499	·20494	·096,5887	·096,4836	·01390	2·96774
0·3	·298,6219	·30708	·30701	·091,6832	·091,4584	·03147	3·00213
0·4	·398,3013	·40868	·40860	·084,7934	·084,4232	·05644	3·05118
0·5	·498,1002	·50964	·50957	·075,8968	·075,3778	·08919	3·11583
0·6	·598,0498	·60982	·60976	·064,9640	·064,3224	·13025	3·19739
0·7	·698,1815	·70907	·70903	·051,9577	·051,2569	·18031	3·29767
0·8	·798,5279	·80726	·80724	·036,8329	·036,1814	·24027	3·41896
0·9	·899,1225	·90427	·90423	·019,5352	·019,0957	·31148	3·57898
1·0	1	1	1	0	0	∞	∞

* $\check{r} = \bar{r} + \mu_3(\beta_2 + 3)/\{\mu_2(10\beta_2 - 12\beta_1 - 18)\}$.

TABLE XXXI[g]. *Values of the Frequency Constants for the Correlation in Samples of* 200.

ρ	$\bar{r}$ mean	Actual $\check{r}$ mode	$\check{r}$ from Pearson's formula*	Actual σ	$\frac{1-\rho^2}{\sqrt{n-1}}$	β_1	β_2
0·0	0	0	0	·070,888	·070,888	0	2·9701
0·1	·099,752	·1013	·1013	·070,189	·070,179	·00177	2·9736
0·2	·199,518	·2024	·2024	·068,090	·068,053	·00708	2·9841
0·3	·299,314	·3035−	·3035−	·064,588	·064,508	·01597	3·0017
0·4	·399,155+	·4043	·4042	·059,677	·059,546	·02851	3·0266
0·5	·499,056	·5048	·5047	·053,349	·053,166	·04481	3·0590
0·6	·599,032	·6049	·6048	·045,594	·045,368	·06498	3·0992
0·7	·699,099	·7045−	·7045−	·036,398	·036,153	·08919	3·1477
0·8	·799,272	·8036	·8036	·025,747	·025,520	·11765	3·2049
0·9	·899,567	·9021	·9021	·013,621	·013,469	·15059	3·2729
1·0	1·0	1·0	1·0	0	0	∞	∞

TABLE XXXI[h]. *Values of the Frequency Constants for the Correlation in Samples of* 400.

ρ	$\bar{r}$ mean	Actual $\check{r}$ mode	$\check{r}$ from Pearson's formula*	Actual σ	$\frac{1-\rho^2}{\sqrt{n-1}}$	β_1	β_2
0·0	0	0	0	·0500,626	·0500,626	0	2·9850
0·1	·0998,760	·1006,250	·1006,232	·0495,654	·0495,620	·00089	2·9868
0·2	·1997,595	·2012,116	·2012,082	·0480,733	·0480,601	·00357	2·9921
0·3	·2996,579	·3017,217	·3017,171	·0455,851	·0455,570	·00804	3·0010
0·4	·3995,788	·4021,171	·4021,115	·0420,988	·0420,526	·01433	3·0138
0·5	·4995,297	·5023,602	·5023,584	·0376,115	·0375,470	·02250	3·0297
0·6	·5995,181	·6024,134	·6024,089	·0321,195	·0320,401	·03245	3·0498
0·7	·6995,517	·7022,401	·7022,386	·0256,183	·0255,319	·04435	3·0725
0·8	·7996,380	·8018,037	·8018,013	·0181,023	·0180,255	·05820	3·1017
0·9	·8997,849	·9010,725	·9010,668	·0095,653	·0095,119	·07402	3·1342
1·0	1	1	1	0	0	∞	∞

* $\check{r} = \bar{r} + \mu_3 (\beta_2 + 3)/\{\mu_2 (10\beta_2 - 12\beta_1 - 18)\}$.

TABLE XXXII.

Distribution of Correlation Coefficient in Small Samples. Ordinates and Constants of Frequency Curves.*

$n = 3$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
− *·95*	1019·41	874·99	744·21	624·87	515·25	413·97	319·92	232·19	150·04	72·82
− *·90*	730·25	631·33	540 26	456·01	377·73	304·70	236·31	172·05	111·49	54·25
− *·85*	604·25	526·19	453·08	384·48	319·97	259·17	201·74	147·37	95·78	46·73
− *·80*	530·52	465·35	403·21	344·03	287·69	234·02	182·85	134·03	87·38	42·75
− *·75*	481·24	425·22	370·79	318·13	267·34	218·43	171·35	126·04	82·44	40·45
− *·70*	445·72	396·74	348·18	300·44	253·76	208·27	164·05	121·12	79·49	39·12
− *·65*	418·87	375·59	331·78	287·95	244·48	201·60	159·47	118·20	77·84	38·44
− *·60*	397·89	359·43	319·60	279·03	238·18	197·36	156·81	116·70	77·14	38·22
− *·55*	381·13	346·87	310·50	272·73	234·08	194·94	155·60	116·29	77·18	38·38
− *·50*	367·55	337·02	303·74	268·44	231·71	193·97	155·57	116·79	77·82	38·85
− *·45*	356·44	329·29	298·82	265·77	230·74	194·20	156·54	118·06	79·02	39·61
− *·40*	347·30	323·28	295·41	264·44	230·97	195·48	158·40	120·05	80·72	40·63
− *·35*	339·80	318·70	293·29	264·28	232·26	197·72	161·09	122·71	82·91	41·93
− *·30*	333·68	315·35	292·30	265·17	234·53	200·85	164·58	126·05	85·60	43·51
− *·25*	328·75	313·08	292·30	267·01	237·71	204·86	168·86	130·08	88·82	45·38
− *·20*	324·87	311·77	293·24	269·76	241·79	209·74	173·97	134·82	92·59	47·57
− *·15*	321·95	311·36	295·05	273·39	246·77	215·51	179·94	140·33	96·98	50·12
− *·10*	319·91	311·80	297·71	277·91	252·66	222·22	186·82	146·69	102·04	53·08
− *·05*	318·71	313·06	301·21	283·32	259·51	229·93	194·72	153·99	107·88	56·51
·00	318·31	315·13	305·58	289·66	267·38	238·73	203·72	162·34	114·59	60·48
+ *·05*	318·71	318·02	310·83	296·99	276·35	248·73	213·97	171·89	122·33	65·09
+ *·10*	319·91	321·75	317·02	305·38	286·51	260·05	225·63	182·84	131·27	70·48
+ *·15*	321·95	326·39	324·22	314·94	298·02	272·89	238·91	195·41	141·63	76·79
+ *·20*	324·87	331·99	332·52	325·79	311·04	287·45	254·08	209·89	153·71	84·24
+ *·25*	328·75	338·66	342·06	338·10	325·78	304·00	271·45	226·66	167·88	93·11
+ *·30*	333·68	346·53	353·00	352·08	342·52	322·88	291·45	246·18	184·60	103·75
+ *·35*	339·80	355·76	365·56	368·00	361·58	344·53	314·60	269·08	204·53	116·66
+ *·40*	347·30	366·59	380·02	386·21	383·43	369·48	341·59	296·15	228·52	132·54
+ *·45*	356·44	379·33	396·75	407·18	408·63	398·48	373·30	328·48	257·73	152·34
+ *·50*	367·55	394·39	416·27	431·53	437·95	432·48	410·96	367·53	293·80	177·48
+ *·55*	381·13	412·36	439·27	460·12	472·45	472·82	456·23	415·36	339·09	210·05
+ *·60*	397·89	434·08	466·77	494·15	513·63	521·35	511·47	474·92	397·07	253·32
+ *·65*	418·87	460·81	500·25	535·44	563·68	580·81	580·15	550·63	473·12	312·61
+ *·70*	445·72	494·50	542·05	586·77	626·01	655·44	667·63	649·38	575·90	396·99
+ *·75*	481·24	538·43	596·05	652·77	706·23	752·17	782·72	782·63	720·25	523·20
+ *·80*	530·52	598·63	669·27	741·91	814·50	883·48	941·21	971·06	933·85	724·94
+ *·85*	604·25	687·68	776·82	871·73	971·83	1074·99	1175·29	1256·88	1274·71	1079·64
+ *·90*	730·25	838·25	956·77	1087·46	1232·06	1391·88	1566·09	1745·85	1890·70	1804·95
+ *·95*	1019·41	1180·31	1361·48	1568·00	1806·93	2088·24	2426·12	2839·55	3341·78	3802·31
+ *1·00*	∞	∞	∞	∞	∞	∞	∞	∞	∞	∞
Mean	·0000	·0786	·1579	·2384	·3209	·4063	·4960	·5919	·6976	·8204
Antimode	− ·0000	− ·1513	− ·2755	− ·3679	− ·4354	− ·4855	− ·5239	− ·5539	− ·5779	− ·5976
σ	·7071	·7045	·6966	·6829	·6629	·6351	·5977	·5470	·4755	·3635
$(1-\rho^2)/\sqrt{n-1}$	·7071	·7000	·6788	·6435	·5940	·5303	·4525	·3606	·2546	·1344
β_1	·0000	·0280	·1152	·2722	·5206	·9018	1·5002	2·5105	4·5031	10·2226
β_2	1·5000	1·5323	1·6329	1·8142	2·1011	2·5423	3·2363	4·4114	6·7388	13·4672

* In all cases the total frequency of the curve is taken as 1000.

TABLE XXXII.—(*continued*).

$n = 4$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	500·00	386·33	295·47	222·28	163·11	115·34	77·06	46·93	24·03	8·02
− *·95*	500·00	390·84	301·85	228·97	169·22	120·41	80·89	49·50	25·46	8·53
− *·90*	500·00	395·43	308·42	235·94	175·66	125·79	84·99	52·27	27·01	9·09
− *·85*	500·00	400·09	315·19	243·21	182·44	131·52	89·38	55·26	28·69	9·69
− *·80*	500·00	404·83	322·17	250·79	189·59	137·61	94·10	58·49	30·52	10·36
− *·75*	500·00	409·64	329·36	258·71	197·13	144·10	99·16	61·99	32·51	11·08
− *·70*	500·00	414·54	336·78	266·97	205·09	151·02	104·61	65·79	34·69	11·89
− *·65*	500·00	419·52	344·44	275·61	213·51	158·41	110·48	69·92	37·08	12·77
− *·60*	500·00	424·58	352·34	284·64	222·42	166·31	116·82	74·41	39·70	13·75
− *·55*	500·00	429·73	360·49	294·09	231·85	174·77	123·68	79·32	42·58	14·83
− *·50*	500·00	434·96	368·90	303·97	241·84	183·84	131·10	84·68	45·76	16·04
− *·45*	500·00	440·28	377·59	314·32	252·44	193·57	139·16	90·56	49·28	17·39
− *·40*	500·00	445·69	386·57	325·17	263·69	204·03	147·92	97·03	53·19	18·90
− *·35*	500·00	451·20	395·84	336·54	275·65	215·29	157·46	104·15	57·54	20·59
− *·30*	500·00	456·80	405·43	348·48	288·38	227·44	167·88	112·01	62·40	22·51
− *·25*	500·00	462·50	415·34	361·01	301·94	240·55	179·28	120·72	67·85	24·68
− *·20*	500·00	468·30	425·59	374·17	316·40	254·74	191·79	130·41	73·98	27·16
− *·15*	500·00	474·19	436·20	388·01	331·84	270·11	205·53	141·20	80·91	29·99
− *·10*	500·00	480·20	447·17	402·57	348·34	286·81	220·69	153·27	88·77	33·25
− *·05*	500·00	486·30	458·53	417·89	366·00	304·96	237·43	166·83	97·73	37·02
·00	500·00	492·52	470·30	434·04	384·94	324·76	256·00	182·11	108·00	41·41
+ *·05*	500·00	498·85	482·49	451·07	405·26	346·38	276·64	199·40	119·83	46·56
+ *·10*	500·00	505·29	495·13	469·04	427·09	370·06	299·67	219·05	133·53	52·64
+ *·15*	500·00	511·84	508·23	488·02	450·60	396·04	325·45	241·50	149·52	59·89
+ *·20*	500·00	518·52	521·81	508·08	475·94	424·63	354·41	267·28	168·29	68·60
+ *·25*	500·00	525·31	535·90	529·31	503·31	456·16	387·08	297·05	190·49	79·17
+ *·30*	500·00	532·23	550·53	551·79	532·91	491·05	424·09	331·63	216·99	92·15
+ *·35*	500·00	539·28	565·72	575·62	564·99	529·75	466·20	372·07	248·90	108·29
+ *·40*	500·00	546·46	581·49	600·89	599·81	572·82	514·35	419·70	287·74	128·65
+ *·45*	500·00	553·77	597·89	627·74	637·68	620·92	569·71	476·24	335·53	154·74
+ *·50*	500·00	561·22	614·93	656·28	678·96	674·81	633·70	543·96	395·13	188·83
+ *·55*	500·00	568·81	632·65	686·66	724·05	735·44	708·15	625·86	470·54	234·34
+ *·60*	500·00	576·54	651·09	719·03	773·41	803·91	795·33	725·97	567·57	296·69
+ *·65*	500·00	584·41	670·29	753·55	827·57	881·57	898·20	849·83	694·88	384·78
+ *·70*	500·00	592·44	690·28	790·43	887·15	970·08	1020·55	1005·20	865·74	514·05
+ *·75*	500·00	600·62	711·11	829·86	952·87	1071·44	1167·38	1203·12	1101·28	712·86
+ *·80*	500·00	608·96	732·82	872·07	1025·55	1188·16	1345·36	1459·79	1436·61	1037·65
+ *·85*	500·00	617·46	755·47	917·33	1106·18	1323·35	1563·48	1799·62	1933·28	1612·67
+ *·90*	500·00	626·13	779·10	965·92	1195·91	1480·93	1834·16	2260·62	2706·28	2751·97
+ *·95*	500·00	634·97	803·76	1018·17	1296·08	1665·90	2174·80	2904·38	3989·04	5425·82
+ *1·00*	500·00	643·98	829·53	1074·43	1408·32	1884·66	2610·44	3835·42	6309·30	13781·45
Mean	·0000	·0850	·1705	·2570	·3453	·4360	·5302	·6293	·7357	·8540
Mode	Non-existent									
σ	·5774	·5746	·5661	·5516	·5304	·5013	·4626	·4111	·3407	·2367
$(1-\rho^2)/\sqrt{n-1}$	·5774	·5716	·5543	·5254	·4850	·4330	·3695	·2944	·2078	·1097
β_1	·0000	·0314	·1295	·3069	·5895	1·0283	1·7284	2·9402	5·4289	13·1840
β_2	1·8000	1·8399	1·9647	2·1907	2·5522	3·1163	4·0230	5·6093	8·9222	19·5710

TABLE XXXII.—(*continued*).

$n = 5$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	198·78	141·35	99·03	67·80	44·87	28·25	16·49	8·50	3·48	·80
− *·90*	277·50	200·54	142·43	98·66	65·96	41·90	24·65	12·79	5·27	1·22
− *·85*	335·36	246·33	177·39	124·35	84·01	53·86	31·94	16·70	6·92	1·62
− *·80*	381·97	285·19	208·27	147·80	100·93	65·32	39·06	20·58	8·59	2·02
− *·75*	421·08	319·60	236·74	170·10	117·44	76·75	46·30	24·59	10·33	2·45
− *·70*	454·64	350·80	263·63	191·85	133·96	88·43	53·84	28·82	12·20	2·91
− *·65*	483·79	379·53	289·41	213·36	150·72	100·55	61·79	33·37	14·24	3·42
− *·60*	509·30	406·24	314·40	234·88	167·91	113·24	70·28	38·30	16·48	3·99
− *·55*	531·68	431·25	338·80	256·56	185·68	126·63	79·40	43·68	18·96	4·62
− *·50*	551·33	454·76	362·75	278·52	204·14	140·84	89·26	49·59	21·72	5·34
− *·45*	568·52	476·92	386·34	300·86	223·41	156·00	99·98	56·12	24·82	6·16
− *·40*	583·47	497·83	409·64	323·65	243·58	172·23	111·67	63·37	28·32	7·10
− *·35*	596·35	517·56	432·68	346·96	264·76	189·65	124·47	71·45	32·27	8·17
− *·30*	607·30	536·16	455·50	370·82	287·04	208·40	138·53	80·49	36·78	9·41
− *·25*	616·40	553·64	478·09	395·29	310·51	228·62	154·02	90·65	41·92	10·86
− *·20*	623·76	570·02	500·44	420·38	335·28	250·49	171·14	102·08	47·83	12·54
− *·15*	629·42	585·27	522·52	446·12	361·44	274·17	190·10	115·02	54·64	14·52
− *·10*	633·43	599·37	544·31	472·50	389·09	299·86	211·15	129·71	62·54	16·86
− *·05*	635·82	612·28	565·73	499·53	418·31	327·76	234·60	146·44	71·74	19·65
·00	636·62	623·95	586·71	527·18	449·20	358·10	260·76	165·58	82·51	22·98
+ *·05*	635·82	634·31	607·16	555·41	481·84	391·13	290·03	187·57	95·19	27·01
+ *·10*	633·43	643·27	626·97	584·15	516·30	427·11	322·86	212·91	110·22	31·91
+ *·15*	629·42	650·74	645·99	613·31	552·65	466·33	359·76	242·26	128·14	37·93
+ *·20*	623·76	656·59	664·06	642·76	590·91	509·09	401·33	276·40	149·65	45·39
+ *·25*	616·40	660·68	680·97	672·33	631·08	555·72	448·27	316·29	175·68	54·74
+ *·30*	607·30	662·86	696·46	701·77	673·11	606·51	501·37	363·13	207·42	66·60
+ *·35*	596·35	662·91	710·24	730·79	716·87	661·77	561·55	418·41	246·48	81·84
+ *·40*	583·47	660·60	721·95	758·98	762·14	721·75	629·83	483·98	295·00	101·75
+ *·45*	568·52	655·66	731·14	785·81	808·54	786·62	707·37	562·17	355·92	128·18
+ *·50*	551·33	647·74	737·25	810·60	855·49	856·39	795·39	655·88	433·30	163·98
+ *·55*	531·68	636·41	739·59	832·42	902·10	930·77	895·14	768·74	532·81	213·57
+ *·60*	509·30	621·15	737·29	850·06	947·05	1009·03	1007·71	905·20	662·54	284·13
+ *·65*	483·79	601·26	729·21	861·85	988·36	1089·62	1133·68	1070·61	834·18	387·69
+ *·70*	454·64	575·83	713·82	865·50	1023·03	1169·66	1272·51	1270·96	1064·70	545·45
+ *·75*	421·08	543·59	689·01	857·73	1046·50	1243·92	1421·02	1511·86	1378·85	796·89
+ *·80*	381·97	502·63	651·67	833·60	1051·45	1302·93	1570·47	1795·27	1811·55	1220·21
+ *·85*	335·36	449·87	596·86	785·20	1025·58	1328·96	1699·62	2109·71	2406·01	1981·91
+ *·90*	277·50	379·52	515·46	698·04	945·84	1286·02	1756·53	2398·74	3182·44	3457·80
+ *·95*	198·78	277·21	385·59	538·03	757·76	1085·21	1595·22	2436·67	3917·02	6392·40
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0884	·1773	·2671	·3584	·4517	·5480	·6482	·7541	·8687
Mode	·0000	·3264	·5520	·6936	·7863	·8500	·8965	·9318	·9595	·9817
σ	·5000	·4972	·4886	·4740	·4528	·4239	·3858	·3358	·2691	·1748
$(1-\rho^2)/\sqrt{n-1}$	·5000	·4950	·4800	·4550	·4200	·3750	·3200	·2550	·1800	·0950
β_1	·0000	·0315	1299	·3077	·5909	1·0315	1·7297	2·9374	5·4065	13·0290
β_2	2·0000	2·0429	2·1769	2·4201	2·8097	3·4191	4·4027	6·1333	9·7830	21·7579

TABLE XXXII.—(*continued*).

$n = 6.$ ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
– *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
– *·95*	73·125	47·28	30·03	18·55	10·99	6·12	3·10	1·35	·44	·07
– *·90*	142·500	94·07	60·81	38·13	22·88	12·89	6·60	2·89	·95	·15
– *·85*	208·125	140·28	92·30	58·76	35·74	20·37	10·54	4·66	1·54	·25
– *·80*	270·000	185·83	124·49	80·50	49·64	28·64	14·97	6·68	2·23	·36
– *·75*	328·125	230·63	157·34	103·38	64·65	37·76	19·96	9·00	3·03	·50
– *·70*	382·500	274·58	190·82	127·43	80·85	47·84	25·59	11·66	3·96	·66
– *·65*	433·125	317·59	224·87	152·69	98·33	58·96	31·92	14·71	5·05	·85
– *·60*	480·000	359·54	259·44	179·18	117·16	71·24	39·06	18·20	6·32	1·07
– *·55*	523·125	400·33	294·48	206·94	137·45	84·78	47·09	22·22	7·79	1·33
– *·50*	562·500	439·82	329·89	235·97	159·29	99·73	56·16	26·83	9·52	1·64
– *·45*	598·125	477·89	365·60	266·29	182·79	116·21	66·38	32·13	11·55	2·02
– *·40*	630·000	514·41	401·49	297·90	208·03	134·39	77·92	38·25	13·93	2·46
– *·35*	658·125	549·23	437·46	330·80	235·13	154·44	90·95	45·31	16·73	3·00
– *·30*	682·500	582·20	473·37	364·95	264·20	176·55	105·68	53·47	20·03	3·64
– *·25*	703·125	613·16	509·07	400·33	295·32	200·93	122·35	62·92	23·94	4·41
– *·20*	720·000	641·93	544·37	436·88	328·62	227·80	141·22	73·89	28·59	5·35
– *·15*	733·125	668·33	579·08	474·49	364·17	257·41	162·61	86·65	34·12	6·50
– *·10*	742·500	692·18	612·97	513·07	402·05	290·01	186·88	101·53	40·75	7·91
– *·05*	748·125	713·27	645·79	552·46	442·82	325·89	214·44	118·92	48·71	9·65
·00	750·000	731·39	677·23	592·47	485·02	365·35	245·76	139·31	58·32	11·80
+ *·05*	748·125	746·31	706·99	632·84	530·14	408·70	281·39	163·28	69·98	14·50
+ *·10*	742·500	757·78	734·67	673·26	577·63	456·23	321·94	191·55	84·21	17·90
+ *·15*	733·125	765·56	759·87	713·34	627·35	508·26	368·14	224·98	101·67	22·24
+ *·20*	720·000	769·38	782·10	752·61	679·10	565·04	420·76	264·66	123·24	27·81
+ *·25*	703·125	768·94	800·84	790·47	732·53	626·81	480·72	311·90	150·07	35·06
+ *·30*	682·500	763·96	815·48	826·21	787·15	693·69	548·97	368·33	183·69	44·60
+ *·35*	658·125	754·11	825·36	858·93	842·24	765·62	626·56	435·94	226·18	57·33
+ *·40*	630·000	739·06	829·70	887·57	896·80	842·35	714·54	517·20	280·35	74·61
+ *·45*	598·125	718·45	827·66	910·82	949·48	923·20	813·87	615·10	350·06	98·48
+ *·50*	562·500	691·90	818·27	927·11	998·43	1006·98	925·29	733·19	440·67	132·11
+ *·55*	523·125	659·02	800·46	934·53	1041·18	1091·61	1048·92	875·62	559·69	180·65
+ *·60*	480·000	619·39	772·99	930·76	1074·42	1173·81	1183·82	1046·92	717·69	252·62
+ *·65*	433·125	572·56	734·52	913·01	1093·74	1248·41	1326·99	1251·36	929·54	362·77
+ *·70*	382·500	518·05	683·50	877·89	1093·27	1307·53	1471·73	1491·35	1215·82	537·74
+ *·75*	328·125	455·38	618·19	821·29	1065·22	1339·14	1604·80	1763·58	1603·56	828·01
+ *·80*	270·000	384·02	536·66	738·25	999·24	1325·11	1701·20	2050·08	2122·58	1334·30
+ *·85*	208·125	303·41	436·70	622·74	881·50	1237·97	1714·92	2297·17	2783·31	2265·98
+ *·90*	142·500	212·95	315·86	467·45	693·60	1036·09	1561·73	2364·83	3479·97	4043·96
+ *·95*	73·125	112·04	171·33	263·48	410·83	655·98	1086·58	1899·93	3578·10	7013·72
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0906	·1816	·2734	·3665	·4614	·5587	·6594	·7646	·8766
Mode	·0000	·2197	·4101	·5599	·6747	·7630	·8321	·8870	·9319	·9689
σ	·4472	·4444	·4360	·4216	·4007	·3725	·3356	·2878	·2253	·1397
$(1-\rho^2)/\sqrt{n-1}$	·4472	·4427	·4293	·4070	·3757	·3354	·2862	·2281	·1610	·0850
β_1	·0000	·0304	·1251	·2959	·5667	·9838	1·6418	2·7599	4·9848	11·4554
β_2	2·1429	2·1863	2·3222	2·5682	2·9615	3·5746	4·5585	6·2752	9·8417	21·1653

TABLE XXXII.—(*continued*).

$n = 7$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	25·84	15·19	8·75	4·87	2·58	1·27	·56	·20	·05	·01
− *·90*	70·30	42·38	24·93	14·14	7·62	3·81	1·69	·63	·16	·02
− *·85*	124·08	76·72	46·12	26·66	14·60	7·39	3·34	1·25	·33	·04
− *·80*	183·35	116·30	71·46	42·10	23·44	12·05	5·51	2·08	·56	·06
− *·75*	245·63	159·85	100·42	60·33	34·17	17·84	8·26	3·16	·85	·10
− *·70*	309·15	206·44	132·64	81·28	46·85	24·84	11·67	4·53	1·24	·14
− *·65*	372·52	255·27	167·80	104·93	61·59	33·20	15·83	6·22	1·72	·20
− *·60*	434·60	305·66	205·61	131·26	78·49	43·03	20·83	8·30	2·32	·27
− *·55*	494·46	356·96	245·82	160·28	97·70	54·50	26·81	10·85	3·08	·37
− *·50*	551·33	408·59	288·14	191·98	119·36	67·80	33·92	13·93	4·01	·49
− *·45*	604·53	459·99	332·29	226·34	143·61	83·12	42·31	17·66	5·16	·63
− *·40*	653·49	510·59	377·96	263·34	170·62	100·70	52·20	22·16	6·58	·82
− *·35*	697·73	559·87	424·83	302·91	200·54	120·78	63·81	27·58	8·32	1·05
− *·30*	736·85	607·28	472·53	344·98	233·54	143·64	77·42	34·10	10·48	1·35
− *·25*	770·51	652·32	520·67	389·43	269·77	169·60	93·33	41·94	13·13	1·72
− *·20*	798·41	694·44	568·81	436·10	309·36	198·97	111·92	51·36	16·41	2·19
− *·15*	820·34	733·15	616·47	484·78	352·43	232·12	133·60	62·69	20·47	2·80
− *·10*	836·13	767·91	663·12	535·18	399·06	269·42	158·87	76·33	25·50	3·56
− *·05*	845·65	798·24	708·17	586·95	449·29	311·28	188·29	92·77	31·77	4·55
·00	848·83	823·62	750·99	639·65	503·10	358·10	222·51	112·60	39·60	5·82
+ *·05*	845·65	843·56	790·87	692·72	560·37	410·29	262·29	136·56	49·43	7·48
+ *·10*	836·13	857·59	827·06	745·49	620·88	468·23	308·46	165·58	61·82	9·65
+ *·15*	820·34	865·26	858·73	797·15	684·25	532·27	361·98	200·77	77·52	12·53
+ *·20*	798·41	866·13	884·99	846·70	749·91	602·63	423·92	243·54	97·54	16·38
+ *·25*	770·51	859·80	904·89	893·00	817·07	679·42	495·43	295·61	123·21	21·58
+ *·30*	736·85	845·93	917·44	934·67	884·59	762·49	577·72	359·10	156·38	28·71
+ *·35*	697·73	824·21	921·57	970·10	950·96	851·33	671·98	436·64	199·53	38·62
+ *·40*	653·49	794·40	916·22	997·43	1014·18	944·93	779·26	531·38	256·18	52·62
+ *·45*	604·53	756·38	900·29	1014·55	1071·64	1041·52	900·25	647·10	331·09	72·76
+ *·50*	551·33	710·11	872·71	1019·07	1120·03	1138·25	1034·91	788·14	431·03	102·38
+ *·55*	494·46	655·69	832·49	1008·34	1155·12	1230·82	1181·85	959·18	565·53	147·00
+ *·60*	434·60	593·44	778·80	979·51	1171·74	1312·87	1337·35	1164·60	747·90	216·12
+ *·65*	372·52	523·87	711·02	929·65	1163·57	1375·33	1493·80	1406·95	996·60	326·69
+ *·70*	309·15	447·82	628·96	855·90	1123·23	1405·52	1637·17	1683·53	1336·03	510·28
+ *·75*	245·63	366·56	533·05	755·92	1042·49	1386·41	1743·33	1979·38	1794·82	828·27
+ *·80*	183·35	281·92	424·74	628·49	913·07	1296·13	1772·80	2252·77	2393·94	1404·91
+ *·85*	124·08	196·62	307·09	474·80	728·55	1109·20	1664·80	2407·27	3099·80	2495·12
+ *·90*	70·30	114·82	186·02	300·94	489·11	802·95	1336·07	2244·07	3664·14	4555·85
+ *·95*	25·84	43·51	73·17	124·05	214·20	381·46	712·23	1426·14	3147·79	7414·56
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0921	·1845	·2777	·3720	·4678	·5658	·6667	·7713	·8814
Mode	·0000	·1813	·3484	·4919	·6106	·7087	·7894	·8563	·9122	·9595
σ	·4082	·4055	·3973	·3832	·3629	·3356	·3001	·2545	·1958	·1175
$(1-\rho^2)/\sqrt{n-1}$	·4082	·4042	·3919	·3715	·3429	·3062	·2613	·2082	·1470	·0776
β_1	·0000	·0288	·1186	·2798	·5340	·9222	1·5263	2·5318	4·4611	9·6408
β_2	2·2500	2·2929	2·4267	2·6686	3·0535	3·6503	4·5968	6·2238	9·5129	19·3424

TABLE XXXII.—(*continued*).

$n = 8$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	8·91	4·76	2·49	1·25	·59	·26	·10	·03	·01	·00
− *·90*	33·84	18·63	9·97	5·12	2·47	1·10	·42	·13	·03	·00
− *·85*	72·19	40·95	22·48	11·80	5·82	2·62	1·03	·33	·07	·01
− *·80*	121·50	71·02	40·02	21·48	10·80	4·95	1·98	·63	·13	·01
− *·75*	179·44	108·11	62·53	34·34	17·61	8·22	3·33	1·08	·23	·02
− *·70*	243·84	151·45	89·96	50·58	26·48	12·58	5·19	1·71	·38	·03
− *·65*	312·66	200·21	122·17	70·35	37·63	18·23	7·66	2·57	·57	·05
− *·60*	384·00	253·56	158·99	93·82	51·30	25·35	10·84	3·69	·83	·07
− *·55*	456·10	310·59	200·22	121·13	67·75	34·18	14·89	5·16	1·18	·10
− *·50*	527·34	370·40	245·57	152·40	87·25	44·96	19·98	7·06	1·64	·14
− *·45*	596·26	432·05	294·69	187·72	110·08	58·00	26·31	9·47	2·25	·19
− *·40*	661·50	494·55	347·19	227·13	136·53	73·61	34·12	12·53	3·03	·27
− *·35*	721·88	556·91	402·57	270·64	166·89	92·15	43·68	16·38	4·04	·36
− *·30*	776·34	618·14	460·28	318·19	201·43	114·03	55·33	21·22	5·34	·49
− *·25*	823·97	677·22	519·66	369·65	240·45	139·67	69·47	27·27	7·03	·66
− *·20*	864·00	733·11	579·99	424·79	284·17	169·57	86·55	34·83	9·19	·88
− *·15*	895·79	784·83	640·42	483·31	332·81	204·24	107·11	44·26	11·98	1·17
− *·10*	918·84	831·37	700·04	544·75	386·52	244·24	131·79	56·00	15·57	1·57
− *·05*	932·82	871·77	757·84	608·54	445·36	290·13	161·34	70·61	20·22	2·09
·00	937·50	905·10	812·68	673·93	509·27	342·52	196·61	88·81	26·24	2·80
+ *·05*	932·82	930·49	863·38	740·00	578·06	401·96	238·59	111·47	34·07	3·77
+ *·10*	918·84	947·15	908·63	805·60	651·31	468·99	288·43	139·69	44·29	5·08
+ *·15*	895·79	954·37	947·08	869·36	728·36	544·03	347·39	174·87	57·69	6·89
+ *·20*	864·00	951·55	977·31	929·66	808·23	627·31	416·87	218·74	75·35	9·42
+ *·25*	823·97	938·24	997·87	984·60	889·50	718·81	498·39	273·48	98·76	12·97
+ *·30*	776·34	914·13	1007·32	1031·99	970·27	818·08	593·47	341·77	129·97	18·05
+ *·35*	721·88	879·12	1004·28	1069·38	1048·02	924·04	703·52	426·94	171·88	25·40
+ *·40*	661·50	833·34	987·47	1094·05	1119·51	1034·75	829·63	532·99	228·55	36·23
+ *·45*	596·26	777·15	955·78	1103·06	1180·66	1147·03	972·16	664·66	305·76	52·50
+ *·50*	527·34	711·26	908·44	1093·37	1226·48	1256·06	1130·10	827·21	411·69	77·48
+ *·55*	456·10	636·70	845·06	1061·99	1251·03	1354·86	1300·15	1025·98	558·02	116·83
+ *·60*	384·00	554·91	765·85	1006·21	1247·49	1433·64	1475·18	1265·10	761·16	180·59
+ *·65*	312·66	467·80	671·79	924·01	1208·46	1479·32	1642·00	1544·83	1043·60	287·38
+ *·70*	243·84	377·81	564·92	814·59	1126·64	1475·21	1778·44	1856·10	1434·02	473·04
+ *·75*	179·44	287·97	448·65	679·20	996·09	1401·54	1849·45	2169·84	1962·40	809·47
+ *·80*	121·50	202·00	328·13	522·33	814·61	1237·97	1804·24	2418·01	2637·69	1445·38
+ *·85*	72·19	124·36	210·79	353·40	587·92	970·50	1578·45	2464·22	3372·91	2684·78
+ *·90*	33·84	60·42	106·94	189·15	336·77	607·69	1116·43	2080·31	3769·68	5016·00
+ *·95*	8·91	16·49	30·50	57·02	109·05	216·63	456·02	1045·85	2706·04	7661·16
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0932	·1867	·2808	·3759	·4725	·5709	·6718	·7760	·8847
Mode	·0000	·1613	·3135	·4505	·5698	·6722	·7594	·8338	·8975	·9524
σ	·3780	·3753	·3673	·3536	·3339	·3074	·2733	·2299	·1746	·1024
$(1-\rho^2)/\sqrt{n-1}$	·3780	·3742	·3628	·3439	·3175	·2835	·2419	·1928	·1361	·0718
β_1	·0000	·0272	·1117	·2630	·5000	·8586	1·4088	2·3044	3·9581	8·0434
β_2	2·3333	2·3751	2·5051	2·7393	3·1101	3·6800	4·5751	6·0839	9·0368	17·2512

TABLE XXXII.—(*continued*).

$n = 9$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	3·02	1·47	·69	·31	·13	·05	·02	·00	·00	—
− *·90*	16·03	8·06	3·92	1·82	·79	·31	·10	·03	·00	—
− *·85*	41·32	21·50	10·78	5·14	2·28	·91	·31	·08	·01	—
− *·80*	79·21	42·66	22·04	10·78	4·89	2·00	·70	·19	·03	—
− *·75*	128·96	71·93	38·30	19·23	8·93	3·72	1·32	·37	·06	·00
− *·70*	189·20	109·29	60·01	30·95	14·72	6·27	2·27	·64	·11	·01
− *·65*	258·15	154·47	87·49	46·39	22·61	9·85	3·64	1·04	·19	·01
− *·60*	333·77	206·90	120·93	65·95	32·98	14·69	5·55	1·62	·29	·02
− *·55*	413·87	265·84	160·41	90·03	46·21	21·08	8·14	2·42	·45	·03
− *·50*	496·20	330·31	205·86	118·99	62·73	29·33	11·58	3·52	·66	·04
− *·45*	578·53	399·18	257·08	153·13	83·00	39·81	16·09	4·99	·96	·06
− *·40*	658·72	471·20	313·71	192·70	107·46	52·93	21·93	6·97	1·37	·09
− *·35*	734·71	544·95	375·25	237·86	136·60	69·16	29·41	9·57	1·93	·12
− *·30*	804·64	618·94	441·03	288·69	170·90	89·03	38·90	12·99	2·68	·17
− *·25*	866·82	691·61	510·20	345·14	210·81	113·15	50·86	17·45	3·70	·25
− *·20*	919·77	761·33	581·74	407·03	256·77	142·16	65·83	23·24	5·06	·35
− *·15*	962·26	826·48	654·46	473·98	309·16	176·78	84·46	30·73	6·89	·48
− *·10*	993·32	885·42	726·99	545·46	368·27	217·80	107·54	40·41	9·36	·68
− *·05*	1012·24	936·57	797·78	620·65	434·27	266·02	135·99	52·88	12·66	·95
·00	1018·59	978·46	865·14	698·50	507·13	322·29	170·89	68·91	17·11	1·33
+ *·05*	1012·24	1009·68	927·20	777·65	586·61	387·41	213·52	89·51	23·11	1·86
+ *·10*	993·32	1029·05	982·02	856·41	672·14	462·13	265·33	115·94	31·22	2·63
+ *·15*	962·26	1035·54	1027·55	932·73	762·75	547·03	327·98	149·85	42·24	3·73
+ *·20*	919·77	1028·41	1061·74	1004·19	856·97	642·43	403·32	193·30	57·27	5·33
+ *·25*	866·82	1007·20	1082·54	1068·00	952·68	748·20	493·28	248·93	77·88	7·67
+ *·30*	804·64	971·79	1088·08	1121·01	1047·05	863·56	599·83	320·04	106·28	11·16
+ *·35*	734·71	922·48	1076·68	1159·76	1136·34	986·80	724·70	410·75	145·67	16·43
+ *·40*	658·72	859·99	1047·01	1180·62	1215·85	1114·86	869·09	526·05	200·65	24·55
+ *·45*	578·53	785·54	998·27	1179·91	1279·81	1242·93	1032·99	671·79	277·86	37·28
+ *·50*	496·20	700·85	930·34	1154·15	1321·44	1363·83	1214·32	854·38	386·97	57·71
+ *·55*	413·87	608·22	843·95	1100·46	1333·12	1467·50	1407·47	1079·97	541·89	91·38
+ *·60*	333·77	510·46	740·94	1016·99	1306·81	1540·47	1601·27	1352·44	762·41	148·52
+ *·65*	258·15	410·96	624·47	903·63	1234·97	1565·77	1776·21	1669·36	1075·58	248·83
+ *·70*	189·20	313·58	499·21	762·81	1111·97	1523·66	1901·22	2014·01	1515·00	431·66
+ *·75*	128·96	222·57	371·51	600·46	936·53	1394·27	1930·95	2341·13	2111·97	778·77
+ *·80*	79·21	142·39	249·41	427·14	715·16	1163·62	1807·20	2554·55	2860·84	1463·91
+ *·85*	41·32	77·38	142·36	258·83	466·86	835·66	1472·97	2482·96	3612·89	2844·14
+ *·90*	16·03	31·28	60·49	116·98	228·19	452·62	918·20	1898·32	3818·02	5437·47
+ *·95*	3·02	6·15	12·51	25·79	54·64	121·08	287·39	755·00	2290·26	7794·37
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0940	·1883	·2832	·3789	·4760	·5747	·6756	·7793	·8869
Mode	·0000	·1492	·2920	·4238	·5420	·6463	·7374	·8168	·8861	·9467
σ	·3536	·3510	·3431	·3298	·3107	·2852	·2524	·2109	·1586	·0915
$(1-\rho^2)/\sqrt{n-1}$	·3536	·3500	·3394	·3217	·2670	·2652	·2263	·1803	·1273	·0672
β_1	·0000	·0256	·1051	·2468	·4677	·7983	1·2989	2·0963	3·5152	6·7561
β_2	2·4000	2·4403	2·5657	2·7907	3·1456	3·6857	4·5239	5·9099	8·5326	15·3136

TABLE XXXII.—(*continued*).

$n = 10.$ ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	1·01	·45	·19	·08	·03	·01	·00	·00	—	—
− *·90*	7·50	3·44	1·53	·64	·25	·09	·03	·01	—	—
− *·85*	23·37	11·15	5·11	2·21	·88	·31	·09	·02	·00	—
− *·80*	51·03	25·33	12·00	5·34	2·19	·80	·24	·06	·01	—
− *·75*	91·59	47·29	23·18	10·64	4·47	1·67	·52	·12	·02	—
− *·70*	145·09	77·94	39·56	18·72	8·09	3·09	·98	·23	·03	—
− *·65*	210·66	117·77	61·92	30·23	13·43	5·25	1·71	·42	·06	—
− *·60*	286·72	166·85	90·90	45·82	20·95	8·41	2·81	·70	·10	·00
− *·55*	371·15	224·86	127·01	66·13	31·14	12·85	4·39	1·12	·17	·01
− *·50*	461·43	291·10	170·55	91·82	44·57	18·91	6·63	1·73	·26	·01
− *·45*	554·77	364·50	221·63	123·45	61·84	27·00	9·73	2·60	·41	·02
− *·40*	648·27	443·69	280·14	161·56	83·58	37·60	13·93	3·83	·61	·03
− *·35*	739·03	526·99	345·68	206·59	110·50	51·29	19·56	5·52	·91	·04
− *·30*	824·22	612·48	417·62	258·84	143·28	68·70	27·02	7·85	1·33	·06
− *·25*	901·22	698·04	495·03	318·47	182·65	90·58	36·79	11·03	1·92	·09
− *·20*	967·68	781·38	576·65	385·42	229·29	117·77	49·48	15·32	2·76	·13
− *·15*	1021·57	860·14	660·97	459·39	283·82	151·22	65·82	21·09	3·92	·20
− *·10*	1061·26	931·94	746·13	539·76	346·77	191·94	86·73	28·82	5·55	·29
− *·05*	1085·57	994·42	830·01	625·59	418·49	241·06	113·28	39·13	7·83	·42
·00	1093·75	1045·39	910·20	715·49	499·09	299·70	146·80	52·84	11·02	·62
+ *·05*	1085·57	1082·81	984·11	807·66	588·33	369·02	188·84	71·03	15·49	·91
+ *·10*	1061·26	1104·96	1048·94	899·79	685·53	450·06	241·23	95·11	21·75	1·35
+ *·15*	1021·57	1110·49	1101·85	989·04	789·44	543·65	306·06	126·91	30·57	1·99
+ *·20*	967·68	1098·49	1139·99	1072·04	898·05	650·25	385·66	168·83	43·03	2·98
+ *·25*	901·22	1068·59	1160·70	1144·96	1008·47	769·73	482·55	223·95	60·70	4·48
+ *·30*	824·22	1021·01	1161·60	1203·51	1116·77	900·98	599·22	296·23	85·91	6·82
+ *·35*	739·03	956·66	1140·83	1243·14	1217·79	1041·59	737·88	390·62	122·04	10·51
+ *·40*	648·27	877·13	1097·21	1259·23	1305·16	1187·27	899·90	513·21	174·12	16·44
+ *·45*	554·77	784·74	1030·51	1247·45	1371·20	1331·27	1084·96	671·18	249·62	26·17
+ *·50*	461·43	682·54	941·67	1204·17	1407·27	1463·74	1289·77	872·31	359·56	42·50
+ *·55*	371·15	574·23	833·02	1127·09	1404·16	1571·18	1506·11	1123·76	520·21	70·66
+ *·60*	286·72	464·10	708·50	1015·97	1353·14	1636·20	1718·18	1429·27	754·96	120·77
+ *·65*	210·66	356·82	573·73	873·46	1247·48	1638·20	1899·37	1783·34	1095·94	213·01
+ *·70*	145·09	257·23	436·02	706·04	1084·83	1555·63	2009·23	2160·46	1582·39	389·45
+ *·75*	91·59	170·01	304·07	524·71	870·38	1371·13	1993·01	2497·22	2247·23	740·79
+ *·80*	51·03	99·20	187·37	345·25	620·62	1081·22	1789·53	2668·18	3067·85	1466·04
+ *·85*	23·37	47·59	95·03	187·37	366·47	711·33	1358·89	2473·52	3826·37	2979·24
+ *·90*	7·50	16·01	33·82	71·51	152·84	333·27	746·59	1712·69	3823·56	5828·60
+ *·95*	1·01	2·27	5·07	11·53	27·06	66·90	179·06	538·90	1916·67	7841·74
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0946	·1896	·2850	·3813	·4787	·5776	·6785	·7819	·8887
Mode	·0000	·1411	·2774	·4050	·5219	·6270	·7206	·8036	·8771	·9422
σ	·3333	·3308	·3232	·3103	·2917	·2671	·2355	·1958	·1461	·0832
$(1-\rho^2)/\sqrt{n-1}$	·3333	·3300	·3200	·3033	·2800	·2500	·2133	·1700	·1200	·0633
β_1	·0000	·0242	·0989	·2317	·4374	·7431	1·2002	1·9122	3·1377	5·7475
β_2	2·4545	2·4933	2·6137	2·8292	3·1669	3·6774	4·4598	5·7290	8·0534	13·6667

TABLE XXXII.—(*continued*).

$n = 11$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·34	·14	·05	·02	·01	·00	·00	—	—	—
− *·90*	3·48	1·46	·59	·22	·08	·02	·01	·00	—	—
− *·85*	13·10	5·73	2·40	·94	·34	·11	·03	·01	—	—
− *·80*	32·59	14·90	6·47	2·63	·97	·31	·08	·02	—	—
− *·75*	64·48	30·82	13·91	5·84	2·22	·74	·20	·04	·00	—
− *·70*	110·28	55·10	25·85	11·22	4·40	1·51	·42	·09	·01	—
− *·65*	170·38	89·00	43·43	19·52	7·90	2·78	·80	·17	·02	—
− *·60*	244·13	133·37	67·72	31·55	13·19	4·77	1·41	·30	·04	—
− *·55*	329·91	188·52	99·67	48·15	20·80	7·76	2·35	·51	·06	—
− *·50*	425·31	254·27	140·04	70·22	31·39	12·08	3·76	·84	·10	·00
− *·45*	527·29	329·89	189·38	98·64	45·66	18·15	5·83	1·34	·17	·01
− *·40*	632·37	414·10	247·94	134·25	64·43	26·48	8·77	2·08	·27	·01
− *·35*	736·81	505·13	315·62	177·84	88·59	37·70	12·90	3·16	·43	·01
− *·30*	836·83	600·74	391·97	230·03	119·07	52·54	18·61	4·71	·65	·02
− *·25*	928·73	698·31	476·06	291·27	156·85	71·87	26·38	6·91	·99	·03
− *·20*	1009·12	794·88	566·57	361·75	202·94	96·71	36·86	10·01	1·49	·05
− *·15*	1074·98	887·29	661·66	441·31	258·26	128·20	50·84	14·35	2·21	·08
− *·10*	1123·87	972·26	759·03	529·42	323·64	167·66	69·32	20·37	3·27	·12
− *·05*	1153·95	1046·54	855·92	625·00	399·73	216·51	93·53	28·70	4·80	·19
·00	1164·10	1107·05	949·18	726·44	486·84	276·25	124·99	40·16	7·04	·29
+ *·05*	1153·95	1150·99	1035·30	831·45	584·86	348·45	165·55	55·88	10·29	·44
+ *·10*	1123·87	1176·02	1110·55	937·05	693·05	434·44	217·39	77·34	15·02	·68
+ *·15*	1074·98	1180·37	1171·11	1039·52	809·89	535·54	283·09	106·54	21·93	1·06
+ *·20*	1009·12	1163·01	1213·24	1134·42	932·85	652·40	365·55	146·17	32·04	1·65
+ *·25*	928·73	1123·74	1233·55	1216·69	1058·17	784·94	467·92	199·73	46·90	2·60
+ *·30*	836·83	1063·29	1229·19	1280·75	1180·68	931·80	593·39	271·79	68·83	4·13
+ *·35*	736·81	983·38	1198·19	1320·82	1293·66	1089·82	744·74	368·23	101·35	6·67
+ *·40*	632·37	886·74	1139·72	1331·30	1388·77	1253·34	923·68	496·34	149·79	10·92
+ *·45*	527·29	777·05	1054·45	1307·30	1456·28	1413·46	1129·63	664·75	222·30	18·21
+ *·50*	425·31	658·86	944·78	1245·35	1485·58	1557·29	1358·02	882·89	331·21	31·02
+ *·55*	329·91	537·38	815·03	1144·27	1466·08	1667·54	1597·69	1159·22	495·09	54·17
+ *·60*	244·13	418·24	671·55	1006·07	1388·90	1722·77	1827·66	1497·43	741·14	97·35
+ *·65*	170·38	307·09	522·51	836·93	1249·15	1699·11	2013·49	1888·67	1107·09	180·79
+ *·70*	110·28	209·16	377·49	647·80	1049·15	1574·50	2105·04	2297·63	1638·62	348·37
+ *·75*	64·48	128·73	246·69	454·52	801·88	1336·70	2039·33	2640·85	2370·71	698·67
+ *·80*	32·59	68·50	139·53	276·64	533·90	995·96	1756·78	2762·99	3261·77	1455·70
+ *·85*	13·10	29·01	62·88	134·46	285·17	600·28	1242·87	2443·04	4017·99	3094·34
+ *·90*	3·48	8·12	18·74	43·33	101·48	243·28	601·85	1532·03	3796·61	6195·13
+ *·95*	·34	·83	2·04	5·11	13·29	36·65	110·61	381·37	1590·43	7823·00
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0952	·1906	·2865	·3831	·4808	·5799	·6807	·7839	·8900
Mode	·0000	·1352	·2667	·3912	·5066	·6121	·7074	·7930	·8697	·9384
σ	·3162	·3138	·3064	·2938	·2758	·2519	·2214	·1833	·1360	·0767
$(1-\rho^2)/\sqrt{n-1}$	·3162	·3131	·3036	·2878	·2656	·2372	·2024	·1613	·1138	·0601
β_1	·0000	·0228	·0932	·2179	·4101	·6933	1·1112	1·7516	2·8193	4·9565
β_2	2·5000	2·5372	2·6527	2·8587	3·1798	3·6616	4·3914	5·5540	7·6188	12·2879

TABLE XXXII.—(*continued*).

$n = 12$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·11	·04	·01	·00	·00	·00	—	—	—	—
− *·90*	1·60	·61	·22	·08	·02	·01	·00	—	—	—
− *·85*	7·30	2·93	1·12	·40	·13	·04	·01	—	—	—
− *·80*	20·67	8·71	3·47	1·28	·43	·12	·03	·00	—	—
− *·75*	45·08	19·94	8·29	3·18	1·10	·33	·08	·01	—	—
− *·70*	83·24	38·68	16·77	6·68	2·38	·73	·18	·03	·00	—
− *·65*	136·86	66·80	30·25	12·52	4·62	1·46	·37	·07	·01	—
− *·60*	206·44	105·87	50·10	21·57	8·24	2·69	·70	·13	·01	—
− *·55*	291·24	156·97	77·68	34·81	13·80	4·65	1·25	·23	·02	—
− *·50*	389·33	220·58	114·20	53·33	21·95	7·66	2·12	·41	·04	—
− *·45*	497·73	296·51	160·71	78·27	33·48	12·11	3·46	·69	·07	—
− *·40*	612·62	383·82	217·93	110·79	49·33	18·52	5·48	1·13	·12	—
− *·35*	729·56	480·84	286·20	152·04	70·53	27·52	8·45	1·80	·20	·00
− *·30*	843·79	585·17	365·35	203·01	98·26	39·90	12·72	2·80	·32	·01
− *·25*	950·51	693·78	454·68	264·55	133·77	56·63	18·79	4·30	·51	·01
− *·20*	1045·09	803·05	552·83	337·18	178·37	78·86	27·27	6·49	·80	·02
− *·15*	1123·41	908·99	657·79	421·03	233·38	107·94	39·00	9·69	1·24	·03
− *·10*	1181·98	1007·35	766·83	515·70	299·98	145·45	55·03	14·30	1·91	·05
− *·05*	1218·21	1093·82	876·57	620·13	379·19	193·12	76·70	20·91	2·93	·08
·00	1230·47	1164·30	983·02	732·48	471·64	252·88	105·70	30·32	4·46	·13
+ *·05*	1218·21	1215·06	1081·67	850·05	577·41	326·69	144·13	43·65	6·79	·21
+ *·10*	1181·98	1243·05	1167·70	969·15	695·83	416·49	194·57	62·45	10·30	·34
+ *·15*	1123·41	1246·03	1236·18	1085·08	825·16	523·93	260·05	88·83	15·62	·56
+ *·20*	1045·09	1222·86	1282·35	1192·20	962·35	650·07	344·11	125·68	23·70	·91
+ *·25*	950·51	1173·63	1301·99	1284·05	1102·71	794·98	450·63	176·90	35·99	1·49
+ *·30*	843·79	1099·72	1291·80	1353·61	1239·72	957·09	583·60	247·67	54·78	2·49
+ *·35*	729·56	1003·91	1249·80	1393·76	1364·85	1132·50	746·54	344·77	83·60	4·20
+ *·40*	612·62	890·31	1175·76	1397·87	1467·64	1314·07	941·64	476·75	127·99	7·20
+ *·45*	497·73	764·16	1071·56	1360·66	1536·09	1490·50	1168·15	653·92	196·63	12·58
+ *·50*	389·33	631·64	941·41	1279·15	1557·56	1645·55	1420·17	887·55	303·03	22·49
+ *·55*	291·24	499·45	791·98	1153·78	1520·32	1757·80	1683·36	1187·72	468·00	41·25
+ *·60*	206·44	374·33	632·17	989·48	1415·90	1801·62	1930·97	1558·25	722·68	77·95
+ *·65*	136·86	262·47	472·60	796·46	1242·33	1750·35	2120·06	1986·75	1110·84	152·41
+ *·70*	83·24	168·90	324·59	590·32	1007·76	1582·81	2190·55	2427·07	1685·48	309·54
+ *·75*	45·08	96·80	198·77	391·03	733·76	1294·33	2072·67	2774·00	2484·25	654·55
+ *·80*	20·67	46·98	103·20	220·15	456·19	911·23	1713·02	2842·00	3444·82	1435·84
+ *·85*	7·30	17·56	41·32	95·84	220·41	503·13	1129·13	2396·80	4191·11	3192·59
+ *·90*	1·60	4·09	10·31	26·08	66·93	176·39	481·91	1361·28	3744·80	6541·18
+ *·95*	·11	·30	·81	2·25	6·48	19·94	67·87	268·10	1310·98	7752·85
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0956	·1914	·2877	·3847	·4826	·5818	·6826	·7855	·8910
Mode	·0000	·1309	·2586	·3805	·4948	·6004	·6968	·7843	·8636	·9353
σ	·3015	·2991	·2919	·2797	·2622	·2390	·2096	·1729	·1276	·0714
$(1-\rho^2)/\sqrt{n-1}$	·3015	·2985	·2895	·2744	·2533	·2261	·1930	·1538	·1085	·0573
β_1	·0000	·0215	·0880	·2054	·3854	·6487	1·0329	1·6118	2·5509	4·3322
β_2	2·5385	2·5742	2·6848	2·8816	3·1870	3 6417	4·3231	5·3905	7·2330	11·1595

TABLE XXXII.—(*continued*).

$n = 13$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·04	·01	·00	·00	·00	—	—	—	—	—
− *·90*	·73	·26	·09	·03	·01	·00	—	—	—	—
− *·85*	4·04	1·49	·52	·17	·05	·01	·00	—	—	—
− *·80*	13·03	5·06	1·85	·62	·19	·05	·01	—	—	—
− *·75*	31·34	12·84	4·91	1·72	·54	·14	·03	·00	—	—
− *·70*	62·49	27·00	10·82	3·95	1·28	·35	·08	·01	—	—
− *·65*	109·33	49·86	20·96	7·99	2·69	·76	·17	·03	—	—
− *·60*	173·60	83·57	36·87	14·67	5·13	1·51	·35	·05	·00	—
− *·55*	255·68	129·97	60·20	25·03	9·10	2·78	·66	·11	·01	—
− *·50*	354·43	190·29	92·61	40·28	15·26	4·83	1·19	·20	·02	—
− *·45*	467·24	265·03	135·62	61·76	24·42	8·04	2·05	·35	·03	—
− *·40*	590·21	353·79	190·50	90·93	37·56	12·88	3·41	·61	·05	—
− *·35*	718·39	455·19	258·08	129·26	55·84	19·97	5·50	1·01	·09	—
− *·30*	846·13	566·86	338·66	178·18	80·64	30·14	8·65	1·66	·15	—
− *·25*	967·43	685·47	431·85	238·96	113·45	44·38	13·30	2·66	·26	·00
− *·20*	1076·39	806·84	536·45	312·55	155·92	63·95	20·07	4·19	·42	·01
− *·15*	1167·55	926·10	650·33	399·46	209·73	90·38	29·75	6·51	·69	·01
− *·10*	1236·25	1037·95	770·44	499·56	276·51	125·48	43·44	9·98	1·11	·02
− *·05*	1278·96	1136·93	892·78	611·89	357·72	171·31	62·54	15·15	1·77	·04
·00	1293·45	1217·76	1012·46	734·51	454·39	230·21	88·89	22·76	2·82	·06
+ *·05*	1278·96	1275·64	1123·90	864·29	566·93	304·67	124·80	33·91	4·45	·10
+ *·10*	1236·25	1306·66	1221·04	996·83	694·79	397·09	173·18	50·15	7·03	·17
+ *·15*	1167·55	1308·10	1297·68	1126·41	836·11	509·76	237·58	73·66	11·07	·29
+ *·20*	1076·39	1278·72	1347·93	1246·04	987·33	644·20	322·16	107·48	17·43	·50
+ *·25*	967·43	1218·98	1366·66	1347·70	1142·82	800·73	431·61	155·83	27·47	·86
+ *·30*	846·13	1131·13	1350·13	1422·76	1294·58	977·68	570·83	224·46	43·35	1·49
+ *·35*	718·39	1019·23	1296·48	1462·65	1432·08	1170·41	744·26	321·04	68·58	2·63
+ *·40*	590·21	888·97	1206·29	1459·72	1542·51	1370·21	954·71	455·44	108·77	4·72
+ *·45*	467·24	747·35	1082·96	1408·44	1611·41	1563·16	1201·40	639·76	172·98	8·65
+ *·50*	354·43	602·21	932·90	1306·67	1624·11	1729·32	1477·09	887·39	275·75	16·22
+ *·55*	255·68	461·64	765·35	1157·00	1567·94	1842·84	1763·97	1210·31	440·01	31·24
+ *·60*	173·60	333·18	591·84	967·83	1435·55	1873·82	2029·03	1612·76	700·88	62·08
+ *·65*	109·33	223·11	425·11	753·80	1228·80	1793·32	2220·16	2078·63	1108·60	127·80
+ *·70*	62·49	135·64	277·57	534·99	962·72	1582·52	2267·17	2549·96	1724·34	273·57
+ *·75*	31·34	72·39	159·28	334·58	667·77	1246·49	2095·16	2898·15	2589·24	609·94
+ *·80*	13·03	32·04	75·91	174·24	387·67	829·19	1661·34	2907·54	3618·62	1408·68
+ *·85*	4·04	10·58	27·01	67·94	169·42	419·43	1020·26	2338·80	4348·30	3276·40
+ *·90*	·73	2·05	5·65	15·61	43·90	127·20	383·80	1203·06	3673·97	6869·84
+ *·95*	·04	·11	·32	·98	3·14	10·79	41·42	187·46	1074·87	7642·57
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0960	·1921	·2887	·3859	·4841	·5834	·6841	·7868	·8919
Mode	·0000	·1274	·2522	·3721	·4853	·5908	·6880	·7772	·8585	·9326
σ	·2887	·2863	·2793	·2674	·2504	·2279	·1994	·1640	·1206	·0671
$(1-\rho^2)/\sqrt{n-1}$	·2887	·2858	·2771	·2627	·2425	·2165	·1848	·1472	·1039	·0548
β_1	·0000	·0204	·0833	·1941	·3631	·6087	·9636	1·4902	2·3236	3·8337
β_2	2·5714	2·6057	2·7117	2·8999	3·1904	3·6201	4·2575	5·2404	6·8937	10·2454

TABLE XXXII.—(*continued*).

$n = 14$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
– *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
– *·95*	·01	·00	·00	·00	—	—	—	—	—	—
– *·90*	·34	·11	·03	·01	·00	—	—	—	—	—
– *·85*	2·23	·75	·24	·07	·02	·00	—	—	—	—
– *·80*	8·18	2·93	·98	·30	·08	·02	·00	—	—	—
– *·75*	21·69	8·22	2·90	·93	·26	·06	·01	—	—	—
– *·70*	46·70	18·77	6·95	2·33	·69	·17	·03	·00	—	—
– *·65*	86·94	37·04	14·45	5·07	1·55	·40	·08	·01	—	—
– *·60*	145·33	65·68	27·00	9·93	3·17	·84	·17	·02	—	—
– *·55*	223·45	107·13	46·44	17·91	5·98	1·65	·35	·05	·00	—
– *·50*	321·20	163·42	74·76	30·28	10·57	3·04	·66	·09	·01	—
– *·45*	436·63	235·83	113·94	48·51	17·73	5·31	1·21	·18	·01	—
– *·40*	566·06	324·64	165·76	74·28	28·46	8·92	2·11	·32	·02	—
– *·35*	704·20	428·97	231·67	109·39	44·02	14·43	3·57	·57	·04	—
– *·30*	844·64	546·64	312·50	155·68	65·88	22·66	5·86	·98	·07	—
– *·25*	980·21	674·21	408·32	214·86	95·78	34·62	9·38	1·64	·13	—
– *·20*	1103·62	806·97	518·19	288·41	135·67	51·63	14·70	2·69	·23	·00
– *·15*	1207·94	939·26	640·05	377·28	187·62	75·34	22·59	4·35	·38	·01
– *·10*	1287·18	1064·65	770·57	481·74	253·73	107·76	34·14	6·94	·64	·01
– *·05*	1336·68	1176·41	905·17	601·04	335·93	151·28	50·77	10·92	1·07	·02
·00	1353·52	1267·92	1038·07	733·22	435·79	208·62	74·41	17·01	1·77	·03
+ *·05*	1336·68	1333·18	1162·50	874·80	554·12	282·80	107·57	26·23	2·91	·05
+ *·10*	1287·18	1367·32	1271·05	1020·68	690·62	376·89	153·45	40·10	4·77	·09
+ *·15*	1207·94	1367·06	1356·11	1164·04	843·38	493·74	216·07	60·80	7·81	·15
+ *·20*	1103·62	1331·09	1410·48	1296·43	1008·40	635·51	300·25	91·50	12·76	·27
+ *·25*	980·21	1260·37	1428·09	1408·13	1179·07	802·90	411·53	136·65	20·87	·49
+ *·30*	844·64	1158·20	1404·74	1488·72	1345·78	994·23	555·84	202·51	34·16	·89
+ *·35*	704·20	1030·12	1338·84	1528·05	1495·87	1204·16	738·66	297·60	56·01	1·64
+ *·40*	566·06	883·63	1232·03	1517·46	1613·92	1422·35	963·63	433·15	92·02	3·08
+ *·45*	436·63	727·61	1089·56	1451·35	1682·84	1632·02	1230·08	623·12	151·50	5·92
+ *·50*	321·20	571·57	920·31	1328·79	1685·90	1809·23	1529·42	883·27	249·81	11·64
+ *·55*	223·45	424·77	736·29	1155·02	1609·82	1923·36	1840·21	1227·85	411·85	23·56
+ *·60*	145·33	295·23	551·59	942·42	1448·96	1940·22	2122·58	1661·76	676·71	49·22
+ *·65*	86·94	188·79	380·68	710·22	1209·98	1829·15	2314·64	2165·10	1101·47	106·69
+ *·70*	46·70	108·45	236·30	482·68	915·58	1575·19	2336·05	2667·21	1756·31	240·71
+ *·75*	21·69	53·89	127·07	284·99	605·00	1195·09	2108·50	3014·47	2686·77	565·87
+ *·80*	8·18	21·76	55·58	137·29	327·97	751·18	1604·06	2961·44	3784·47	1375·97
+ *·85*	2·23	6·34	17·57	47·94	129·65	348·10	917·81	2272·14	4491·55	3347·70
+ *·90*	·34	1·02	3·08	9·30	28·67	91·32	304·31	1058·56	3588·66	7183·43
+ *·95*	·01	·04	·13	·43	1·52	5·81	25·17	130·49	877·42	7501·01
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0963	·1927	·2896	·3870	·4853	·5847	·6854	·7879	·8926
Mode	·0000	·1246	·2470	·3652	·4775	·5828	·6808	·7711	·8541	·9303
σ	·2774	·2751	·2682	·2566	·2401	·2182	·1906	·1564	·1145	·0634
$(1-\rho^2)/\sqrt{n-1}$	·2774	·2746	·2663	·2524	·2330	·2080	·1775	·1414	·0998	·0527
β_1	·0000	·0194	·0790	·1838	·3430	·5729	·9020	1·3838	2·1298	3·4290
β_2	2·6000	2·6329	2·7346	2·9145	3·1912	3·5979	4·1955	5·1038	6·5961	9·4886

TABLE XXXII.—(*continued*).

$n = 15$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	0	·1	·2	·3	·4	·5	·6	·7	·8	·9
– 1·00	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
– ·95	·00	·00	·00	—	—	—	—	—	—	—
– ·90	·15	·04	·01	·00	·00	—	—	—	—	—
– ·85	1·22	·38	·11	·03	·01	·00	—	—	—	—
– ·80	5·12	1·69	·52	·14	·04	·01	—	—	—	—
– ·75	14·96	5·25	1·70	·50	·13	·03	·00	—	—	—
– ·70	34·77	12·99	4·45	1·37	·37	·08	·01	—	—	—
– ·65	68·88	27·42	9·93	3·21	·90	·21	·04	·00	—	—
– ·60	121·21	51·42	19·70	6·69	1·96	·47	·08	·01	—	—
– ·55	194·55	87·97	35·70	12·77	3·91	·97	·18	·02	—	—
– ·50	289·98	139·82	60·13	22·68	7·29	1·90	·37	·05	·00	—
– ·45	406·50	209·05	95·35	37·96	12·82	3·50	·71	·09	·01	—
– ·40	540·85	296·76	143·69	60·46	21·49	6·15	1·30	·17	·01	—
– ·35	687·70	402·73	207·17	92·23	34·56	10·39	2·30	·32	·02	—
– ·30	839·97	525·16	287·27	135·50	53·62	16·97	3·95	·57	·04	—
– ·25	989·42	660·62	384·61	192·47	80·56	26·90	6·59	1·00	·07	—
– ·20	1127·28	804·07	498·68	265·12	117·61	41·52	10·72	1·72	·12	—
– ·15	1245·03	949·02	627·56	354·99	167·21	62·56	17·09	2·90	·21	—
– ·10	1335·15	1087·93	767·80	462·81	231·94	92·19	26·73	4·80	·37	·00
– ·05	1391·74	1212·67	914·28	588·16	314·29	133·08	41·06	7·85	·64	·01
·00	1411·04	1315·18	1060·32	729·17	416·38	188·35	62·06	12·66	1·11	·01
+ ·05	1391·74	1388·08	1197·90	882·11	539·56	261·56	92·37	20·21	1·89	·02
+ ·10	1335·15	1425·42	1318·13	1041·17	683·89	356·36	135·46	31·94	3·23	·04
+ ·15	1245·03	1423·30	1411·83	1198·41	847·52	476·43	195·77	50·00	5·49	·08
+ ·20	1127·28	1380·40	1470·37	1343·80	1026·06	624·58	278·78	77·60	9·31	·15
+ ·25	989·42	1298·27	1486·66	1465·74	1211·89	802·05	390·92	119·38	15·80	·28
+ ·30	839·97	1181·45	1456·06	1551·88	1393·76	1007·27	539·22	182·03	26·81	·53
+ ·35	687·70	1037·21	1377·39	1590·37	1556·64	1234·25	730·36	274·85	45·57	1·02
+ ·40	540·85	875·02	1253·60	1571·56	1682·30	1470·94	968·99	410·40	77·56	2·01
+ ·45	406·50	705·73	1092·09	1489·95	1750·86	1697·55	1254·73	604·65	132·19	4·04
+ ·50	289·98	540·45	904·49	1346·21	1743·50	1885·77	1577·71	875·91	225·46	8·33
+ ·55	194·55	389·38	705·68	1148·73	1646·64	1999·91	1912·58	1241·01	384·06	17·70
+ ·60	121·21	260·61	512·15	914·23	1457·04	2001·47	2212·18	1705·89	650·97	38·88
+ ·65	68·88	159·16	339·61	666·66	1187·01	1858·75	2404·17	2246·82	1090·34	88·74
+ ·70	34·77	86·37	200·40	433·86	867·51	1562·05	2398·10	2779·52	1782·27	211·01
+ ·75	14·96	39·97	100·99	241·85	546·09	1141·54	2114·05	3123·86	2777·70	523·05
+ ·80	5·12	14·72	40·55	107·77	276·43	677·98	1543·04	3005·21	3943·34	1339·09
+ ·85	1·22	3·79	11·39	33·71	98·85	287·83	822·59	2199·24	4622·48	3408·02
+ ·90	·15	·51	1·67	5·52	18·65	65·32	240·39	927·98	3492·48	7483·96
+ ·95	·00	·01	·05	·19	·73	3·12	15·23	90·51	713·62	7335·23
+ 1·00	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0965	·1932	·2903	·3879	·4864	·5858	·6865	·7888	·8932
Mode	·0000	·1224	·2429	·3595	·4710	·5761	·6745	·7659	·8504	·9283
σ	·2673	·2650	·2583	·2470	·2309	·2096	·1828	·1496	·1093	·0602
$(1-\rho^2)/\sqrt{n-1}$	·2673	·2646	·2566	·2423	·2245	·2004	·1710	·1363	·0962	·0508
β_1	·0000	·0184	·0751	·1745	·3248	·5407	·8473	1·2904	1·9635	3·0956
β_2	2·6250	2·6566	2·7542	2·9265	3·1904	3·5759	4·1375	4·9799	6·3347	8·8548

TABLE XXXII.—(*continued*).

$n = 16$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·00	—	—	—	—	—	—	—	—	—
− *·90*	·07	·02	·00	·00	—	—	—	—	—	—
− *·85*	·67	·19	·05	·01	·00	—	—	—	—	—
− *·80*	3·19	·97	·27	·07	·02	·00	—	—	—	—
− *·75*	10·28	3·34	1·00	·27	·06	·01	·00	—	—	—
− *·70*	25·80	8·97	2·84	·80	·19	·04	·01	—	—	—
− *·65*	54·39	20·23	6·80	2·02	·51	·11	·02	—	—	—
− *·60*	100·76	40·12	14·33	4·50	1·20	·26	·04	·00	—	—
− *·55*	168·85	72·01	27·35	9·08	2·55	·57	·09	·01	—	—
− *·50*	260·97	119·24	48·20	16·93	5·01	1·18	·20	·02	—	—
− *·45*	377·23	184·72	79·55	29·61	9·24	2·29	·41	·05	—	—
− *·40*	515·11	270·42	124·16	49·05	16·17	4·23	·80	·09	·00	—
− *·35*	669·43	376·88	184·68	77·51	27·05	7·46	1·48	·18	·01	—
− *·30*	832·67	502·91	263·24	117·56	43·50	12·67	2·65	·34	·02	—
− *·25*	995·53	645·25	361·12	171·85	67·54	20·84	4·61	·61	·03	—
− *·20*	1147·76	798·62	478·36	242·94	101·63	33·28	7·80	1·10	·06	—
− *·15*	1279·16	955·82	613·35	332·95	148·55	51·78	12·89	1·93	·12	—
− *·10*	1380·50	1108·16	762·59	443·20	211·35	78·63	20·86	3·32	·21	—
− *·05*	1444·45	1246·06	920·53	573·72	293·10	116·70	33·10	5·62	·38	—
·00	1466·31	1359·84	1079·59	722·83	396·57	169·51	51·59	9·40	·69	·00
+ *·05*	1444·45	1440·62	1230·45	886·63	523·71	241·10	79·06	15·52	1·23	·01
+ *·10*	1380·50	1481·25	1362·60	1058·69	675·07	335·89	119·19	25·36	2·18	·02
+ *·15*	1279·16	1477·14	1465·15	1229·86	848·97	458·26	176·81	40·99	3·84	·04
+ *·20*	1147·76	1426·97	1527·93	1388·46	1040·70	611·89	258·02	65·60	6·77	·08
+ *·25*	995·53	1333·04	1542·70	1520·86	1241·67	798·66	370·16	103·97	11·92	·16
+ *·30*	832·67	1201·32	1504·45	1612·58	1438·86	1017·24	521·43	163·10	20·98	·31
+ *·35*	669·43	1041·01	1412·54	1649·98	1614·73	1261·08	719·87	253·03	36·96	·63
+ *·40*	515·11	863·74	1271·49	1622·42	1748·02	1516·38	971·31	387·62	65·16	1·30
+ *·45*	377·23	682·33	1091·14	1524·73	1815·85	1760·11	1275·84	584·87	114·98	2·74
+ *·50*	260·97	509·39	886·11	1359·54	1797·36	1959·32	1622·38	865·86	202·85	5·94
+ *·55*	168·85	355·79	674·19	1138·85	1678·96	2072·94	1981·54	1250·36	357·03	13·25
+ *·60*	100·76	229·32	474·01	884·08	1460·52	2058·14	2298·30	1745·69	624·23	30·62
+ *·65*	54·39	133·74	302·02	623·79	1160·78	1882·87	2489·31	2324·29	1075·93	73·57
+ *·70*	25·80	68·58	169·43	388·74	819·36	1544·13	2454·04	2887·46	1802·95	184·41
+ *·75*	10·28	29·55	80·00	204·59	491·36	1086·96	2112·96	3227·08	2862·73	481·97
+ *·80*	3·19	9·92	29·49	84·33	232·25	609·99	1479·67	3040·08	4096·07	1299·15
+ *·85*	·67	2·25	7·36	23·62	75·13	237·24	734·93	2121·99	4742·40	3458·65
+ *·90*	·07	·25	·90	3·27	12·09	46·58	189·31	810·97	3388·31	7772·88
+ *·95*	·00	·00	·02	·08	·35	1·67	9·19	62·58	578·60	7150·91
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0968	·1937	·2909	·3888	·4873	·5868	·6875	·7896	·8937
Mode	·0000	·1206	·2394	·3548	·4655	·5705	·6692	·7614	·8471	·9265
σ	·2582	·2560	·2495	·2384	·2227	·2020	·1759	·1437	·1047	·0575
$(1-\rho^2)/\sqrt{n-1}$	·2582	·2556	·2479	·2350	·2169	·1936	·1652	·1310	·0930	·0491
β_1	·0000	·0176	·0716	·1660	·3083	·5117	·7983	1·2080	1·8195	2·8181
β_2	2·6471	2·6775	2·7712	2·9363	3·1883	3·5545	4·0836	4·8677	6·1046	8·3239

TABLE XXXII.—(*continued*).

$n = 17$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·00	·00	—	—	—	—	—	—	—	—
− *·90*	·03	·01	·00	—	—	—	—	—	—	—
− *·85*	·37	·10	·02	·01	·00	—	—	—	—	—
− *·80*	1·98	·56	·14	·03	·01	·00	—	—	—	—
− *·75*	7·05	2·12	·58	·14	·03	·01	—	—	—	—
− *·70*	19·10	6·17	1·81	·47	·10	·02	·00	—	—	—
− *·65*	42·84	14·88	4·64	1·27	·29	·05	·01	—	—	—
− *·60*	83·54	31·23	10·39	3·02	·74	·14	·02	—	—	—
− *·55*	146·13	58·78	20·89	6·43	1·66	·34	·05	·00	—	—
− *·50*	234·22	101·41	38·54	12·61	3·43	·74	·11	·01	—	—
− *·45*	349·12	162·78	66·18	23·04	6·64	1·50	·24	·02	—	—
− *·40*	489·26	245·73	106·99	39·68	12·14	2·90	·49	·05	—	—
− *·35*	649·87	351·73	164·17	64·96	21·11	5·33	·95	·10	·00	—
− *·30*	823·17	480·28	240·55	101·72	35·19	9·43	1·78	·20	·01	—
− *·25*	998·93	628·51	338·14	153·03	56·47	16·10	3·22	·37	·02	—
− *·20*	1165·43	791·03	457·61	222·01	87·57	26·61	5·66	·70	·03	—
− *·15*	1310·64	960·04	597·82	311·43	131·60	42·74	9·69	1·28	·06	—
− *·10*	1423·48	1125·69	755·35	423·25	192·06	66·87	16·23	2·28	·12	—
− *·05*	1495·05	1276·87	924·29	558·10	272·60	102·06	26·61	4·01	·23	—
·00	1519·58	1402·18	1096·21	714·59	376·67	152·13	42·77	6·95	·43	·00
+ *·05*	1495·05	1491·07	1260·42	888·75	506·94	221·67	67·49	11·89	·79	·01
+ *·10*	1423·48	1535·05	1404·71	1073·56	664·54	315·72	104·60	20·08	1·46	·01
+ *·15*	1310·64	1528·81	1516·33	1258·69	848·09	439·58	159·26	33·51	2·68	·02
+ *·20*	1165·43	1471·07	1583·40	1430·69	1052·66	597·82	238·16	55·31	4·91	·04
+ *·25*	998·93	1365·00	1596·49	1573·74	1268·71	793·12	349·55	90·30	8·97	·09
+ *·30*	823·17	1218·19	1550·21	1671·08	1481·38	1024·51	502·86	145·74	16·37	·18
+ *·35*	649·87	1041·98	1444·64	1707·15	1670·43	1284·98	707·60	232·31	29·89	·39
+ *·40*	489·26	850·26	1286·11	1670·36	1811·36	1558·97	970·98	365·12	54·60	·84
+ *·45*	349·12	657·90	1087·22	1556·06	1878·12	1820·03	1293·78	564·21	99·74	1·86
+ *·50*	234·22	478·81	865·73	1369·26	1847·84	2030·22	1663·80	853·62	182·02	4·22
+ *·55*	146·13	324·22	642·35	1125·98	1707·27	2142·80	2047·42	1256·38	331·00	9·90
+ *·60*	83·54	201·23	437·52	852·59	1460·03	2110·68	2381·31	1781·59	596·99	24·05
+ *·65*	42·84	112·08	267·85	582·09	1132·06	1902·13	2570·49	2397·95	1058·86	60·84
+ *·70*	19·10	54·30	142·84	347·36	771·78	1522·30	2504·51	2991·52	1818·97	160·72
+ *·75*	7·05	21·79	63·21	172·59	440·91	1032·18	2106·17	3324·73	2942·45	442·92
+ *·80*	1·98	6·67	21·38	65·80	194·61	547·33	1415·08	3067·10	4243·31	1257·03
+ *·85*	·37	1·34	4·74	16·51	56·94	195·02	654·85	2042·00	4852·41	3500·67
+ *·90*	·03	·12	·49	1·93	7·82	33·12	148·67	706·81	3278·45	8051·44
+ *·95*	·00	·00	·01	·03	·17	·89	5·53	43·15	467·87	6952·68
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0970	·1941	·2915	·3895	·4881	·5876	·6883	·7903	·8941
Mode	·0000	·1190	·2364	·3507	·4608	·5656	·6646	·7575	·8442	·9250
σ	·2500	·2479	·2415	·2307	·2153	·1951	·1696	·1384	·1006	·0551
$(1-\rho^2)/\sqrt{n-1}$	·2500	·2475	·2400	·2275	·2100	·1875	·1600	·1275	·0900	·0475
β_1	·0000	·0168	·0683	·1582	·2934	·4855	·7543	1·1348	1·6940	2·5832
β_2	2·6667	2·6960	2·7861	2·9446	3·1855	3·5340	4·0337	4·7661	5·9012	7·8748

TABLE XXXII.—(*continued*).

$n = 18$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·00	—	—	—	—	—	—	—	—	—
− *·90*	·01	·00	·00	—	—	—	—	—	—	—
− *·85*	·20	·05	·01	·00	—	—	—	—	—	—
− *·80*	1·23	·32	·08	·02	·00	—	—	—	—	—
− *·75*	4·82	1·34	·34	·08	·01	·00	—	—	—	—
− *·70*	14·10	4·24	1·15	·27	·05	·01	—	—	—	—
− *·65*	33·66	10·93	3·16	·80	·17	·03	—	—	—	—
− *·60*	69·10	24·24	7·52	2·02	·45	·08	·01	—	—	—
− *·55*	126·18	47·87	15·93	4·55	1·08	·20	·03	—	—	—
− *·50*	209·71	86·05	30·73	9·36	2·35	·46	·06	—	—	—
− *·45*	322·33	143·10	54·93	17·88	4·76	·98	·14	·01	—	—
− *·40*	463·60	222·77	91·98	32·03	9·09	1·98	·30	·03	—	—
− *·35*	629·39	327·48	145·60	54·32	16·44	3·80	·61	·06	—	—
− *·30*	811·85	457·58	219·30	87·80	28·40	7·01	1·19	·11	—	—
− *·25*	999·97	610·75	315·87	135·94	47·10	12·40	2·24	·23	·01	—
− *·20*	1180·56	781·66	436·73	202·39	75·28	21·22	4·09	·44	·02	—
− *·15*	1339·70	961·98	581·30	290·60	116·32	35·20	7·27	·84	·03	—
− *·10*	1464·32	1140·77	746·40	403·25	174·11	56·74	12·60	1·57	·07	—
− *·05*	1543·76	1305·33	925·87	541·62	252·92	89·04	21·34	2·86	·14	—
·00	1571·04	1442·41	1110·44	704·76	356·91	136·21	35·38	5·13	·27	—
+ *·05*	1543·76	1539·62	1288·06	888·76	489·54	203·29	57·47	9·09	·51	·00
+ *·10*	1464·32	1587·04	1444·69	1086·05	652·63	296·06	91·57	15·86	·98	·01
+ *·15*	1339·70	1578·54	1565·59	1285·14	845·22	420·66	143·10	27·33	1·87	·01
+ *·20*	1180·56	1512·94	1637·00	1470·71	1062·25	582·69	219·31	46·52	3·55	·02
+ *·25*	999·97	1394·42	1648·23	1624·60	1293·27	785·76	329·31	78·24	6·73	·05
+ *·30*	811·85	1232·37	1593·57	1727·60	1521·54	1029·39	483·81	129·92	12·75	·11
+ *·35*	629·39	1040·48	1473·96	1762·12	1723·97	1306·25	693·90	212·79	24·12	·24
+ *·40*	463·60	835·02	1297·82	1715·64	1872·57	1598·97	968·37	343·11	45·64	·54
+ *·45*	322·33	632·84	1080·74	1584·29	1937·95	1877·54	1308·88	543·00	86·32	1·26
+ *·50*	209·71	449·00	843·82	1375·79	1895·25	2098·72	1702·25	839·57	162·94	3·00
+ *·55*	126·18	294·75	610·56	1110·63	1731·96	2209·80	2110·51	1259·46	306·15	7·37
+ *·60*	69·10	176·17	402·90	820·29	1456·10	2159·46	2461·52	1813·97	569·59	18·84
+ *·65*	33·66	93·71	236·98	541·90	1101·45	1917·07	2648·10	2468·15	1039·63	50·19
+ *·70*	14·10	42·89	120·15	309·66	725·26	1497·24	2550·03	3092·09	1830·85	139·75
+ *·75*	4·82	16·03	49·82	145·26	394·72	977·87	2094·49	3417·34	3017·33	406·10
+ *·80*	1·23	4·48	15·47	51·23	162·68	489·96	1350·14	3087·13	4385·61	1213·45
+ *·85*	·20	·79	3·05	11·51	43·06	159·94	582·14	1960·44	4953·44	3534·99
+ *·90*	·01	·05	·26	1·14	5·05	23·50	116·49	614·60	3164·79	8320·69
+ *·95*	·00	·00	·00	·01	·08	·47	3·32	29·69	377·45	6744·32
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0971	·1944	·2920	·3901	·4888	·5884	·6890	·7909	·8945
Mode	·0000	·1176	·2338	·3472	·4567	·5613	·6605	·7540	·8417	·9236
σ	·2425	·2405	·2342	·2237	·2086	·1889	·1641	·1337	·0970	·0530
$(1-\rho^2)/\sqrt{n-1}$	·2425	·2401	·2328	·2207	·2037	·1819	·1552	·1237	·0873	·0461
β_1	·0000	·0161	·0653	·1511	·2797	·4617	·7147	1·0695	1·5839	2·3830
β_2	2·6842	2·7124	2·7992	2·9515	3·1823	3·5144	3·9873	4·6737	5·7207	7·4908

TABLE XXXII.—(*continued*).

$n = 19$. ρ variate (correlation in population sampled).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·00	—	—	—	—	—	—	—	—	—
− *·90*	·01	·00	—	—	—	—	—	—	—	—
− *·85*	·11	·02	·00	·00	—	—	—	—	—	—
− *·80*	·76	·18	·04	·01	·00	—	—	—	—	—
− *·75*	3·29	·85	·20	·04	·01	—	—	—	—	—
− *·70*	10·39	2·90	·73	·16	·03	·00	—	—	—	—
− *·65*	26·39	8·00	2·15	·50	·10	·01	—	—	—	—
− *·60*	57·03	18·78	5·43	1·35	·27	·04	·00	—	—	—
− *·55*	108·73	38·90	12·11	3·21	·70	·12	·01	—	—	—
− *·50*	187·37	72·86	24·46	6·94	1·60	·28	·03	·00	—	—
− *·45*	296·98	125·54	45·49	13·84	3·41	·64	·08	·01	—	—
− *·40*	438·38	201·54	78·91	25·79	6·79	1·35	·18	·01	—	—
− *·35*	608·28	304·27	128·86	45·32	12·77	2·71	·39	·03	—	—
− *·30*	799·03	435·05	199·51	75·63	22·88	5·19	·79	·07	—	—
− *·25*	998·93	592·25	294·45	120·51	39·21	9·54	1·56	·14	·00	—
− *·20*	1193·40	770·79	415·93	184·13	64·59	16·89	2·96	·28	·01	—
− *·15*	1366·56	961·93	564·06	270·60	102·59	28·93	5·45	·56	·02	—
− *·10*	1503·20	1153·66	736·02	383·39	157·51	48·04	9·76	1·07	·04	—
− *·05*	1590·74	1331·66	925·52	524·53	234·18	77·52	17·08	2·03	·08	—
·00	1620·88	1480·70	1122·52	693·62	337·49	121·70	29·20	3·78	·16	—
+ *·05*	1590·74	1586·45	1313·57	886·92	471·76	186·07	48·84	6·93	·33	—
+ *·10*	1503·20	1637·37	1482·73	1096·42	639·60	277·05	80·00	12·50	·66	·00
+ *·15*	1366·56	1626·51	1613·08	1309·42	840·60	401·73	128·32	22·24	1·30	·01
+ *·20*	1193·40	1552·77	1688·90	1508·71	1069·70	566·77	201·53	39·05	2·57	·01
+ *·25*	998·93	1421·51	1698·12	1673·64	1315·58	776·85	309·60	67·65	5·04	·03
+ *·30*	799·03	1244·13	1634·75	1782·33	1559·56	1032·16	464·51	115·58	9·90	·06
+ *·35*	608·28	1036·82	1500·76	1815·10	1775·54	1325·12	679·05	194·50	19·43	·15
+ *·40*	438·38	818·35	1306·92	1758·51	1931·83	1636·61	963·78	321·76	38·08	·35
+ *·45*	296·98	607·48	1072·08	1609·70	1995·55	1932·88	1321·43	521·51	74·55	·85
+ *·50*	187·37	420·16	820·76	1379·49	1939·87	2165·06	1738·01	824·05	145·56	2·12
+ *·55*	108·73	267·40	579·15	1093·22	1753·38	2274·19	2171·08	1259·96	282·59	5·48
+ *·60*	57·03	153·91	370·23	787·57	1449·19	2204·82	2539·21	1843·14	542·34	14·73
+ *·65*	26·39	78·18	209·24	503·43	1069·45	1928·16	2722·44	2535·20	1018·65	41·32
+ *·70*	10·39	33·81	100·85	275·47	680·14	1469·57	2591·04	3189·48	1839·04	121·27
+ *·75*	3·29	11·76	39·19	122·01	352·63	924·51	2078·60	3505·34	3087·80	371·57
+ *·80*	·76	3·00	11·17	39·80	135·72	437·70	1285·55	3100·93	4523·43	1169·00
+ *·85*	·11	·47	1·96	8·01	32·49	130·90	516·43	1878·29	5046·26	3562·39
+ *·90*	·01	·02	·14	·67	3·25	16·63	91·09	533·33	3048·86	8581·50
+ *·95*	·00	·00	·00	·01	·04	·25	1·99	20·38	303·89	6528·96
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0973	·1947	·2924	·3906	·4894	·5890	·6896	·7915	·8948
Mode	·0000	·1165	·2316	·3442	·4531	·5576	·6569	·7509	·8394	·9224
σ	·2357	·2337	·2275	·2172	·2025	·1832	·1590	·1294	·0937	·0511
$(1-\rho^2)/\sqrt{n-1}$	·2357	·2333	·2263	·2145	·1980	·1768	·1508	·1202	·0849	·0448
β_1	·0000	·0154	·0626	·1446	·2672	·4400	·6789	1·0110	1·4866	2·2105
β_2	2·7000	2·7272	2·8109	2·9573	3·1787	3·4958	3·9447	4·5897	5·5597	7·1586

TABLE XXXII.—(*continued*).

$n = 20$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	—	—	—	—	—	—	—	—	—	—
− *·90*	·00	·00	—	—	—	—	—	—	—	—
− *·85*	·06	·01	·00	—	—	—	—	—	—	—
− *·80*	·47	·10	·02	·00	—	—	—	—	—	—
− *·75*	2·24	·53	·11	·02	·00	—	—	—	—	—
− *·70*	7·64	1·99	·46	·10	·02	·00	—	—	—	—
− *·65*	20·65	5·85	1·46	·31	·05	·01	—	—	—	—
− *·60*	46·98	14·53	3·91	·90	·17	·02	·00	—	—	—
− *·55*	93·51	31·56	9·20	2·26	·45	·07	·01	—	—	—
− *·50*	167·11	61·57	19·43	5·14	1·09	·17	·02	—	—	—
− *·45*	273·13	109·93	37·61	10·70	2·44	·42	·05	·00	—	—
− *·40*	413·76	181·99	67·57	20·74	5·06	·92	·11	·01	—	—
− *·35*	586·81	282·18	113·83	37·75	9·91	1·93	·25	·02	—	—
− *·30*	784·96	412·86	181·17	65·03	18·39	3·84	·53	·04	—	—
− *·25*	996·07	573·27	273·98	106·64	32·57	7·32	1·08	·08	—	—
− *·20*	1204·17	758·68	395·39	167·20	55·31	13·42	2·13	·18	·00	—
− *·15*	1391·40	960·11	546·33	251·51	90·32	23·73	4·07	·37	·01	—
− *·10*	1540·28	1164·55	724·46	363·84	142·24	40·60	7·55	·73	·02	—
− *·05*	1636·14	1356·03	923·47	507·05	216·43	67·37	13·64	1·44	·05	—
·00	1669·24	1517·23	1132·65	681·41	318·54	108·54	24·06	2·78	·10	—
+ *·05*	1636·14	1631·71	1337·14	883·46	453·78	169·98	41·43	5·27	·21	—
+ *·10*	1540·28	1686·21	1518·98	1104·85	625·68	258·79	69·76	9·84	·44	—
+ *·15*	1391·40	1672·86	1658·98	1331·72	834·48	382·94	114·86	18·07	·90	·00
+ *·20*	1204·17	1590·74	1739·26	1544·87	1075·23	550·27	184·86	32·72	1·85	·01
+ *·25*	996·07	1446·47	1746·32	1720·99	1335·82	766·63	290·54	58·39	3·77	·02
+ *·30*	784·96	1253·70	1673·93	1835·44	1595·60	1033·05	445·18	102·63	7·68	·04
+ *·35*	586·81	1031·28	1525·25	1866·25	1825·32	1341·82	663·32	177·47	15·62	·09
+ *·40*	413·76	800·54	1313·68	1799·15	1989·34	1672·08	957·45	301·19	31·71	·22
+ *·45*	273·13	582·06	1061·54	1632·51	2051·11	1986·22	1331·67	499·96	64·26	·57
+ *·50*	167·11	392·47	796·88	1380·68	1981·92	2229·43	1771·29	807·35	129·80	1·50
+ *·55*	93·51	242·15	548·35	1074·11	1771·83	2336·21	2229·32	1258·17	260·36	4·07
+ *·60*	46·98	134·22	339·60	754·79	1439·68	2247·04	2614·58	1869·39	515·46	11·50
+ *·65*	20·65	65·11	184·41	466·85	1036·50	1935·78	2793·79	2599·35	996·30	33·96
+ *·70*	7·64	26·60	84·50	244·62	636·66	1439·79	2627·94	3283·99	1843·93	105·05
+ *·75*	2·24	8·62	30·77	102·29	314·46	872·48	2059·10	3589·11	3154·22	339·37
+ *·80*	·47	2·00	8·05	30·87	113·01	390·31	1221·83	3109·18	4657·18	1124·15
+ *·85*	·06	·28	1·25	5·56	24·47	106·93	457·32	1796·33	5131·57	3583·56
+ *·90*	·00	·00	·08	·39	2·09	11·76	71·10	461·97	2931·90	8834·61
+ *·95*	—	—	·00	·00	·02	·13	1·19	13·97	244·23	6309·15
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0974	·1950	·2928	·3911	·4900	·5896	·6902	·7919	·8951
Mode	·0000	·1154	·2297	·3415	·4500	·5543	·6538	·7482	·8374	·9213
σ	·2294	·2274	·2214	·2113	·1969	·1780	·1543	·1254	·0907	·0493
$(1-\rho^2)/\sqrt{n-1}$	·2294	·2271	·2202	·2088	·1927	·1721	·1468	·1170	·0826	·0436
β_1	·0000	·0148	·0600	·1386	·2557	·4202	·6464	·9584	1·4001	2·0603
β_2	2·7143	2·7406	2·8213	2·9623	3·1749	3·4783	3·9055	4·5131	5·4154	6·8681

TABLE XXXII.—(*continued*).

$n = 21$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·00	—	—	—	—	—	—	—	—	—
− *·90*	·00	·00	—	—	—	—	—	—	—	—
− *·85*	·03	·01	·00	—	—	—	—	—	—	—
− *·80*	·29	·06	·01	·00	—	—	—	—	—	—
− *·75*	1·52	·34	·07	·01	·00	—	—	—	—	—
− *·70*	5·61	1·36	·29	·05	·01	—	—	—	—	—
− *·65*	16·13	4·27	·99	·19	·03	·00	—	—	—	—
− *·60*	38·65	11·22	2·82	·60	·10	·01	—	—	—	—
− *·55*	80·30	25·56	6·97	1·59	·29	·04	·00	—	—	—
− *·50*	148·80	51·95	15·41	3·79	·74	·11	·01	—	—	—
− *·45*	250·78	96·10	31·04	8·26	1·74	·27	·03	—	—	—
− *·40*	389·90	164·07	57·77	16·64	3·77	·63	·07	·00	—	—
− *·35*	565·17	261·27	100·39	31·39	7·67	1·37	·16	·01	—	—
− *·30*	769·89	391·17	164·25	55·82	14·76	2·84	·35	·02	—	—
− *·25*	991·59	553·98	254·51	94·20	27·02	5·61	·75	·05	—	—
− *·20*	1213·06	745·68	375·26	151·59	47·28	10·64	1·53	·11	·00	—
− *·15*	1414·38	956·73	528·29	233·39	79·38	19·43	3·04	·24	·01	—
− *·10*	1575·70	1173·63	711·91	344·73	128·23	34·26	5·83	·50	·01	—
− *·05*	1680·10	1378·59	919·93	489·35	199·70	58·45	10·88	1·02	·03	—
·00	1716·23	1552·13	1141·00	668·33	300·17	96·65	19·79	2·04	·06	—
+ *·05*	1680·10	1675·52	1358·90	878·59	435·79	155·05	35·09	4·01	·14	—
+ *·10*	1575·70	1733·68	1553·58	1111·53	611·07	241·33	60·74	7·73	·29	—
+ *·15*	1414·38	1717·73	1703·39	1352·20	827·05	364·44	102·64	14·66	·63	—
+ *·20*	1213·06	1626·97	1788·20	1579·31	1079·03	533·39	169·29	27·37	1·33	·00
+ *·25*	991·59	1469·48	1792·97	1766·81	1354·17	755·33	272·20	50·31	2·82	·01
+ *·30*	769·89	1261·29	1711·25	1887·05	1629·83	1032·26	425·95	90·99	5·95	·02
+ *·35*	565·17	1024·10	1547·62	1915·72	1873·44	1356·52	646·90	161·66	12·53	·06
+ *·40*	389·90	781·85	1318·32	1837·75	2045·23	1705·56	949·63	281·48	26·36	·14
+ *·45*	250·78	556·80	1049·40	1652·96	2104·80	2037·72	1339·82	478·52	55·31	·38
+ *·50*	148·80	366·00	772·43	1379·62	2021·59	2291·99	1802·29	789·71	115·56	1·06
+ *·55*	80·30	218·92	518·34	1053·63	1787·57	2396·03	2285·43	1254·35	239·50	3·02
+ *·60*	38·65	116·85	311·00	722·19	1427·92	2286·37	2687·85	1892·96	489·12	8·96
+ *·65*	16·13	54·13	162·26	432·22	1002·93	1940·29	2862·39	2660·83	972·87	27·86
+ *·70*	5·61	20·90	70·68	216·87	595·00	1408·33	2661·07	3375·86	1845·86	90·85
+ *·75*	1·52	6·31	24·12	85·61	279·97	822·04	2036·49	3668·97	3216·90	309·47
+ *·80*	·29	1·34	5·79	23·90	93·95	347·48	1159·40	3112·44	4787·20	1079·30
+ *·85*	·03	·16	·80	3·86	18·41	87·22	404·32	1715·20	5209·97	3599·09
+ *·90*	·00	·00	·04	·23	1·34	8·29	55·40	399·51	2814·91	9080·68
+ *·95*	—	—	·00	·00	·01	·07	·71	9·56	195·96	6087·03
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0976	·1952	·2932	·3916	·4905	·5902	·6907	·7924	·8954
Mode	·0000	·1145	·2279	·3391	·4472	·5515	·6509	·7457	·8354	·9203
σ	·2236	·2216	·2157	·2058	·1917	·1732	·1500	·1218	·0880	·0478
$(1-\rho^2)/\sqrt{n-1}$	·2236	·2214	·2147	·2035	·1878	·1677	·1431	·1140	·0805	·0425
β_1	·0000	·0142	·0577	·1331	·2451	·4020	·6166	·9107	1·3227	1·9288
β_2	2·7273	2·7527	2·8306	2·9666	3·1711	3·4617	3·8683	4·4432	5·2858	6·6169

TABLE XXXII.—(*continued*).

$n = 22$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·00	—	—	—	—	—	—	—	—	—
− *·90*	·01	—	—	—	—	—	—	—	—	—
− *·85*	·02	·00	·00	—	—	—	—	—	—	—
− *·80*	·18	·03	·01	·00	—	—	—	—	—	—
− *·75*	1·03	·21	·04	·01	—	—	—	—	—	—
− *·70*	4·11	·92	·18	·03	·00	—	—	—	—	—
− *·65*	12·59	3·11	·67	·12	·02	·00	—	—	—	—
− *·60*	31·74	8·65	2·02	·40	·06	·01	—	—	—	—
− *·55*	68·85	20·67	5·28	1·12	·19	·02	·00	—	—	—
− *·50*	132·30	43·77	12·21	2·80	·50	·07	·01	—	—	—
− *·45*	229·92	83·90	25·58	6·36	1·24	·17	·02	—	—	—
− *·40*	366·87	147·70	49·31	13·34	2·80	·43	·04	·00	—	—
− *·35*	543·53	241·56	88·41	26·06	5·93	·97	·10	·01	—	—
− *·30*	754·00	370·08	148·69	47·84	11·83	2·09	·23	·01	—	—
− *·25*	985·69	534·57	236·09	83·10	22·38	4·29	·52	·03	—	—
− *·20*	1220·22	731·56	355·63	137·23	40·36	8·43	1·10	·07	—	—
− *·15*	1435·65	951·98	510·10	216·26	69·67	15·89	2·26	·16	·00	—
− *·10*	1609·59	1181·06	698·57	326·14	115·44	28·86	4·49	·34	·01	—
− *·05*	1722·72	1399·48	915·06	471·58	183·99	50·64	8·67	·72	·02	—
·00	1761·97	1585·51	1147·75	654·54	282·44	85·93	16·25	1·50	·04	—
+ *·05*	1722·72	1718·00	1379·01	872·46	417·89	141·20	29·67	3·04	·09	—
+ *·10*	1609·59	1779·88	1586·65	1116·63	595·93	224·73	52·80	6·06	·20	—
+ *·15*	1435·65	1761·23	1746·45	1370·99	818·50	346·33	91·59	11·87	·43	—
+ *·20*	1220·22	1661·60	1835·83	1612·18	1081·27	516·27	154·80	22·86	·96	—
+ *·25*	985·69	1490·67	1838·17	1811·21	1370·78	743·10	254·65	43·29	2·10	·00
+ *·30*	754·00	1267·07	1746·86	1937·29	1662·37	1029·97	406·96	80·55	4·60	·01
+ *·35*	543·53	1015·49	1568·03	1963·65	1920·03	1369·38	629·96	147·04	10·04	·03
+ *·40*	366·87	762·48	1321·06	1874·43	2099·64	1737·17	940·51	262·68	21·88	·09
+ *·45*	229·92	531·86	1035·89	1671·23	2156·76	2087·52	1346·06	457·35	47·54	·26
+ *·50*	132·30	340·82	747·64	1376·56	2059·06	2352·90	1831·17	771·34	102·73	·75
+ *·55*	68·85	197·63	489·26	1032·04	1800·84	2453·82	2339·55	1248·74	219·99	2·23
+ *·60*	31·74	101·58	284·38	690·00	1414·20	2323·01	2759·17	1914·05	463·46	6·97
+ *·65*	12·59	44·94	142·57	399·58	969·04	1942·00	2928·43	2719·83	948·62	22·83
+ *·70*	4·11	16·39	59·04	191·99	555·25	1375·57	2690·72	3465·29	1845·14	78·45
+ *·75*	1·03	4·60	18·88	71·56	248·90	773·40	2011·22	3745·20	3276·10	281·79
+ *·80*	·18	·89	4·16	18·48	78·00	308·91	1098·57	3111·21	4913·78	1034·74
+ *·85*	·02	·10	·51	2·67	13·82	71·03	356·95	1635·37	5281·97	3609·52
+ *·90*	·01	·00	·02	·13	·86	5·84	43·11	345·00	2698·71	9320·25
+ *·95*	·00	—	·00	·00	·00	·04	·42	6·53	157·01	5864·34
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0977	·1955	·2935	·3920	·4910	·5906	·6912	·7928	·8956
Mode	·0000	·1137	·2264	·3369	·4447	·5486	·6484	·7435	·8339	·9194
σ	·2182	·2162	·2105	·2007	·1869	·1688	·1461	·1185	·0855	·0464
$(1-\rho^2)/\sqrt{n-1}$	·2182	·2160	·2095	·1986	·1833	·1637	·1396	·1113	·0786	·0415
β_1	·0000	·0137	·0555	·1279	·2354	·3853	·5893	·8674	1·2532	1·8125
β_2	2·7391	2·7630	2·8390	2·9703	3·1672	3·4461	3·8328	4·3790	5·1687	6·3926

TABLE XXXII.—(*continued*).

$n = 23$. ρ variate (correlation in population sampled).

r variate (correlation in sample).

	0	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	·00	—	—	—	—	—	—	—	—	—
− *·90*	·00	—	—	—	—	—	—	—	—	—
− *·85*	·01	·00	—	—	—	—	—	—	—	—
− *·80*	·11	·02	—	—	—	—	—	—	—	—
− *·75*	·70	·13	·00	—	—	—	—	—	—	—
− *·70*	3·01	·63	·11	·00	·00	—	—	—	—	—
− *·65*	9·81	2·26	·45	·08	·01	—	—	—	—	—
− *·60*	26·04	6·66	1·45	·26	·04	·00	—	—	—	—
− *·55*	58·96	16·69	3·99	·78	·12	·01	—	—	—	—
− *·50*	117·47	36·83	9·65	2·06	·34	·04	·00	—	—	—
− *·45*	210·52	73·14	21·06	4·90	·88	·11	·01	—	—	—
− *·40*	344·75	132·79	42·04	10·68	2·08	·29	·02	—	—	—
− *·35*	522·03	223·04	77·76	21·61	4·58	·69	·06	·00	—	—
− *·30*	737·47	349·67	134·43	40·95	9·47	1·54	·15	·01	—	—
− *·25*	978·54	515·16	218·71	73·21	18·51	3·28	·36	·02	—	—
− *·20*	1225·82	716·90	336·58	124·07	34·41	6·67	·79	·04	—	—
− *·15*	1455·33	946·00	491·89	200·13	61·07	12·98	1·68	·10	—	—
− *·10*	1642·05	1186·97	684·57	308·15	103·79	24·29	3·46	·23	·00	—
− *·05*	1764·10	1418·82	909·02	453·86	169·29	43·81	6·89	·51	·01	—
·00	1806·56	1617·48	1153·02	640·19	265·41	76·30	13·33	1·10	·02	—
+ *·05*	1764·10	1759·25	1397·58	865·25	400·21	128·44	25·06	2·30	·06	—
+ *·10*	1642·05	1824·91	1618·30	1120·27	580·40	208·99	45·84	4·75	·13	—
+ *·15*	1455·33	1803·46	1788·25	1388·22	808·98	328·68	81·62	9·60	·30	—
+ *·20*	1225·82	1694·75	1882·27	1643·56	1082·09	499·05	141·37	19·07	·69	—
+ *·25*	978·54	1510·18	1882·05	1854·28	1385·76	730·12	237·92	37·20	1·56	·00
+ *·30*	737·47	1271·20	1780·86	1986·26	1693·34	1026·34	388·31	71·21	3·55	·01
+ *·35*	522·03	1005·63	1586·63	2010·13	1965·21	1380·56	612·67	133·58	8·04	·02
+ *·40*	344·75	742·61	1322·06	1909·35	2152·67	1767·06	930·25	244·82	18·14	·06
+ *·45*	210·52	507·37	1021·21	1687·50	2207·11	2135·75	1350·57	436·53	40·80	·17
+ *·50*	117·47	316·95	722·70	1371·71	2094·49	2412·26	1858·09	752·42	91·21	·52
+ *·55*	58·96	178·18	461·21	1009·57	1811·83	2509·73	2391·84	1241·53	201·81	1·65
+ *·60*	26·04	88·20	259·71	658·38	1398·78	2357·16	2828·70	1932·86	438·57	5·42
+ *·65*	9·81	37·26	125·10	368·92	935·07	1941·17	2992·09	2776·53	923·77	18·68
+ *·70*	3·01	12·84	49·25	169·74	517·49	1341·82	2717·16	3552·48	1842·02	67·66
+ *·75*	·70	3·36	14·76	59·73	220·99	726·69	1983·68	3818·06	3332·08	256·26
+ *·80*	·11	·59	2·99	14·27	64·66	274·26	1039·58	3105·96	5037·18	990·75
+ *·85*	·01	·06	·33	1·85	10·37	57·78	314·71	1557·24	5348·05	3615·31
+ *·90*	·00	·00	·01	·08	·55	4·11	33·50	297·55	2583·97	9553·82
+ *·95*	·00	·00	·00	·00	·00	·02	·25	4·46	125·64	5642·53
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0978	·1957	·2938	·3923	·4914	·5911	·6916	·7931	·8958
Mode	·0000	·1130	·2250	·3351	·4424	·5462	·6461	·7415	·8324	·9185
σ	·2132	·2113	·2056	·1960	·1825	·1647	·1425	·1155	·0832	·0450
$(1-\rho^2)/\sqrt{n-1}$	·2132	·2111	·2047	·1940	·1791	·1599	·1364	·1087	·0768	·0405
β_1	·0000	·0132	·0535	·1232	·2264	·3698	·5645	·8279	1·1905	1·7092
β_2	2·7500	2·7738	2·8467	2·9735	3·1633	3·4313	3·8024	4·3197	5·0623	6·1951

TABLE XXXII.—(*continued*).

$n = 24$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	—	—	—	—	—	—	—	—	—	—
− *·90*	·00	—	—	—	—	—	—	—	—	—
− *·85*	·01	—	—	—	—	—	—	—	—	—
− *·80*	·07	·00	·00	—	—	—	—	—	—	—
− *·75*	·48	·08	·01	—	—	—	—	—	—	—
− *·70*	2·20	·43	·07	·00	—	—	—	—	—	—
− *·65*	7·63	1·65	·30	·05	·00	—	—	—	—	—
− *·60*	21·33	5·12	1·04	·17	·02	·00	—	—	—	—
− *·55*	50·42	13·46	3·01	·55	·08	·01	—	—	—	—
− *·50*	104·18	30·95	7·63	1·52	·23	·03	·00	—	—	—
− *·45*	192·53	63·69	17·31	3·76	·63	·08	·01	—	—	—
− *·40*	323·58	119·24	35·80	8·54	1·54	·20	·02	—	—	—
− *·35*	500·79	205·69	68·31	17·90	3·53	·49	·04	—	—	—
− *·30*	720·45	329·99	121·39	35·02	7·57	1·13	·10	·00	—	—
− *·25*	970·29	495·86	202·37	64·42	15·29	2·51	·25	·01	—	—
− *·20*	1229·99	701·70	318·18	112·03	29·30	5·27	·57	·03	—	—
− *·15*	1473·52	938·94	473·77	184·97	53·46	10·58	1·25	·07	—	—
− *·10*	1673·17	1191·49	670·05	290·81	93·20	20·41	2·66	·16	·00	—
− *·05*	1804·33	1436·72	901·95	436·29	155·59	37·86	5·48	·36	·01	—
·00	1850·07	1648·13	1156·93	625·41	249·11	67·67	10·92	·80	·01	—
+ *·05*	1804·33	1799·35	1414·71	857·07	382·82	116·68	21·14	1·74	·04	—
+ *·10*	1673·17	1868·86	1648·62	1122·60	564·61	194·13	39·75	3·71	·09	—
+ *·15*	1473·52	1844·51	1828·88	1403·99	798·61	311·57	72·65	7·76	·21	—
+ *·20*	1229·99	1726·50	1927·58	1673·57	1081·63	481·83	128·95	15·89	·49	—
+ *·25*	970·29	1528·14	1924·68	1896·13	1399·26	716·52	222·03	31·93	1·16	—
+ *·30*	720·45	1273·84	1813·38	2034·06	1722·83	1021·51	370·08	62·89	2·74	·00
+ *·35*	500·79	994·68	1603·54	2055·28	2009·07	1390·19	595·15	121·20	6·42	·01
+ *·40*	323·58	722·40	1321·50	1942·61	2204·43	1795·33	919·02	227·90	15·02	·04
+ *·45*	192·53	483·43	1005·54	1701·90	2255·95	2182·51	1353·49	416·18	34·98	·12
+ *·50*	104·18	294·40	697·76	1365·25	2128·00	2470·20	1883·18	733·09	80·88	·37
+ *·55*	50·42	160·45	434·25	986·41	1820·73	2563·87	2442·41	1232·91	184·91	1·22
+ *·60*	21·33	76·48	236·89	627·46	1381·90	2388·99	2896·56	1949·56	414·53	4·21
+ *·65*	7·63	30·86	109·64	340·21	901·23	1938·06	3053·53	2831·08	898·52	15·27
+ *·70*	2·20	10·05	41·03	149·89	481·72	1307·36	2740·64	3637·57	1836·75	58·29
+ *·75*	·48	2·45	11·52	49·80	195·98	682·00	1954·22	3887·76	3385·03	232·77
+ *·80*	·07	·39	2·14	11·00	53·55	243·21	982·60	3097·07	5157·63	947·52
+ *·85*	·01	·03	·21	1·28	7·76	46·94	277·15	1481·10	5408·62	3616·87
+ *·90*	·00	·00	·01	·04	·35	2·89	26·01	256·32	2471·22	9781·81
+ *·95*	·00	·00	·00	·00	·00	·01	·15	3·04	100·42	5422·78
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0979	·1959	·2941	·3927	·4918	·5915	·6920	·7934	·8960
Mode	·0000	·1124	·2238	·3334	·4404	·5441	·6440	·7397	·8310	·9178
σ	·2085	·2067	·2011	·1916	·1783	·1609	·1391	·1127	·0811	·0438
$(1-\rho^2)/\sqrt{n-1}$	·2085	·2064	·2002	·1897	·1752	·1564	·1334	·1063	·0751	·0396
β_1	·0000	·0127	·0516	·1187	·2180	·3557	·5419	·7918	1·1335	1·6167
β_2	2·7600	2·7826	2·8537	2·9764	3·1596	3·4174	3·7774	4·2653	4·9654	6·0161

TABLE XXXII.—(*continued*).

$n = 25$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	*·9*
− *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	—	—	—	—	—	—	—	—	—	—
− *·90*	—	—	—	—	—	—	—	—	—	—
− *·85*	·00	—	—	—	—	—	—	—	—	—
− *·80*	·04	·00	—	—	—	—	—	—	—	—
− *·75*	·32	·05	·00	—	—	—	—	—	—	—
− *·70*	1·61	·29	·05	·00	—	—	—	—	—	—
− *·65*	5·93	1·20	·21	·03	·00	—	—	—	—	—
− *·60*	17·46	3·93	·75	·12	·01	—	—	—	—	—
− *·55*	43·08	10·85	2·27	·38	·05	·00	—	—	—	—
− *·50*	92·30	25·99	6·01	1·11	·16	·01	—	—	—	—
− *·45*	175·88	55·40	14·22	2·89	·44	·05	·00	—	—	—
− *·40*	303·38	106·96	30·45	6·82	1·14	·13	·01	—	—	—
− *·35*	479·90	189·49	59·94	14·80	2·72	·34	·03	—	—	—
− *·30*	703·06	311·08	109·50	29·91	6·05	·83	·07	·00	—	—
− *·25*	961·07	476·77	187·04	56·62	12·62	1·80	·17	·01	—	—
− *·20*	1232·83	686·08	300·46	101·06	24·92	4·15	·41	·02	—	—
− *·15*	1490·32	930·93	455·82	170·78	46·75	8·62	·93	·04	—	—
− *·10*	1703·04	1194·73	655·13	274·14	83·60	17·14	2·04	·11	—	—
− *·05*	1843·49	1453·28	893·96	418·94	142·84	32·68	4·35	·25	·00	—
·00	1892·58	1677·56	1159·60	610·31	233·56	59·95	8·94	·59	·01	—
+ *·05*	1843·49	1838·37	1430·51	848·05	365·78	105·89	17·81	1·32	·02	—
+ *·10*	1703·04	1911·80	1677·69	1123·71	548·65	180·12	34·44	2·90	·06	—
+ *·15*	1490·32	1884·46	1868·40	1418·41	787·53	295·02	64·59	6·26	·14	—
+ *·20*	1232·83	1756·95	1971·86	1702·29	1080·00	464·70	117·49	13·22	·35	—
+ *·25*	961·07	1544·63	1966·16	1936·84	1411·36	702·41	206·98	27·37	·86	—
+ *·30*	703·06	1275·10	1844·50	2080·76	1750·96	1015·61	352·32	55·47	2·11	·00
+ *·35*	479·90	982·79	1618·89	2099·17	2051·69	1398·37	577·51	109·85	5·13	·01
+ *·40*	303·38	701·99	1319·51	1974·33	2255·00	1822·10	906·95	211·92	12·43	·02
+ *·45*	175·88	460·12	989·05	1714·58	2303·40	2227·89	1354·96	396·34	29·95	·08
+ *·50*	92·30	273·17	672·95	1357·37	2159·72	2526·88	1906·56	713·49	71·65	·26
+ *·55*	43·08	144·33	408·43	962·75	1827·71	2616·37	2491·37	1223·04	169·24	·90
+ *·60*	17·46	66·25	215·85	597·36	1363·75	2418·65	2962·87	1964·30	391·39	3·26
+ *·65*	5·93	25·53	95·99	313·40	867·68	1932·87	3112·90	2883·60	873·02	12·46
+ *·70*	1·61	7·85	34·15	132·22	447·95	1272·41	2761·35	3720·72	1829·54	50·16
+ *·75*	·32	1·78	8·99	41·47	173·61	639·37	1923·13	3954·50	3435·16	211·20
+ *·80*	·04	·26	1·53	8·48	44·30	215·45	927·75	3084·92	5275·33	905·21
+ *·85*	·00	·02	·13	·88	5·81	38·09	243·81	1407·18	5464·05	3614·59
+ *·90*	—	·00	·00	·00	·22	2·03	20·16	220·57	2360·87	10004·61
+ *·95*	—	—	—	—	·00	·01	·09	2·07	80·18	5206·06
+ *1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
Mean	·0000	·0980	·1960	·2943	·3930	·4921	·5918	·6923	·7937	·8962
Mode	·0000	·1118	·2227	·3318	·4385	·5421	·6420	·7380	·8297	·9170
σ	·2041	·2023	·1968	·1875	·1744	·1573	·1359	·1100	·0791	·0427
$(1-\rho^2)/\sqrt{n-1}$	·2041	·2021	·1960	·1858	·1715	·1531	·1306	·1041	·0735	·0388
β_1	·0000	·0123	·0499	·1146	·2102	·3423	·5203	·7586	1·0816	1·5334
β_2	2·7692	2·7916	2·8601	2·9788	3·1559	3·4042	3·7453	4·2149	4·8769	5·8584

TABLE XXXII.—(*continued*).

$n = 50$. ρ variate (correlation in population sampled).

r variate (correlation in sample)	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*	r variate (correlation in sample)	*·9*
−*1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00	*·67*	·2
− *·95*	—	—	—	—	—	—	—	—	—	*·68*	·3
− *·90*	—	—	—	—	—	—	—	—	—	*·69*	·6
− *·85*	—	—	—	—	—	—	—	—	—	*·70*	1·0
− *·80*	—	—	—	—	—	—	—	—	—	*·71*	1·7
− *·75*	—	—	—	—	—	—	—	—	—	*·72*	2·9
− *·70*	·00	—	—	—	—	—	—	—	—	*·73*	5·1
− *·65*	·01	—	—	—	—	—	—	—	—	*·74*	8·8
− *·60*	·10	·00	—	—	—	—	—	—	—	*·75*	15·3
− *·55*	·69	·04	·00	—	—	—	—	—	—	*·76*	26·7
− *·50*	3·68	·27	·01	—	—	—	—	—	—	*·77*	46·4
− *·45*	15·10	1·40	·08	·00	—	—	—	—	—	*·78*	80·4
− *·40*	49·85	5·82	·44	·02	—	—	—	—	—	*·79*	138·9
− *·35*	136·13	20·06	1·88	·11	·00	—	—	—	—	*·80*	238·4
− *·30*	314·21	58·57	6·85	·48	·02	—	—	—	—	*·81*	406·0
− *·25*	623·17	147·07	21·50	1·85	·09	—	—	—	—	*·82*	683·7
− *·20*	1075·24	321·70	59·02	6·32	·36	·00	—	—	—	*·83*	1134·8
− *·15*	1629·13	618·58	142·88	19·11	1·35	·04	—	—	—	*·84*	1848·2
− *·10*	2182·12	1052·79	307·18	51·61	4·55	·18	·00	—	—	*·85*	2936·7
− *·05*	2595·77	1593·19	589·27	125·03	13·87	·68	·01	—	—	*·86*	4519·5
·00	2749·60	2149·47	1011·38	272·76	38·38	2·39	·05	—	—	*·87*	6673·8
+ *·05*	2595·77	2587·70	1554·59	535·97	96·53	7·70	·20	·00	—	*·88*	9340·1
+ *·10*	2182·12	2777·44	2138·36	948·41	220·60	22·82	·78	·01	—	*·89*	12187·5
+ *·15*	1629·13	2650·80	2625·45	1507·84	457·26	62·11	2·82	·02	—	*·90*	14502·0
+ *·20*	1075·24	2239·38	2864·46	2144·80	856·50	154·86	9·46	·11	—	*·91*	15261·3
+ *·25*	623·17	1663·32	2758·76	2712·27	1441·46	351·85	29·47	·48	—	*·92*	13599·9
+ *·30*	314·21	1076·19	2323·98	3022·24	2161·66	723·72	84·89	1·99	·00	*·93*	9630·6
+ *·35*	136·13	599·07	1691·43	2932·02	2856·13	1333·93	224·22	7·75	·02	*·94*	4918·7
+ *·40*	49·85	282·26	1046·45	2437·43	3274·68	2172·97	536·92	28·37	·09	*·95*	1550·4
+ *·45*	15·10	110·16	538·66	1700·04	3192·62	3070·40	1147·17	96·36	·51	*·96*	230·3
+ *·50*	3·68	34·61	224·22	967·26	2575·61	3668·50	2138·79	298·71	2·85	*·97*	9·6
+ *·55*	·69	8·42	72·63	432·21	1656·86	3578·51	3372·39	824·60	15·26	*·98*	·3
+ *·60*	·10	1·51	17·37	143·93	807·35	2713·26	4300·25	1954·75	76·77	*·99*	·0
+ *·65*	·01	·18	2·84	33·16	276·92	1489·70	4152·55	3764·57	350·56		
+ *·70*	·00	·01	·29	4·73	59·97	532·70	2747·94	5398·21	1367·63		
+ *·75*	—	·00	·01	·35	6·91	104·96	1061·91	4990·96	4092·05		
+ *·80*	—	—	·00	·01	·32	8·58	181·98	2306·06	7650·44		
+ *·85*	—	—	—	·00	·00	·17	8·16	322·77	5817·30		
+ *·90*	—	—	—	—	—	·00	·03	4·26	621·81		
+ *·95*	—	—	—	—	—	—	·00	·00	·24		
+*1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00		

For the constants of the curves for $n=50$: see Table XXXI[e] above.

TABLE XXXII.—(*continued*).

$n = 100$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	*·1*	*·2*	*·3*	*·4*	*·5*	*·6*	*·7*	*·8*
−1·00	·00	·00	·00	·00	·00	·00	·00	·00	·00
− *·95*	—	—	—	—	—	—	—	—	—
− *·90*	—	—	—	—	—	—	—	—	—
− *·85*	—	—	—	—	—	—	—	—	—
− *·80*	—	—	—	—	—	—	—	—	—
− *·75*	—	—	—	—	—	—	—	—	—
− *·70*	—	—	—	—	—	—	—	—	—
− *·65*	—	—	—	—	—	—	—	—	—
− *·60*	—	—	—	—	—	—	—	—	—
− *·55*	—	—	—	—	—	—	—	—	—
− *·50*	·00	—	—	—	—	—	—	—	—
− *·45*	·08	·00	—	—	—	—	—	—	—
− *·40*	·91	·01	—	—	—	—	—	—	—
− *·35*	7·43	·15	·00	—	—	—	—	—	—
− *·30*	42·60	1·41	·02	—	—	—	—	—	—
− *·25*	177·84	9·50	·18	·00	—	—	—	—	—
− *·20*	555·18	48·00	1·55	·02	—	—	—	—	—
− *·15*	1321·36	185·37	9·53	·16	·00	—	—	—	—
− *·10*	2431·67	554·86	45·84	1·24	·01	—	—	—	—
− *·05*	3493·29	1299·62	173·78	7·57	·09	—	—	—	—
·00	3939·27	2395·29	522·21	36·98	·70	·00	—	—	—
+ *·05*	3493·29	3480·22	1246·23	145·32	4·56	·03	—	—	—
+ *·10*	2431·67	3979·11	2358·16	458·62	24·21	·25	—	—	—
+ *·15*	1321·36	3560·42	3519·22	1156·81	104·66	1·87	·00	—	—
+ *·20*	555·18	2469·56	4103·61	2311·65	365·76	11·67	·04	—	—
+ *·25*	177·84	1309·30	3687·36	3611·32	1021·01	59·96	·41	—	—
+ *·30*	42·60	520·41	2504·77	4329·36	2237·43	249·60	3·35	·00	—
+ *·35*	7·43	151·11	1253·64	3884·32	3759·08	824·50	22·96	·03	—
+ *·40*	·91	30·98	446·88	2522·86	4690·55	2099·42	127·86	·35	—
+ *·45*	·08	4·29	108·49	1135·08	4166·27	3962·12	558·78	3·87	—
+ *·50*	·00	·38	16·90	333·60	2488·44	5254·02	1829·25	35·59	·00
+ *·55*	—	·02	1·56	59·16	925·05	4549·13	4200·10	254·84	·02
+ *·60*	—	·00	·08	5·68	192·25	2320·57	6157·92	1316·29	2·01
+ *·65*	—	—	·00	·25	19·17	601·45	5023·96	4363·45	38·45
+ *·70*	—	—	—	·00	·73	63·47	1850·41	7728·87	519·97
+ *·75*	—	—	—	—	·01	1·92	220·19	5408·23	3951·47
+ *·80*	—	—	—	—	·00	·01	4·76	876·76	10951·32
+ *·85*	—	—	—	—	—	·00	·01	11·56	4488·65
+ *·90*	—	—	—	—	—	—	·00	·00	29·37
+ *·95*	—	—	—	—	—	—	—	—	·00
+*1·00*	·00	·00	·00	·00	·00	·00	·00	·00	·00

r variate (correlation in sample).	*·9*	*·9* (normal curve)*
·75	·1	·0
·76	·2	—
·77	·5	—
·78	1·4	—
·79	4·0	·0
·80	11·3	·2
·81	31·3	·3
·82	84·7	3·2
·83	221·8	25·3
·84	556·2	150·2
·85	1320·0	678·6
·86	2919·0	2330·1
·87	5895·9	6082·6
·88	10597·3	11944·8
·89	16373·8	18211·3
·90	20754·4	20887·0
·91	20233·5	18211·3
·92	13848·4	11944·8
·93	5823·1	6082·6
·94	1227·8	2330·1
·95	93·7	678·6
·96	1·5	150·2
·97	—	25·3
·98	—	3·2
·99	—	·3
1·00	—	·2

* These ordinates indicate how poor is the approximation of a normal curve to the frequency of r, where n is 100, but ρ is large.

For the constants of the curves for $n = 100$: see Table XXXI′ above.

TABLE XXXII.—(*continued*).

$n = 200$. ρ variate (correlation in population sampled).

r variate (correlation in sample).	0	·1	·2	·3	·4	·5	·6	·7
−·35	·02	·00	·00	·00	·00	·00	·00	·00
−·30	·54	·00	—	—	—	—	—	—
−·25	10·04	·03	—	—	—	—	—	—
−·20	102·63	·74	·00	—	—	—	—	—
−·15	602·75	11·54	·03	—	—	—	—	—
−·10	2093·84	106·87	·71	·00	—	—	—	—
−·05	4387·01	599·65	10·48	·02	—	—	—	—
·00	5606·53	2062·51	96·53	·47	·00	—	—	—
+·05	4387·01	4365·03	555·35	7·41	·01	—	—	—
+·10	2093·84	5663·20	1988·65	74·37	·20	—	—	—
+·15	602·75	4453·91	4384·81	472·17	3·80	·00	—	—
+·20	102·63	2082·57	5840·28	1862·26	46·26	·05	—	—
+·25	10·04	562·56	4568·09	4440·01	355·27	1·21	—	—
+·30	·54	84·39	2017·83	6161·37	1662·53	20·59	·00	—
+·35	·02	6·67	477·58	4728·06	4516·54	218·49	·17	—
+·40	·00	·26	56·52	1874·61	6675·12	1359·42	5·03	—
+·45	—	·00	3·05	350·96	4921·34	4576·95	91·98	·00
+·50	—	—	·07	27·52	1611·32	7476·55	928·39	·35
+·55	—	—	·00	·77	200·03	5100·32	4520·42	16·89
+·60	—	—	—	·01	7·56	1177·75	8762·19	414·22
+·65	—	—	—	·00	·30	68·03	5102·96	4068·60
+·70	—	—	—	—	·00	·62	582·29	10996·59
+·75	—	—	—	—	—	·00	6·57	4407·96
+·80	—	—	—	—	—	—	·00	87·98
+·85	—	—	—	—	—	—	—	·01
+·90	—	—	—	—	—	—	—	·00
+·95	·00	·00	·00	·00	·00	·00	·00	·00

r variate (correlation in sample).	·8	·9
·63	·0	·0
·64	·1	—
·65	·3	—
·66	1·0	—
·67	2·7	—
·68	7·6	—
·69	20·4	—
·70	52·2	—
·71	127·7	—
·72	296·5	—
·73	650·3	—
·74	1336·9	—
·75	2557·9	—
·76	4514·3	—
·77	7276·6	—
·78	10586·9	—
·79	13717·1	—
·80	15580·0	·0
·81	15226·2	·1
·82	12526·6	·9
·83	8449·2	5·9
·84	4528·2	35·0
·85	1855·5	185·2
·86	554·8	845·6
·87	114·2	3195·7
·88	15·0	9474·4
·89	1·2	20525·2
·90	·0	29523·1
·91	—	24702·9
·92	—	9973·7
·93	—	1478·7
·94	—	53·1
·95	·0	·2

TABLE XXXII.—(*continued*).

$n = 400$.

ρ variate (correlation in population sampled).

r variate (correlation in sample).	*0*	·1	·2	·3	·4	5	·6
− ·40	·00	·00	·00	·00	·00	·00	·00
− ·35	—	—	—	—	—	—	—
− ·30	—	—	—	—	—	—	—
− ·25	·00	—	—	—	—	—	—
− ·20	2·46	·00	—	—	—	—	—
− ·15	87·84	·03	—	—	—	—	—
− ·10	1087·30	6·72	·00	—	—	—	—
− ·05	4845·66	89·41	·03	—	—	—	—
·00	7953·88	1071·03	2·31	·00	—	—	—
+ ·05	4845·66	4809·08	77·24	·01	—	—	—
+ ·10	1087·30	8034·24	990·50	1·37	—	—	—
+ ·15	87·84	4878·55	4767·51	55·10	·00	—	—
+ ·20	2·46	1037·29	8285·39	846·48	·52	—	—
+ ·25	·00	72·74	4910·62	4701·88	30·13	·00	—
+ ·30	—	1·55	917·19	8740·76	642·95	·01	—
+ ·35	—	·01	48·55	4906·74	4567·01	10·75	·00
+ ·40	—	·00	·63	724·97	9469·37	399·28	·01
+ ·45	—	—	·00	23·50	4810·20	4278·49	1·75
+ ·50	—	—	—	·13	473·26	10606·00	167·53
+ ·55	—	—	—	·00	6·55	4491·43	3668·41
+ ·60	—	—	—	—	·08	212·53	12429·40
+ ·65	—	—	—	—	·00	·16	3688·70
+ ·70	—	—	—	—	—	·00	40·04
+ ·75	—	—	—	—	—	—	·00
+ ·80	—	—	—	—	—	—	—
+ ·85	—	—	—	—	—	—	—
+ ·90	—	—	—	—	—	—	—
+ ·95	—	—	—	—	—	—	—
+1·00	·00	·00	·00	·00	·00	·00	·00

r variate (correlation in sample).	·7	·7 normal*	·8	·8 normal*	·9	·9 normal*
·54	·0	·0	·0	·0	·0	·0
·55	·1	—	—	—	—	—
·56	·2	—	—	—	—	—
·57	·8	·0	—	—	—	—
·58	2·8	·2	—	—	—	—
·59	9·3	1·4	—	—	—	—
·60	28·7	7·3	—	—	—	—
·61	82·9	31·3	—	—	—	—
·62	221·2	115·3	—	—	—	—
·63	542·5	364·4	—	—	—	—
·64	1212·0	987·7	—	—	—	—
·65	2478·7	2296·4	—	—	—	—
·66	4553·8	4579·8	—	—	—	—
·67	7487·9	7834·8	—	—	—	—
·68	10922·9	11497·0	·0	—	—	—
·69	13999·7	14471·6	·1	—	—	—
·70	15598·3	15625·2	·2	·0	—	—
·71	14931·6	14471·6	2·2	·1	—	—
·72	12106·9	11497·0	11·2	1·2	—	—
·73	8212·0	7834·8	52·2	11·7	—	—
·74	4572·5	4579·8	213·0	86·8	—	—
·75	2052·1	2296·4	751·2	471·8	—	—
·76	726·6	987·7	2248·2	1885·6	—	—
·77	198·1	364·4	5595·6	5538·9	—	—
·78	40·5	115·3	11311·7	11958·6	—	—
·79	6·0	31·3	18071·0	18977·4	—	—
·80	·0	7·3	22139·3	22135·7	—	—
·81	—	1·4	19920·7	18977·4	—	—
·82	—	·2	12665·6	11958·6	—	—
·83	—	·0	5383·5	5538·9	·0	—
·84	—	—	1435·4	1885·6	·1	—
·85	—	—	222·2	471·8	2·6	·0
·86	—	—	18·2	86·8	49·7	·6
·87	—	—	·7	11·7	658·1	290·2
·88	—	—	·0	1·2	5308·0	4598·7
·89	—	—	—	·1	22606·9	24134·5
·90	—	—	—	·0	41873·1	41941·4
·91	—	—	—	—	25806·1	24134·5
·92	—	—	—	—	3626·0	4598·7
·93	—	—	—	—	66·8	290·2
·94	—	—	—	—	·1	·6
·95	—	—	—	—	·0	·0
·96	—	—	—	—	—	—
·97	—	—	—	—	—	—
·98	—	—	—	—	—	—
·99	—	—	—	—	—	—
1·00	·0	·0	·0	·0	·0	·0

* The columns headed 'normal' mark how roughly the Gaussian frequency describes the distribution of the correlation even for large samples, if the correlation be not small in the sampled population.

For the constants of the curves for $n = 400$: see Table XXXI^A above.

TABLE XXXIII. *To assist the calculation of the Ordinates* of the Correlation Frequency Curves from Expansion Formulae.*

$\log \frac{n-2}{\sqrt{n-1}}$.

$\rho = 0.$

$\log (1-\rho^2)^{\frac{3}{2}} = 0.$

n	$\log \frac{n-2}{\sqrt{n-1}}$	n	$\log \frac{n-2}{\sqrt{n-1}}$	n	$\log \frac{n-2}{\sqrt{n-1}}$	r	$\log \chi_1$	$\log \chi_2$	ϕ_1	ϕ_2	ϕ_3	ϕ_4
3	$\bar{1}$·8494850	42	·7956681	81	·9460821	−·95	·5054977	$\bar{2}$·8825969				
4	·0624694	43	·8011592	82	·9488475	−·90	·3606232	$\bar{1}$·3172203				
5	·1760913	44	·8065151	83	·9515781	−·85	·2783685	$\bar{1}$·5639844				
6	·2525750	45	·8117421	84	·9542748	−·80	·2218487	$\bar{1}$·7335437				
7	·3098944	46	·8168464	85	·9569384	−·75	·1795110	$\bar{1}$·8605570				
8	·3556022	47	·8218336	86	·9595698	−·70	·1462149	$\bar{1}$·9604452				
9	·3935530	48	·8267089	87	·9621697	−·65	·1192240	·0414179				
10	·4259687	49	·8314772	88	·9647388	−·60	·0969100	·1083599				
11	·4542425	50	·8361432	89	·9672779	−·55	·0782279	·1644063				
12	·4793037	51	·8407111	90	·9697877	−·50	·0624694	·2116818				
13	·5018021	52	·8451849	91	·9722688	−·45	·0491347	·2516860				
14	·5222096	53	·8495685	92	·9747218	−·40	·0378604	·2855089				
15	·5408793	54	·8538654	93	·9771475	−·35	·0283764	·3139606				
16	·5580824	55	·8580790	94	·9795464	−·30	·0204793	·3376520				
17	·5740313	56	·8622124	95	·9819190	−·25	·0140144	·3570469				
18	·5888955	57	·8662687	96	·9842661	−·20	·0088644	·3724968				
19	·6028127	58	·8702506	97	·9865880	−·15	·0049416	·3842651				
20	·6158957	59	·8741609	98	·9888854	−·10	·0021824	·3925427				
21	·6282386	60	·8780020	99	·9911587	−·05	·0005435	·3974593				
22	·6399203	61	·8817764	100	·9934085	·00	·0	·3990899	$\phi_1 = ·25$	$\phi_2 = ·03125$	$\phi_3 = -·0390625$	$\phi_4 = -·0102539$
23	·6510080	62	·8854863	400	1·2993966	+·05	·0005435	·3974593				
24	·6615588	63	·8891340			+·10	·0021824	·3925427				
25	·6716222	64	·8927214			+·15	·0049416	·3842651				
26	·6812412	65	·8962506			+·20	·0088644	·3724968				
27	·6904533	66	·8997233			+·25	·0140144	·3570469				
28	·6992915	67	·9031414			+·30	·0204793	·3376520				
29	·7077847	68	·9065065			+·35	·0283764	·3139606				
30	·7159590	69	·9098203			+·40	·0378604	·2855089				
31	·7238374	70	·9130844			+·45	·0491347	·2516860				
32	·7314404	71	·9163001			+·50	·0624694	·2116818				
33	·7387867	72	·9194689			+·55	·0782279	·1644063				
34	·7458930	73	·9225921			+·60	·0969100	·1083599				
35	·7527745	74	·9256711			+·65	·1192240	·0414179				
36	·7594449	75	·9287070			+·70	·1462149	$\bar{1}$·9604452				
37	·7659168	76	·9317011			+·75	·1795110	$\bar{1}$·8605570				
38	·7722016	77	·9346545			+·80	·2218487	$\bar{1}$·7335437				
39	·7783099	78	·9375682			+·85	·2783685	$\bar{1}$·5639844				
40	·7842513	79	·9404434			+·90	·3606232	$\bar{1}$·3172203				
41	·7900346	80	·9432811			+·95	·5054977	$\bar{2}$·8825969				

* If the ordinate at r be y, then (see *Introduction*, p. clv)

$$y = Y\left(1 + \frac{\phi_1}{n-1} + \frac{\phi_2}{(n-1)^2} + \frac{\phi_3}{(n-1)^3} + \frac{\phi_4}{(n-1)^4}\right),$$

where

$$\log Y = \log \frac{n-2}{\sqrt{n-1}} + \log (1-\rho^2)^{\frac{3}{2}} - (n-1)\log \chi_1 - \log \chi_2.$$

All these quantities are given for $r = -·95$ to $+·95$ and $\rho = 0·0$ to $0·9$ in the present Table.

TABLE XXXIII.—(*continued*).

$\rho = \cdot 1.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 9934528.$

r	$\log \chi_1$	$\log \chi_2$	ϕ_1	ϕ_2	ϕ_3	ϕ_4
–·95	·5470942	$\bar{1}$·8563426	·238125	·0229783	–·0364766	–·0013075
–·90	·4002321	$\bar{1}$·2919599	·23875	·0233820	–·0366462	–·0017344
–·85	·3159806	$\bar{1}$·5397223	·239375	·0237893	–·0368123	–·0021666
–·80	·2574549	$\bar{1}$·7102846	·24	·0242	–·0369750	–·0026040
–·75	·2131018	$\bar{1}$·8383056	·240625	·0246143	–·0371342	–·0030466
–·70	·1777811	$\bar{1}$·9392061	·24125	·0250320	–·0372898	–·0034943
–·65	·1487560	·0211959	·241875	·0254533	–·0374417	–·0039470
–·60	·1243983	·0891598	·2425	·0258781	–·0375900	–·0044047
–·55	·1036628	·1462328	·243125	·0263064	–·0377346	–·0048672
–·50	·0858411	·1945400	·24375	·0267383	–·0378754	–·0053345
–·45	·0704333	·2355806	·244375	·0271736	–·0380123	–·0058066
–·40	·0570761	·2704450	·245	·0276125	–·0381453	–·0062833
–·35	·0454992	·2999432	·245625	·0280549	–·0382744	–·0067646
–·30	·0354989	·3246862	·24625	·0285008	–·0383994	–·0072503
–·25	·0269206	·3451377	·246875	·0289502	–·0385204	–·0077405
–·20	·0196470	·3616495	·2475	·0294031	–·0386373	–·0082349
–·15	·0135901	·3744849	·248125	·0298596	–·0387500	–·0087336
–·10	·0086862	·3838348	·24875	·0303195	–·0388585	–·0092363
–·05	·0048920	·3898291	·249375	·0307830	–·0389627	–·0097431
·00	·0021824	·3925427	·25	·03125	–·0390625	–·0102539
+·05	·0005490	·3920005	·250625	·0317205	–·0391579	–·0107685
+·10	·0	·3881779	·25125	·0321945	–·0392490	–·0112869
+·15	·0005603	·3809998	·251875	·0326721	–·0393354	–·0118089
+·20	·0022729	·3703365	·2525	·0331531	–·0394174	–·0123344
+·25	·0052014	·3559973	·253125	·0336377	–·0394947	–·0128634
+·30	·0094334	·3377189	·25375	·0341258	–·0395674	–·0133957
+·35	·0150862	·3151498	·254375	·0346174	–·0396353	–·0139313
+·40	·0223140	·2878260	·255	·0351125	–·0396984	–·0144700
+·45	·0313204	·2551371	·255625	·0356111	–·0397568	–·0150118
+·50	·0423754	·2162728	·25625	·0361133	–·0398102	–·0155564
+·55	·0558421	·1701431	·256875	·0366189	–·0398587	–·0161038
+·60	·0722203	·1152488	·2575	·0371281	–·0399021	–·0166540
+·65	·0922180	·0494649	·258125	·0376408	–·0399406	–·0172067
+·70	·1168803	$\bar{1}$·9696565	·25875	·0381570	–·0399739	–·0177618
+·75	·1478351	$\bar{1}$·8709390	·259375	·0386768	–·0400021	–·0183193
+·80	·1878190	$\bar{1}$·7451026	26	·0392	–·0400250	–·0188790
+·85	·2419720	$\bar{1}$·5767267	·260625	·0397268	–·0400427	–·0194408
+·90	·3218470	$\bar{1}$·3311524	·26125	·0402570	–·0400550	–·0200045
+·95	·4643287	$\bar{2}$·8977254	·261875	·0407908	–·0400620	–·0205702

$\rho = \cdot 2.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 9734068.$

r	$\log \chi_1$	$\log \chi_2$	ϕ_1
–·95	·5899090	$\bar{1}$·8182302	·22625
–·90	·4413696	$\bar{1}$·2546862	·2275
–·85	·3554188	$\bar{1}$·5032983	·22875
–·80	·2951711	$\bar{1}$·6747215	·23
–·75	·2490732	$\bar{1}$·8036150	·23125
–·70	·2119841	$\bar{1}$·9053996	·2325
–·65	·1811668	$\bar{1}$·9882856	·23375
–·60	·1549924	·0571577	·235
–·55	·1324153	·1151516	·23625
–·50	·1127264	·1643923	·2375
–·45	·0954255	·2063796	·23875
–·40	·0801485	·2422038	·24
–·35	·0666246	·2726756	·24125
–·30	·0546496	·2984059	·2425
–·25	·0440680	·3198590	·24375
–·20	·0347621	·3373870	·245
–·15	·0266432	·3512533	·24625
–·10	·0196470	·3616495	·2475
–·05	·0137293	·3687055	·24875
·00	·0088644	·3724968	·25
+·05	·0050431	·3730485	·25125
+·10	·0022729	·3703365	·2525
+·15	·0005777	·3642861	·25375
+·20	·0	·3547680	·255
+·25	·0006024	·3415919	·25625
+·30	·0024715	·3244949	·2575
+·35	·0057238	·3031260	·25875
+·40	·0105126	·2770218	·26
+·45	·0170404	·2455721	·26125
+·50	·0255763	·2079674	·2625
+·55	·0364823	·1631181	·26375
+·60	·0502571	·1095254	·265
+·65	·0676076	·0450651	·26625
+·70	·0895777	$\bar{1}$·9666028	·2675
+·75	·1177943	$\bar{1}$·8692544	·26875
+·80	·1549924	$\bar{1}$·7448109	·27
+·85	·2063110	$\bar{1}$·5778522	·27125
+·90	·2833014	$\bar{1}$·3337203	·2725
+·95	·4228471	$\bar{2}$·9017612	·27375

TABLE XXXIII.—(*continued*).

$\rho = \cdot 2.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 9734068.$

$\rho = \cdot 3.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 9385621.$

ϕ_2	ϕ_3	ϕ_4	r	$\log \chi_1$	$\log \chi_2$	ϕ_1	ϕ_2	ϕ_3	ϕ_4
·0159758	−·0326811	+·0057193	−·95	·6348801	$\bar{2}$·7667074	·214375	·0102424	−·0280527	+·0104960
·0166531	−·0331264	+·0050816	−·90	·4849062	$\bar{1}$·2038806	·21625	·0110633	−·0288235	+·0098985
·0173445	−·0335620	+·0044192	−·85	·3974915	$\bar{1}$·4532246	·218125	·0119158	−·0295824	+·0092418
·01805	−·0339875	+·0037321	−·80	·3357497	$\bar{1}$·6253949	·22	·0128	−·0303250	+·0085260
·0187695	−·0344025	+·0030208	−·75	·2881264	$\bar{1}$·7550511	·221875	·0137158	−·0310528	+·0077516
·0195031	−·0348065	+·0022856	−·70	·2494796	$\bar{1}$·8576146	·22375	·0146633	−·0317633	+·0069189
·0202508	−·0351990	+·0015269	−·65	·2170712	$\bar{1}$·9412961	·225625	·0156424	−·0324549	+·0060287
·0210125	−·0355797	+·0007451	−·60	·1892713	·0109810	·2275	·0166531	−·0331264	+·0050816
·0217883	−·0359481	−·0000593	−·55	·1650331	·0698054	·229375	·0176955	−·0337760	+·0040787
·0225781	−·0363037	−·0008860	−·50	·1436465	·1198950	·23125	·0187695	−·0344025	+·0030208
·0233820	−·0366462	−·0017344	−·45	·1246098	·1627501	·233125	·0198752	−·0350042	+·0019092
·0242	−·0369750	−·0026040	−·40	·1075577	·1994619	·235	·0210125	−·0355797	+·0007451
·0250320	−·0372898	−·0034943	−·35	·0922180	·2308416	·236875	·0221814	−·0361275	−·0004699
·0258781	−·0375900	−·0044047	−·30	·0783851	·2575009	·23875	·0233820	−·0366462	−·0017344
·0267383	−·0378754	−·0053345	−·25	·0659021	·2799047	·240625	·0246143	−·0371342	−·0030466
·0276125	−·0381453	−·0062833	−·20	·0546496	·2984059	·2425	·0258781	−·0375900	−·0044047
·0285008	−·0383994	−·0072503	−·15	·0445372	·3132690	·244375	·0271736	−·0380123	−·0058066
·0294031	−·0386373	−·0082349	−·10	·0354989	·3246862	·24625	·0285008	−·0383994	−·0072503
·0303195	−·0388585	−·0092363	−·05	·0274889	·3327884	·248125	·0298596	−·0387500	−·0087336
·03125	−·0390625	−·0102539	·00	·0204793	·3376520	·25	·03125	−·0390625	−·0102539
·0321945	−·0392490	−·0112869	+·05	·0144591	·3393033	·251875	·0326721	−·0393354	−·0118089
·0331531	−·0394170	−·0123344	+·10	·0094334	·3377189	·25375	·0341258	−·0395674	−·0133957
·0341258	−·0395674	−·0133957	+·15	·0054243	·3328255	·255625	·0356111	−·0397568	−·0150118
·0351125	−·0396984	−·0144700	+·20	·0024715	·3244949	·2575	·0371281	−·0399021	−·0166540
·0361133	−·0398102	−·0155564	+·25	·0006354	·3125381	·259375	·0386768	−·0400021	−·0183193
·0371281	−·0399021	−·0166540	+·30	·0	·2966934	·26125	·0402570	−·0400550	−·0200045
·0381570	−·0399739	−·0177618	+·35	·0006788	·2766112	·263125	·0418689	−·0400595	−·0217064
·0392	−·0400250	−·0188790	+·40	·0028223	·2518296	·265	·0435125	−·0400141	−·0234213
·0402570	−·0400550	−·0200045	+·45	·0066301	·2217400	·266875	·0451877	−·0399172	−·0251457
·0413281	−·0400635	−·0211375	+·50	·0123676	·1855345	·26875	·0468945	−·0397675	−·0268757
·0424133	−·0400500	−·0222767	+·55	·0203937	·1421251	·270625	·0486330	−·0395633	−·0286077
·0435125	−·0400141	−·0234213	+·60	·0312032	·0900151	·2725	·0504031	−·0393033	−·0303374
·0446258	−·0399553	−·0245700	+·65	·0454992	·0270821	·274375	·0522049	−·0389860	−·0320608
·0457531	−·0398732	−·0257219	+·70	·0643213	$\bar{1}$·9501937	·27625	·0540383	−·0386098	−·0337735
·0468945	−·0397675	−·0268757	+·75	·0892920	$\bar{1}$·8544683	·278125	·0559033	−·0381733	−·0354711
·04805	−·0396375	−·0280304	+·80	·1231416	$\bar{1}$·7316990	·28	·0578	−·0376750	−·0371490
·0492195	−·0394829	−·0291847	+·85	·1710041	$\bar{1}$·5664684	·281875	·0597283	−·0371134	−·0388026
·0504031	−·0393033	−·0303374	+·90	·2444254	$\bar{1}$·3241210	·28375	·0616883	−·0364871	−·0404269
·0516008	−·0390982	−·0314873	+·95	·3802830	1·8940059	·285625	·0636799	−·0357945	−·0420171

TABLE XXXIII.—(*continued*).

$\rho = \cdot 4$.
$\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 8864189$.

r	$\log \chi_1$	$\log \chi_2$	ϕ_1	ϕ_2	ϕ_3	ϕ_4
−·95	·6832371	$\bar{2}$·6990762	·2025	·0057781	−·0229682	+·0129113
−·90	·5320225	$\bar{1}$·1368698	·205	·0066125	−·0240578	+·0125970
−·85	·4433337	$\bar{1}$·3868509	·2075	·0075031	−·0251404	+·0121802
−·80	·3802830	$\bar{1}$·5596756	·21	·00845	−·0262125	+·0116596
−·75	·3313147	$\bar{1}$·6900043	·2125	·0094531	−·0272705	+·0110342
−·70	·2912852	$\bar{1}$·7932591	·215	·0105125	−·0283109	+·0103034
−·65	·2574549	$\bar{1}$·8776516	·2175	·0116281	−·0293303	+·0094672
−·60	·2281921	$\bar{1}$·9480680	·22	·0128	−·0303250	+·0085260
−·55	·2024481	·0076453	·2225	·0140281	−·0312916	+·0074804
−·50	·1795110	·0585101	·225	·0153125	−·0322266	+·0063318
−·45	·1588770	·1021639	·2275	·0166531	−·0331264	+·0050816
−·40	·1401787	·1396988	·23	·01805	−·0339875	+·0037321
−·35	·1231416	·1719271	·2325	·0195031	−·0348065	+·0022856
−·30	·1075577	·1994619	·235	·0210125	−·0355797	+·0007451
−·25	·0932674	·2227694	·2375	·0225781	−·0363037	−·0008860
−·20	·0801485	·2422038	·24	·0242	−·0369750	−·0026040
−·15	·0681078	·2580318	·2425	·0258781	−·0375900	−·0044047
−·10	·0570761	·2704450	·245	·0276125	−·0381453	−·0062833
−·05	·0470041	·2795781	·2475	·0294031	−·0386373	−·0082349
·00	·0378604	·2855089	·25	·03125	−·0390625	−·0102539
+·05	·0296300	·2882652	·2525	·0331531	−·0394174	−·0123344
+·10	·0223140	·2878260	·255	·0351125	−·0396984	−·0144700
+·15	·0159298	·2841201	·2575	·0371281	−·0399021	−·0166540
+·20	·0105126	·2770218	·26	·0392	−·0400250	−·0188790
+·25	·0061172	·2663445	·2625	·0413281	−·0400635	−·0211375
+·30	·0028223	·2518296	·265	·0435125	−·0400141	−·0234213
+·35	·0007352	·2331303	·2675	·0457531	−·0398732	−·0257219
+·40	·0	·2097881	·27	·04805	−·0396375	−·0280304
+·45	·0008089	·1811980	·2725	·0504031	−·0393033	−·0303374
+·50	·0034197	·1465558	·275	·0528125	−·0388672	−·0326331
+·55	·0081829	·1047779	·2775	·0552781	−·0383256	−·0349072
+·60	·0155840	·0543720	·28	·0578	−·0376750	−·0371490
+·65	·0263161	$\bar{1}$·9932210	·2825	·0603781	−·0369119	−·0393475
+·70	·0414078	$\bar{1}$·9181979	·285	·0630125	−·0360328	−·0414911
+ 75	·0624694	$\bar{1}$·8244269	·2875	·0657031	−·0350342	−·0435679
+·80	·0922180	$\bar{1}$·7037082	·29	·06845	−·0339125	−·0455654
+·85	·1357728	$\bar{1}$·5406314	·2925	·0712531	−·0326643	−·0474709
+·90	·2046635	$\bar{1}$·3005493	·295	·0741125	−·0312859	−·0492710
+·95	·3357497	$\bar{2}$·8728199	·2975	·0770281	−·0297740	−·0509521

$\rho = \cdot 5$.
$\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 8125919$.

r	$\log \chi_1$	$\log \chi_2$	ϕ_1
−·95	·7367591	$\bar{2}$·6107927	·190625
−·90	·5844606	$\bar{1}$·0491282	·19375
−·85	·4946527	$\bar{1}$·2996689	·196875
−·80	·4304462	$\bar{1}$·4730716	·2
−·75	·3802830	$\bar{1}$·6039976	·203125
−·70	·3390180	$\bar{1}$·7078702	·20625
−·65	·3039093	$\bar{1}$·7929019	·209375
−·60	·2733227	$\bar{1}$·8639801	·2125
−·55	·2462074	$\bar{1}$·9242431	·215625
−·50	·2218487	$\bar{1}$·9758187	·21875
−·45	·1997401	·0202098	·221875
−·40	·1795110	·0585101	·225
−·35	·1608837	·0915336	·228125
−·30	·1436465	·1198950	·23125
−·25	·1276363	·1440625	·234375
−·20	·1127264	·1643923	·2375
−·15	·0988194	·1811527	·240625
−·10	·0858411	·1945400	·24375
−·05	·0737368	·2046893	·246875
·00	·0624694	·2116818	·25
+·05	·0520175	·2155489	·253125
+·10	·0423754	·2162728	·25625
+·15	·0335527	·2137861	·259375
+·20	·0255763	·2079674	·2625
+·25	·0184918	·1986347	·265625
+·30	·0123676	·1855345	·26875
+·35	·0072998	·1683255	·271875
+·40	·0034197	·1465558	·275
+·45	·0009057	·1196270	·278125
+·50	·0	·0867431	·28125
+·55	·0010353	·0468291	·284375
+·60	·0044774	$\bar{1}$·9984028	·2875
+·65	·0109971	$\bar{1}$·9393579	·290625
+·70	·0215976	$\bar{1}$·8665804	·29375
+·75	·0378604	$\bar{1}$·7752089	·296875
+·80	·0624694	$\bar{1}$·6570600	·3
+·85	·1005057	$\bar{1}$·4967424	·303125
+·90	·1634553	$\bar{1}$·2596309	30625
+·95	·2881264	$\bar{2}$·8351091	·309375

TABLE XXXIII.—(*continued*).

$\rho = \cdot 5.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 8125919.$

$\rho = \cdot 6.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 7092700.$

ϕ_2	ϕ_3	ϕ_4	r	$\log \chi_1$	$\log \chi_2$	ϕ_1	ϕ_2	ϕ_3	ϕ_4
·0025830	−·0178043	+·0130733	*−·95*	·7983074	$\bar{2}$·4939170	·17875	·0006570	−·0129380	+·0113090
·0033008	−·0191498	+·0132346	*−·90*	·6450539	$\bar{2}$·9327299	·1825	·0011281	−·0148103	+·0120455
·0041064	−·0205090	+·0132540	*−·85*	·5542555	$\bar{1}$·1837659	·18625	·0017258	−·0159569	+·0126231
·005	−·0218750	+·0131250	*−·80*	·4890205	$\bar{1}$·3576828	·19	·00245	−·0175375	+·0130246
·0059814	−·0232410	+·0128423	*−·75*	·4377890	$\bar{1}$·4891430	·19375	·0033008	−·0191498	+·0132346
·0070508	−·0246002	+·0124015	*−·70*	·3954124	$\bar{1}$·5935710	·1975	·0042781	−·0207818	+·0132403
·0082080	−·0259457	+·0117995	*−·65*	·3591488	$\bar{1}$·6791805	·20125	·0053820	−·0224218	+·0130306
·0094531	−·0272705	+·0110342	*−·60*	·3273589	$\bar{1}$·7508604	·205	·0066125	−·0240578	+·0125970
·0107861	−·0285679	+·0101042	*−·55*	·2989895	$\bar{1}$·8117504	·20875	·0079695	−·0256780	+·0119330
·0122070	−·0298309	+·0090097	*−·50*	·2733227	$\bar{1}$·8639801	·2125	·0094531	−·0272705	+·0110342
·0137158	−·0310528	+·0077516	*−·45*	·2498484	$\bar{1}$·9090541	·21625	·0110633	−·0288235	+·0098985
·0153125	−·0322266	+·0063318	*−·40*	·2281921	$\bar{1}$·9480680	·22	·0128	−·0303250	+·0085260
·0169971	−·0333454	+·0047535	*−·35*	·2080718	$\bar{1}$·9818379	·22375	·0146633	−·0317633	+·0069189
·0187695	−·0344025	+·0030208	*−·30*	·1892713	·0109810	·2275	·0166531	−·0331264	+·0050816
·0206299	−·0353909	+·0011389	*−·25*	·1716222	·0359679	·23125	·0187695	−·0344025	+·0030208
·0225781	−·0363037	−·0008860	*−·20*	·1549924	·0571577	·235	·0210125	−·0355797	+·0007451
·0246143	−·0371342	−·0030466	*−·15*	·1392781	·0748218	·23875	·0233820	−·0366462	−·0017344
·0267383	−·0378754	−·0053345	*−·10*	·1243983	·0891598	·2425	·0258781	−·0375900	−·0044047
·0289502	−·0385204	−·0077405	*−·05*	·1102908	·1003106	·24625	0285008	−·0383994	−·0072503
·03125	−·0390625	−·0102539	*·00*	·0969100	·1083599	·25	·03125	−·0390625	−·0102539
·0336377	−·0394947	−·0128634	*+·05*	·0842253	·1133434	·25375	·0341258	−·0395674	−·0133957
·0361133	−·0398102	−·0155564	*+·10*	·0722203	·1152488	·2575	·0371281	−·0399021	−·0166540
·0386768	−·0400021	−·0183193	*+·15*	·0608930	·1140143	·26125	·0402570	−·0400550	−·0200045
·0413281	−·0400635	−·0211375	*+·20*	·0502571	·1095254	·265	·0435125	−·0400141	−·0234213
·0440674	−·0399876	−·0239952	*+·25*	·0403433	·1016073	·26875	·0468945	−·0397675	−·0268757
·0468945	−·0397675	−·0268757	*+·30*	·0312032	·0900151	·2725	·0504031	−·0393033	−·0303374
·0498096	−·0393963	−·0297613	*+·35*	·0229135	·0744170	·27625	·0540383	−·0386098	−·0337735
·0528125	−·0388672	−·0326331	*+·40*	·0155840	·0543720	·28	·0578	−·0376750	−·0371490
·0559033	−·0381733	−·0354711	*+·45*	·0093675	·0292945	·28375	·0616883	−·0364871	−·0404269
·0590820	−·0373077	−·0382544	*+·50*	·0044774	$\bar{1}$·9984028	·2875	·0657031	−·0350342	−·0435679
·0623486	−·0362637	−·0409610	*+·55*	·0012127	$\bar{1}$·9606388	·29125	·0698445	−·0333044	−·0465305
·0657031	−·0350342	−·0435679	*+·60*	·0	$\bar{1}$·9145399	·295	·0741125	−·0312859	−·0492710
·0691455	−·0336124	−·0460509	*+·65*	·0014639	$\bar{1}$·8580230	·29875	·0785070	−·0289669	−·0517436
·0726758	−·0319916	−·0483849	*+·70*	·0065529	$\bar{1}$·7880012	·3025	·0830281	−·0263353	−·0539003
·0762939	−·0301647	−·0505437	*+·75*	·0167837	$\bar{1}$·6996456	·30625	·0876758	−·0233795	−·0556908
·08	−·0281250	−·0525000	*+·80*	·0347621	$\bar{1}$·5848120	·31	·09245	−·0200875	−·0570629
·0837939	−·0258656	−·0542255	*+·85*	·0654746	$\bar{1}$·4281563	·31375	·0973508	−·0164474	−·0579619
·0876758	−·0233795	−·0556908	*+·90*	·1202910	$\bar{1}$·1951114	·3175	·1023781	−·0120568	−·0583312
·0916455	−·0206600	−·0568656	*+·95*	·2358762	$\bar{2}$·7751326	·32125	·1075320	−·0080757	−·0581117

TABLE XXXIII.—(*continued*).

$\rho = \cdot 7.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 5613553.$ | $\rho = \cdot 8.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 3344538.$

r	$\log \chi_1$	$\log \chi_2$	ϕ_1	ϕ_2	ϕ_3	ϕ_4	r	$\log \chi_1$	$\log \chi_2$	ϕ_1
−·95	·8731268	$\bar{2}$·3332450	·166875	·0000002	−·0087458	+·0081651	−·95	·9728591	$\bar{2}$·0942943	·155
−·90	·7190257	$\bar{2}$·7724818	·17125	·0000945	−·0101880	+·0094402	−·90	·8180004	$\bar{2}$·5339099	·16
−·85	·6273441	$\bar{1}$·0239593	·175625	·0003611	−·0117540	+·0105881	−·85	·7255265	$\bar{2}$·7857835	·165
−·80	·5611883	$\bar{1}$·1983367	·18	·0008	−·0134250	+·0115710	−·80	·6585413	$\bar{2}$·9605755	·17
−·75	·5089957	$\bar{1}$·3302774	·184375	·0014111	−·0151821	+·0123553	−·75	·6054797	$\bar{1}$·0929508	·175
−·70	·4656161	$\bar{1}$·4352073	·18875	·0021945	−·0170065	+·0129113	−·70	·5611883	$\bar{1}$·1983367	·18
−·65	·4283019	$\bar{1}$·5213417	·193125	·0031502	−·0188794	+·0132135	−·65	·5229163	$\bar{1}$·2849499	·185
−·60	·3954124	$\bar{1}$·5935710	·1975	·0042781	−·0207818	+·0132403	−·60	·4890205	$\bar{1}$·3576828	·19
−·55	·3658926	$\bar{1}$·6550366	·201875	·0055783	−·0226951	+·0129741	−·55	·4584391	$\bar{1}$·4196788	·195
−·50	·3390180	$\bar{1}$·7078702	·20625	·0070508	−·0246002	+·0124015	−·50	·4304462	$\bar{1}$·4730716	·2
−·45	·3142753	$\bar{1}$·7535784	·210625	·0086955	−·0264785	+·0115131	−·45	·4045223	$\bar{1}$·5193703	·205
−·40	·2912852	$\bar{1}$·7932591	·215	·0105125	−·0283109	+·0103034	−·40	·3802830	$\bar{1}$·5596756	·21
−·35	·2697607	$\bar{1}$·8277312	·219375	·0125018	−·0300788	+·0087711	−·35	·3574352	$\bar{1}$·5948094	·215
−·30	·2494796	$\bar{1}$·8576146	·22375	·0146633	−·0317633	+·0069189	−·30	·3357497	$\bar{1}$·6253949	·22
−·25	·2302671	$\bar{1}$·8833832	·228125	·0169971	−·0333454	+·0047535	−·25	·3150444	$\bar{1}$·6519100	·225
−·20	·2119841	$\bar{1}$·9053996	·2325	·0195031	−·0348065	+·0022856	−·20	·2951711	$\bar{1}$·6747215	·23
−·15	·1945188	$\bar{1}$·9239392	·236875	·0221814	−·0361275	−·0004699	−·15	·2760084	$\bar{1}$·6941098	·235
−·10	·1777811	$\bar{1}$·9392061	·24125	·0250320	−·0372898	−·0034943	−·10	·2574549	$\bar{1}$·7102846	·24
−·05	·1616988	$\bar{1}$·9513444	·245625	·0280549	−·0382744	−·0067646	−·05	·2394256	$\bar{1}$·7233964	·245
·00	·1462149	$\bar{1}$·9604452	·25	·03125	−·0390625	−·0102539	·00	·2218487	$\bar{1}$·7335437	·25
+·05	·1312858	$\bar{1}$·9665509	·254375	·0346174	−·0396353	−·0139313	+·05	·2046635	$\bar{1}$·7407774	·255
+·10	·1168803	$\bar{1}$·9696565	·25875	·0381570	−·0399739	−·0177618	+·10	·1878190	$\bar{1}$·7451026	·26
+·15	·1029796	$\bar{1}$·9697088	·263125	·0418689	−·0400595	−·0217064	+·15	·1712730	$\bar{1}$·7464775	·265
+·20	·0895777	$\bar{1}$·9666028	·2675	·0457531	−·0398732	−·0257219	+·20	·1549924	$\bar{1}$·7448109	·27
+·25	·0766832	$\bar{1}$·9601751	·271875	·0498096	−·0393963	−·0297613	+·25	·1389531	$\bar{1}$·7399556	·275
+·30	·0643213	$\bar{1}$·9501937	·27625	·0540383	−·0386098	−·0337735	+·30	·1231416	$\bar{1}$·7316990	·28
+·35	·0525383	$\bar{1}$·9363424	·280625	·0584393	−·0374949	−·0377031	+·35	·1075577	$\bar{1}$·7197481	·285
+·40	·0414078	$\bar{1}$·9181979	·285	·0630125	−·0360328	−·0414911	+·40	·0922180	$\bar{1}$·7037082	·29
+·45	·0310401	$\bar{1}$·8951960	·289375	·0677580	−·0342047	−·0450741	+·45	·0771634	$\bar{1}$·6830497	·295
+·50	·0215976	$\bar{1}$·8665804	·29375	·0726758	−·0319916	−·0483849	+·50	·0624694	$\bar{1}$·6570600	·30
+·55	·0133179	$\bar{1}$·8313240	·298125	·0777658	−·0293748	−·0513521	+·55	·0482647	$\bar{1}$·6247660	·305
+·60	·0065529	$\bar{1}$·7880012	·3025	·0830281	−·0263353	−·0539003	+·60	·0347621	$\bar{1}$·5848120	·31
+·65	·0018354	$\bar{1}$·7345749	·306875	·0884627	−·0228545	−·0559500	+·65	·0223140	$\bar{1}$·5352510	·315
+·70	·0	$\bar{1}$·6680154	·31125	·0940695	−·0189134	−·0574179	+·70	·0115163	$\bar{1}$·4731726	·32
+·75	·0024195	$\bar{1}$·5835655	·315625	·0998486	−·0144932	−·0582164	+·75	·0034197	$\bar{1}$·3939808	·325
+·80	·0115163	$\bar{1}$·4731726	·32	·1058	−·0095750	−·0582540	+·80	·0	$\bar{1}$·2898462	·33
+·85	·0320384	$\bar{1}$·3216122	·324375	·1119236	−·0041400	−·0574351	+·85	·0053672	$\bar{1}$·1458632	·335
+·90	·0750398	$\bar{1}$·0944747	·32875	·1182195	+·0018306	−·0556601	+·90	·0296300	$\bar{2}$·9280951	·34
+·95	·1767574	$\bar{2}$·6814297	·333125	·1246877	+·0083557	−·0528253	+·95	·1075577	$\bar{2}$·5269450	·345

TABLE XXXIII.—(*continued*).

$\rho = \cdot 8.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{1}\cdot 3344538.$

$\rho = \cdot 9.$ $\log (1-\rho^2)^{\frac{3}{2}} = \bar{2}\cdot 9181304.$

ϕ_2	ϕ_3	ϕ_4	r	$\log \chi_1$	$\log \chi_2$	ϕ_1	ϕ_2	ϕ_3	ϕ_4
·0006125	–·0056047	+·0044070	–·95	1·1344648	$\bar{3}$·6665553	·143125	·0024939	–·0038913	+·0010198
·0002	–·0067750	+·0060060	–·90	·9789250	$\bar{2}$·1065114	·14875	·0014445	–·0045010	+·0025068
·0000125	–·0081703	+·0075898	–·85	·8857364	$\bar{2}$·3587425	·154375	·0006799	–·0054756	+·0042099
·00005	–·0097625	+·0090871	–·80	·8180004	$\bar{2}$·5339099	·16	·0002	–·0067750	+·0060060
·0003125	–·0115234	+·0104333	–·75	·7641490	$\bar{2}$·6666800	·165625	·0000049	–·0083591	+·0077831
·0008	–·0134250	+·0115710	–·70	·7190257	$\bar{2}$·7724818	·17125	·0000945	–·0101880	+·0094402
·0015125	–·0154391	+·0124493	–·65	·6798765	$\bar{2}$·8595337	·176875	·0004689	–·0122216	+·0108873
·00245	–·0175375	+·0130246	–·60	·6450539	$\bar{2}$·9327299	·1825	·0011281	–·0148103	+·0120455
·0036125	–·0196922	+·0132598	–·55	·6134923	$\bar{2}$·9952161	·188125	·0020721	–·0167425	+·0128469
·005	–·0218750	+·0131250	–·50	·5844606	$\bar{1}$·0491282	·19375	·0033008	–·0191498	+·0132346
·0066125	–·0240578	+·0125970	–·45	·5574342	$\bar{1}$·0959782	·199375	·0048143	–·0216015	+·0131629
·00845	–·0262125	+·0116596	–·40	·5320225	$\bar{1}$·1368698	·205	·0066125	–·0240578	+·0125970
·0105125	–·0283109	+·0103034	–·35	·5079254	$\bar{1}$·1726281	·210625	·0086955	–·0264785	+·0115131
·0128	–·0303250	+·0085260	–·30	·4849062	$\bar{1}$·2038806	·21625	·0110633	–·0288235	+·0098985
·0153125	–·0322266	+·0063318	–·25	·4627737	$\bar{1}$·2311092	·221875	·0137158	–·0310528	+·0077516
·01805	–·0339875	+·0037321	–·20	·4413696	$\bar{1}$·2546862	·2275	·0166531	–·0331264	+·0050816
·0210125	–·0355797	+·0007451	–·15	·4205607	$\bar{1}$·2748976	·233125	·0198752	–·0350042	+·0019092
·0242	–·0369750	–·0026040	–·10	·4002321	$\bar{1}$·2919599	·23875	·0233820	–·0366462	–·0017344
·0276125	–·0381453	–·0062833	–·05	·3802830	$\bar{1}$·3060315	·244375	·0271736	–·0380123	–·0058066
·03125	–·0390625	–·0102539	·00	·3606232	$\bar{1}$·3172203	·25	·03125	–·0390625	–·0102539
·0351125	–·0396984	–·0144700	+·05	·3411701	$\bar{1}$·3255880	·255625	·0356111	–·0397568	–·0150118
·0392	–·0400250	–·0188790	+·10	·3218470	$\bar{1}$·3311524	·26125	·0402570	–·0400550	–·0200045
·0435125	–·0400141	–·0234213	+·15	·3025809	$\bar{1}$·3338874	·266875	·0451877	–·0399172	–·0251457
·04805	–·0396375	–·0280304	+·20	·2833014	$\bar{1}$·3337203	·2725	·0504031	–·0393033	–·0303374
·0528125	–·0388672	–·0326331	+·25	·2639393	$\bar{1}$·3305264	·278125	·0559033	–·0381733	–·0354711
·0578	–·0376750	–·0371490	+·30	·2444254	$\bar{1}$·3241210	·28375	·0616883	–·0364871	–·0404269
·0630125	–·0360328	–·0414911	+·35	·2246902	$\bar{1}$·3142457	·289375	·0677580	–·0342047	–·0450741
·06845	–·0339125	–·0455654	+·40	·2046635	$\bar{1}$·3005493	·295	·0741125	–·0312859	–·0492710
·0741125	–·0312859	–·0492710	+·45	·1842748	$\bar{1}$·2825579	·300625	·0807518	–·0276909	–·0528645
·08	–·0281250	–·0525000	+·50	·1634553	$\bar{1}$·2596309	·30625	·0876758	–·0233795	–·0556908
·0861125	–·0244016	–·0551378	+·55	·1421425	$\bar{1}$·2308910	·311875	·0948846	–·0183117	–·0575750
·09245	– 0200875	–·0570629	+·60	·1202910	$\bar{1}$·1951114	·3175	·1023781	–·0120568	–·0583312
·0990125	–·0151547	–·0581467	+·65	·0978953	$\bar{1}$·1505243	·323125	·1101564	–·0057467	–·0577622
·1058	–·0095750	–·0582540	+·70	·0750398	$\bar{1}$·0944747	·32875	·1182195	+·0018306	–·0556601
·1128125	–·0033203	–·0572424	+·75	·0520175	$\bar{1}$·0227457	·334375	·1265674	+·0103245	–·0518057
·12005	+·0036375	–·0549629	+·80	·0296300	$\bar{2}$·9280951	·34	·1352	+·0197750	–·0459690
·1275125	+·0113266	–·0512594	+·85	·0100596	$\bar{2}$·7965809	·345625	·1441174	+·0302222	–·0379088
·1352	+·0197750	–·0459690	+·90	·0	$\bar{2}$·5959739	·35125	·1533195	+·0417061	–·0273728
·1431125	+·0290109	–·0389219	+·95	·0274889	$\bar{2}$·2200433	·356875	·1628064	+·0542668	–·0140979

TABLE XXXIV. *To assist the use of the Coefficient of Correlation Curves in the Case of other Frequencies with like β_1 and β_2.*

Position of Origin and Abscissal Unit in terms of Standard Deviation. The first Number gives the Position of the Origin, the second the Abscissal Unit.

n	$\rho=0$	$\rho=\cdot1$	$\rho=\cdot2$	$\rho=\cdot3$	$\rho=\cdot4$
3	0	·1116225	·2266490	·3490329	·4840501
	·0707107	·0709720	·0717802	·0732142	·0754314
4	0	·1478819	·3011028	·4659475	·6510044
	·0866025	·0870223	·0883242	·0906481	·0942760
5	0	·1778638	·3643600	·5634956	·7915154
	·1000000	·1005663	·1023258	·1054792	·1104330
6	0	·2038711	·4165411	·6485234	·9145610
	·1118034	·1125038	·1146829	·1185985	·1247759
7	0	·2271065	·4645401	·7246924	1·0250662
	·1224745	·1232981	·1258629	·1304802	·1377861
8	0	·2482790	·5083017	·7942029	1·1260506
	·1322876	·1332252	·1361468	·1414136	·1497650
9	0	·2678441	·5487533	·8584888	1·2195137
	·1414214	·1424651	·1457192	·1515911	·1609168
10	0	·2861133	·5865316	·9185423	1·3068548
	·1500000	·1511433	·1547090	·1611481	·1713870
11	0	·3033102	·6220953	·9750815	1·3890961
	·1581139	·1593510	·1632105	·1701841	·1812835
12	0	·3196014	·6557863	1·0286451	1·4670090
	·1658312	·1671572	·1712949	·1787749	·1906890
13	0	·3351148	·6878684	1·0796486	1·5411920
	·1732051	·1746157	·1790180	·1869796	·1996684
14	0	·3499533	·7185489	1·1284203	1·6121199
	·1802776	·1817701	·1864240	·1948454	·2082735
15	0	·3641907	·7479946	1·1752248	1·6801759
	·1870829	·1886516	·1935489	·2024107	·2165466
16	0	·3779001	·7763419	1·2202786	1·7456751
	·1936492	·1952922	·2004222	·2097070	·2245228
17	0	·3911338	·8037041	1·2637617	1·8088795
	·2000000	·2017147	·2070688	·2167611	·2322314
18	0	·4039379	·8301762	1·3052186	1·8700099
	·2061553	·2079391	·2135096	·2234913	·2396972
19	0	·4163514	·8558391	1·3465992	1·9292543
	·2121320	·2139828	·2197626	·2302287	·2469416
20	0	·4284077	·8807623	1·3861929	1·9867744
	·2179449	·2198606	·2258433	·2366781	·2539828
21	0	·4401360	·9050057	1·4247026	2·0427101
	·2236068	·2255854	·2317651	·2429578	·2608369
22	0	·4515616	·9286218	1·4622122	2·0971840
	·2291288	·2311687	·2375398	·2490805	·2675179
23	0	·4627064	·9516565	1·4987939	2·1503024
	·2345208	·2366202	·2431779	·2550572	·2740380
24	0	·4735903	·9741508	1·5345139	2·2021616
	·2397916	·2419491	·2486887	·2608980	·2804084
25	0	·4842308	·9961404	1·5694295	2·2528457
	·2449490	·2471633	·2540801	·2666117	·2866387
50	0	·6995857	1·4409868	2·2751863	3·2760792
	·3500000	·3533454	·3637983	·3827476	·4130572
100	0	·9997548	2·0606127	3·2571060	4·6973149
	·4974937	·5023813	·5176589	·5453562	·5896685
400	0	2·0150354	4·1553109	6·5735909	9·4914497
	·9987492	1·0087684	1·0400784	1·0968491	1·1876817

TABLE XXXIV.—(*continued*).

n	$\rho = \cdot 5$	$\rho = \cdot 6$	$\rho = \cdot 7$	$\rho = \cdot 8$	$\rho = \cdot 9$
3	·6397035 ·0787233	·8298069 ·0836496	1·0821815 ·0914099	1·4670408 ·1051565	2·2572614 ·1375647
4	·8697069 ·0997391	1·1461037 ·1080827	1·5308211 ·1216223	2·1592865 ·1467433	3·6084918 ·2112748
5	1·0657049 ·1179621	1·4204694 ·1296152	1·9303003 ·1488972	2·8019830 ·1857778	4·9700548 ·2860585
6	1·2384801 ·1342232	1·6646016 ·1489755	2·2906234 ·1737018	3·3941363 ·2219447	6·2758785 ·3579595
7	1·3941989 ·1490074	1·8857159 ·1666372	2·6192262 ·1964454	3·9396570 ·2553750	7·4992321 ·4253943
8	1·5367713 ·1626318	2·0886726 ·1829343	2·9218412 ·2174712	4·4441908 ·2863637	8·6363301 ·4881142
9	1·6688524 ·1753174	2·2769195 ·1981116	3·2029089 ·2370570	4·9133944 ·3152309	9·6932562 ·5464383
10	1·7923354 ·1872248	2·4529927 ·2123532	3·4658872 ·2554247	5·3522889 ·3422692	10·6791012 ·6008602
11	1·9086231 ·1984751	2·6188112 ·2258005	3·7134918 ·2727512	5·7651162 ·3677294	11·6030258 ·6518808
12	2·0191978 ·2092046	2·7758616 ·2385646	3·9478808 ·2891787	6·1553948 ·3918213	12·4732325 ·6999496
13	2·1236943 ·2193627	2·9253194 ·2507341	4·1707880 ·3048225	6·5260261 ·4147185	13·2967143 ·7454499
14	2·2238984 ·2291249	3·0681290 ·2623809	4·3836241 ·3197770	6·8794080 ·4365653	14·0793562 ·7887049
15	2·3200595 ·2385095	3·2050605 ·2735636	4·5875494 ·3341195	7·2175324 ·4574817	14·8260439 ·8299826
16	2·4125823 ·2475526	3·3367521 ·2843315	4·7835297 ·3479156	7·5420659 ·4775684	15·5412908 ·8695312
17	2·5018385 ·2562879	3·4637416 ·2947261	4·9723756 ·3612200	7·8544126 ·4969104	16·2273352 ·9074724
18	2·5881420 ·2647443	3·5864801 ·3047823	5·1547751 ·3740794	8·1557645 ·5155798	16·8882836 ·9440329
19	2·6717601 ·2729462	3·7053440 ·3145295	5·3313166 ·3865338	8·4471433 ·5336387	17·5262030 ·9793257
20	2·7529232 ·2809148	3·8206677 ·3239936	5·5025071 ·3986177	8·7294265 ·5511403	18·1432348 1·0134685
21	2·8318307 ·2886686	3·9341863 ·3333199	5·6687868 ·4103611	9·0033775 ·5681311	18·7411717 1·0465598
22	2·9086578 ·2962240	4·0418750 ·3421658	5·8305409 ·4217904	9·2696624 ·5846516	19·3216440 1·0786891
23	2·9835558 ·3035949	4·1481734 ·3509062	5·9881082 ·4329287	9·5288659 ·6007373	19·8860017 1·1099306
24	3·0566623 ·3107942	4·2518695 ·3594371	6·1417876 ·4437967	9·7815042 ·6164198	20·4355030 1·1403534
25	3·1280980 ·3178324	4·3532587 ·3677825	6·2918434 ·4544124	10·0281639 ·6317351	20·9711894 1·1700149
50	4·5677713 ·4603212	6·3911451 ·5361355	9·2990780 ·6677547	14·9462808 ·9376711	31·5884211 1·7584334
100	6·5628599 ·6587893	9·2058648 ·7696570	13·4374982 ·9623213	21·6797456 1·3574820	46·0257637 2·5594824
400	13·2812941 1·3293798	18·6652227 1·5566854	27·3067557 1·9517326	44·1732879 2·7620803	94·0676645 5·2272309

TABLE XXXV. *To determine the Probability that a small Sample has been drawn from a Normal Population with a specified Mean and Standard Deviation.*

TABLE OF P_λ.

Size of Sample, n.

k	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*k*
·44	·9865	·9800	·9736	·9672	·9609	·9546	·9484	·9421	·9360	·9298	·9238	·9177	*·44*
·45	·9634	·9460	·9291	·9124	·8961	·8800	·8642	·8487	·8335	·8186	·8039	·7895	*·45*
·46	·9408	·9132	·8866	·8607	·8356	·8113	·7876	·7646	·7423	·7207	·6996	·6792	*·46*
·47	·9189	·8817	·8461	·8120	·7792	·7478	·7177	·6888	·6611	·6344	·6089	·5844	*·47*
·48	·8975	·8513	·8075	·7660	·7267	·6894	·6541	·6205	·5887	·5585	·5299	·5027	*·48*
·49	·8766	·8219	·7707	·7227	·6778	·6356	·5961	·5590	·5243	·4917	·4612	·4325	*·49*
·50	·8562	·7935	·7355	·6818	·6321	·5859	·5432	·5036	·4669	·4329	·4014	·3721	*·50*
·51	·8363	·7661	·7019	·6432	·5895	·5402	·4951	·4537	·4159	·3811	·3493	·3202	*·51*
·52	·8168	·7396	·6699	·6068	·5497	·4980	·4512	·4088	·3704	·3356	·3040	·2755	*·52*
·53	·7978	·7140	·6393	·5724	·5126	·4591	·4112	·3683	·3299	·2954	·2646	·2370	*·53*
·54	·7792	·6894	·6101	·5401	·4781	·4233	·3748	·3318	·2938	·2601	·2303	·2039	*·54*
·55	·7611	·6656	·5823	·5096	·4459	·3903	·3416	·2990	·2617	·2290	·2005	·1755	*·55*
·56	·7434	·6426	·5558	·4808	·4159	·3598	·3113	·2694	·2331	·2017	·1745	·1510	*·56*
·57	·7261	·6204	·5304	·4536	·3879	·3318	·2837	·2427	·2076	·1776	·1519	·1299	*·57*
·58	·7092	·5990	·5063	·4280	·3618	·3059	·2586	·2187	·1849	·1563	·1322	·1118	*·58*
·59	·6927	·5784	·4832	·4038	·3374	·2820	·2357	·1970	·1647	·1376	·1151	·0962	*·59*
·60	·6766	·5584	·4611	·3810	·3147	·2600	·2148	·1775	·1467	·1212	·1001	·0827	*·60*
·61	·6608	·5391	·4401	·3594	·2935	·2397	·1958	·1599	·1306	·1067	·0872	·0712	*·61*
·62	·6454	·5205	·4201	·3391	·2737	·2210	·1784	·1441	·1163	·0939	·0759	·0613	*·62*
·63	·6305	·5026	·4009	·3199	·2553	·2037	·1626	·1298	·1036	·0827	·0660	·0527	*·63*
·64	·6158	·4852	·3826	·3018	·2381	·1878	·1482	·1169	·0923	·0728	·0575	·0453	*·64*
·65	·6015	·4685	·3652	·2847	·2220	·1732	·1350	·1053	·0822	·0641	·0500	·0390	*·65*
·70	·5348	·3931	·2892	·2129	·1567	·1153	·0849	·0625	·0461	·0339	·0250	·0184	*·70*
·75	·4756	·3299	·2291	·1591	·1106	·0768	·0534	·0371	·0258	·0180	·0125	·0087	*·75*
·80	·4229	·2769	·1815	·1190	·0781	·0512	·0336	·0221	·0145	·0095	·0062	·0041	*·80*
·85	·3762	·2325	·1439	·0891	·0551	·0341	·0211	·0131	·0081	·0050	·0031	·0019	*·85*
·90	·3347	·1952	·1140	·0666	·0389	·0228	·0133	·0078	·0046	·0027	·0016	·0009	*·90*
·95	·2979	·1640	·0904	·0499	·0275	·0152	·0084	·0046	·0026	·0014	·0008	·0004	*·95*
1·00	·2651	·1377	·0717	·0373	·0194	·0101	·0053	·0027	·0014	·0007	·0004	·0002	*1·00*
1·05	·2359	·1157	·0568	·0279	·0137	·0068	·0033	·0016	·0008	·0004	·0002	·0001	*1·05*
1·10	·2100	·0972	·0450	·0209	·0097	·0045	·0021	·0010	·0005	·0002	·0001	·0000	*1·10*
1·15	·1869	·0817	·0357	·0156	·0069	·0030	·0013	·0006	·0003	·0001	·0000	—	*1·15*
1·20	·1664	·0687	·0284	·0117	·0048	·0020	·0008	·0003	·0001	·0001	—	—	*1·20*
1·25	·1482	·0578	·0226	·0088	·0034	·0013	·0005	·0002	·0001	·0000	—	—	*1·25*
1·30	·1319	·0486	·0179	·0066	·0024	·0009	·0003	·0001	·0000	—	—	—	*1·30*
1·35	·1174	·0409	·0142	·0049	·0017	·0006	·0002	·0001	—	—	—	—	*1·35*
1·40	·1046	·0344	·0113	·0037	·0012	·0004	·0001	·0000	—	—	—	—	*1·40*
1·45	·0932	·0289	·0090	·0028	·0009	·0003	·0001	—	—	—	—	—	*1·45*
1·50	·0830	·0243	·0071	·0021	·0006	·0002	·0001	—	—	—	—	—	*1·50*
1·80	·0415	·0086	·0018	·0004	·0001	·0000	·0000	—	—	—	—	—	*1·80*
2·10	·0206	·0030	·0004	·0001	·0000	—	—	—	—	—	—	—	*2·10*
2·40	·0106	·0011	·0001	·0000	—	—	—	—	—	—	—	—	*2·40*
2·70	·0053	·0004	·0000	—	—	—	—	—	—	—	—	—	*2·70*
3·00	·0026	·0001	—	—	—	—	—	—	—	—	—	—	*3·00*

TABLE XXXV.—(*continued*).

Size of Sample, n.

k	*15*	*16*	*17*	*18*	*19*	*20*	*21*	*22*	*23*	*24*	*25*	*26*	*k*
·44	·9117	·9057	·8998	·8939	·8881	·8822	·8765	·8707	·8650	·8593	·8537	·8481	*·44*
·45	·7754	·7615	·7478	·7344	·7213	·7084	·6956	·6832	·6709	·6589	·6471	·6355	*·45*
·46	·6594	·6402	·6215	·6034	·5858	·5687	·5521	·5360	·5204	·5052	·4905	·4762	*·46*
·47	·5608	·5382	·5166	·4958	·4758	·4566	·4382	·4206	·4037	·3874	·3718	·3568	*·47*
·48	·4770	·4525	·4293	·4073	·3864	·3666	·3478	·3300	·3131	·2970	·2818	·2674	*·48*
·49	·4057	·3805	·3568	·3347	·3139	·2944	·2761	·2589	·2429	·2278	·2136	·2004	*·49*
·50	·3450	·3199	·2966	·2750	·2549	·2364	·2191	·2032	·1884	·1746	·1619	·1501	*·50*
·51	·2934	·2690	·2465	·2259	·2071	·1898	·1739	·1594	·1461	·1339	·1227	·1125	*·51*
·52	·2496	·2261	·2049	·1856	·1682	·1524	·1381	·1251	·1133	·1027	·0930	·0843	*·52*
·53	·2123	·1901	·1703	·1525	·1366	·1224	·1096	·0982	·0879	·0787	·0705	·0632	*·53*
·54	·1806	·1599	·1416	·1253	·1110	·0983	·0870	·0770	·0682	·0604	·0535	·0473	*·54*
·55	·1536	·1344	·1177	·1030	·0901	·0789	·0691	·0604	·0529	·0463	·0405	·0355	*·55*
·56	·1306	·1130	·0978	·0846	·0732	·0634	·0548	·0474	·0410	·0355	·0307	·0265	*·56*
·57	·1111	·0950	·0813	·0695	·0595	·0509	·0435	·0372	·0318	·0272	·0233	·0199	*·57*
·58	·0945	·0799	·0676	·0571	·0483	·0409	·0345	·0292	·0247	·0209	·0177	·0149	*·58*
·59	·0804	·0672	·0562	·0470	·0392	·0328	·0274	·0229	·0192	·0160	·0134	·0112	*·59*
·60	·0684	·0565	·0467	·0386	·0319	·0263	·0218	·0180	·0149	·0123	·0101	·0084	*·60*
·61	·0582	·0475	·0388	·0317	·0259	·0212	·0173	·0141	·0115	·0094	·0077	·0063	*·61*
·62	·0495	·0399	·0323	·0260	·0210	·0170	·0137	·0111	·0089	·0072	·0058	·0047	*·62*
·63	·0421	·0336	·0268	·0214	·0171	·0136	·0109	·0087	·0069	·0055	·0044	·0035	*·63*
·64	·0358	·0282	·0223	·0176	·0139	·0110	·0086	·0068	·0054	·0042	·0034	·0026	*·64*
·65	·0304	·0237	·0186	·0145	·0113	·0088	·0069	·0054	·0042	·0033	·0025	·0020	*·65*
·70	·0135	·0100	·0073	·0054	·0040	·0029	·0022	·0016	·0012	·0009	·0006	·0005	*·70*
·75	·0060	·0042	·0029	·0020	·0014	·0010	·0007	·0005	·0003	·0002	·0002	·0001	*·75*
·80	·0027	·0018	·0012	·0008	·0005	·0003	·0002	·0001	·0001	·0001	·0000	·0000	*·80*
·85	·0012	·0007	·0005	·0003	·0002	·0001	·0001	·0000	·0000	·0000	—	—	*·85*
·90	·0005	·0003	·0002	·0001	·0001	·0000	·0000	—	—	—	—	—	*·90*
·95	·0002	·0001	·0001	·0000	·0000	—	—	—	—	—	—	—	*·95*
1·00	·0001	·0001	·0000	—	—	—	—	—	—	—	—	—	*1·00*
1·05	·0000	·0000	—	—	—	—	—	—	—	—	—	—	*1·05*

Size of Sample, n.

k	*27*	*28*	*29*	*30*	*31*	*32*	*33*	*34*	*35*	*36*	*37*	*38*	*k*
·44	·8426	·8371	·8316	·8262	·8207	·8154	·8100	·8047	·7994	·7942	·7890	·7839	*·44*
·45	·6241	·6129	·6020	·5912	·5806	·5702	·5600	·5499	·5401	·5304	·5209	·5116	*·45*
·46	·4623	·4488	·4357	·4230	·4107	·3987	·3871	·3758	·3648	·3542	·3439	·3339	*·46*
·47	·3425	·3287	·3154	·3027	·2905	·2788	·2676	·2568	·2465	·2365	·2270	·2179	*·47*
·48	·2537	·2407	·2283	·2166	·2055	·1950	·1850	·1755	·1665	·1580	·1499	·1422	*·48*
·49	·1879	·1762	·1653	·1550	·1454	·1364	·1279	·1199	·1125	·1055	·0989	·0928	*·49*
·50	·1392	·1290	·1196	·1109	·1028	·0954	·0884	·0820	·0760	·0705	·0653	·0606	*·50*
·51	·1031	·0945	·0866	·0794	·0728	·0667	·0611	·0560	·0513	·0471	·0431	·0395	*·51*
·52	·0764	·0692	·0627	·0568	·0515	·0466	·0423	·0383	·0347	·0314	·0285	·0258	*·52*
·53	·0566	·0507	·0454	·0407	·0364	·0326	·0292	·0262	·0234	·0210	·0188	·0168	*·53*
·54	·0419	·0371	·0329	·0291	·0258	·0228	·0202	·0179	·0158	·0140	·0125	·0110	*·54*
·55	·0311	·0272	·0238	·0208	·0182	·0160	·0140	·0122	·0107	·0094	·0082	·0072	*·55*
·56	·0230	·0199	·0172	·0149	·0129	·0112	·0097	·0084	·0072	·0063	·0054	·0047	*·56*
·57	·0170	·0146	·0125	·0107	·0091	·0078	·0067	·0057	·0049	·0042	·0036	·0031	*·57*
·58	·0126	·0107	·0090	·0076	·0065	·0055	·0046	·0039	·0033	·0028	·0024	·0020	*·58*
·59	·0094	·0078	·0065	·0055	·0046	·9038	·0032	·0027	·0022	·0019	·0016	·0013	*·59*
·60	·0069	·0057	·0047	·0039	·0032	·0027	·0022	·0018	·0015	·0012	·0010	·0008	*·60*
·61	·0051	·0042	·0034	·0028	·0023	·0019	·0015	·0012	·0010	·0008	·0007	·0006	*·61*
·62	·0038	·0031	·0025	·0020	·0016	·0013	·0011	·0009	·0007	·0006	·0004	·0004	*·62*
·63	·0028	·0022	·0018	·0014	·0011	·0009	·0007	·0006	·0005	·0004	·0003	·0002	*·63*
·64	·0021	·0016	·0013	·0010	·0008	·0006	·0005	·0004	·0003	·0002	·0002	·0002	*·64*
·65	·0015	·0012	·0009	·0007	·0006	·0004	·0003	·0003	·0002	·0002	·0001	·0001	*·65*
·70	·0003	·0003	·0002	·0001	·0001	·0001	·0001	·0000	·0000	·0000	·0000	·0000	*·70*
·75	·0001	·0001	·0000	·0000	·0000	·0000	·0000	—	—	—	—	—	*·75*
·80	·0000	·0000	—	—	—	—	—	—	—	—	—	—	*·80*

TABLE XXXV.—(*continued*).

Size of Sample, n.

k	39	40	41	42	43	44	45	46	47	48	49	50	k
·44	·7787	·7736	·7686	·7635	·7585	·7536	·7486	·7437	·7389	·7340	·7292	·7244	·44
·45	·5024	·4934	·4846	·4759	·4673	·4590	·4507	·4427	·4347	·4269	·4193	·4118	·45
·46	·3241	·3147	·3055	·2966	·2879	·2795	·2714	·2635	·2558	·2483	·2411	·2341	·46
·47	·2091	·2007	·1926	·1848	·1774	·1703	·1634	·1568	·1505	·1444	·1386	·1330	·47
·48	·1349	·1280	·1214	·1152	·1093	·1037	·0984	·0933	·0886	·0840	·0797	·0756	·48
·49	·0870	·0816	·0766	·0718	·0673	·0632	·0592	·0556	·0521	·0489	·0458	·0430	·49
·50	·0562	·0521	·0483	·0448	·0415	·0385	·0357	·0331	·0307	·0284	·0264	·0244	·50
·51	·0362	·0332	·0304	·0279	·0256	·0234	·0215	·0197	·0180	·0165	·0152	·0139	·51
·52	·0234	·0212	·0192	·0174	·0158	·0143	·0129	·0117	·0106	·0096	·0087	·0079	·52
·53	·0151	·0135	·0121	·0108	·0097	·0087	·0078	·0070	·0062	·0056	·0050	·0045	·53
·54	·0097	·0086	·0076	·0068	·0060	·0053	·0047	·0042	·0037	·0033	·0029	·0026	·54
·55	·0063	·0055	·0048	·0042	·0037	·0032	·0028	·0025	·0022	·0019	·0017	·0015	·55
·56	·0041	·0035	·0030	·0026	·0023	·0020	·0017	·0015	·0013	·0011	·0010	·0008	·56
·57	·0026	·0022	·0019	·0016	·0014	·0012	·0010	·0009	·0007	·0006	·0005	·0005	·57
·58	·0017	·0014	·0012	·0010	·0009	·0007	·0006	·0005	·0004	·0004	·0003	·0003	·58
·59	·0011	·0009	·0008	·0006	·0005	·0004	·0004	·0003	·0003	·0002	·0002	·0002	·59
·60	·0007	·0006	·0005	·0004	·0003	·0003	·0002	·0002	·0002	·0001	·0001	·0001	·60
·61	·0005	·0004	·0003	·0002	·0002	·0002	·0001	·0001	·0001	·0001	·0001	·0000	·61
·62	·0003	·0002	·0002	·0002	·0001	·0001	·0001	·0001	·0001	·0000	·0000	—	·62
·63	·0002	·0002	·0001	·0001	·0001	·0001	·0000	·0000	·0000	—	—	—	·63
·64	·0001	·0001	·0001	·0001	·0000	·0000	—	—	—	—	—	—	·64
·65	·0001	·0001	·0000	·0000	—	—	—	—	—	—	—	—	·65

TABLE XXXVI. *To find P_λ for Samples from the Ratio P_λ/λ for $n=10$ and beyond.*

k	P_λ/λ	k	P_λ/λ	k	P_λ/λ	k	P_λ/λ
·435	1·0008	·500	1·0731	·565	1·1514	·630	1·2353
·440	1·0062	·505	1·0789	·570	1·1576	·635	1·2420
·445	1·0116	·510	1·0847	·575	1·1639	·640	1·2488
·450	1·0170	·515	1·0906	·580	1·1702	·645	1·2555
·455	1·0224	·520	1·0965	·585	1·1766	·650	1·2623
·460	1·0279	·525	1·1024	·590	1·1830	·70	1·332
·465	1·0334	·530	1·1084	·595	1·1894	·75	1·407
·470	1·0390	·535	1·1144	·600	1·1959	·80	1·485+
·475	1·0446	·540	1·1205	·605	1·2024	·85	1·569
·480	1·0502	·545	1·1266	·610	1·2089	·90	1·658
·485	1·0559	·550	1·1328	·615	1·2155	·95	1·753
·490	1·0616	·555	1·1390	·620	1·2221	1·00	1·855
·495	1·0673	·560	1·1452	·625	1·2287	—	—

TABLE XXXVII[a].

Single Test of the Probability that two Samples have been drawn from the same Population.

Values of λ giving $P_\lambda = \cdot 05$.

n_1

		5	10	20	50	∞
n_2	5	·0167	·0222	·0241	·0247	·0248
	10	·0222	·0312	·0349	·0364	·0368
	20	·0241	·0349	·0401	·0425	·0432
	50	·0247	·0364	·0425	·0459	·0473
	∞	·0248	·0368	·0432	·0473	·0500

TABLE XXXVII^b. *Values of* λ *giving* $P_\lambda = \cdot 01$.

n_2 \ n_1	5	10	20	50	∞
5	·0019	·0029	·0033	·0034	·0034
10	·0029	·0048	·0058	·0061	·0062
20	·0033	·0058	·0071	·0078	·0080
50	·0034	·0061	·0078	·0088	·0092
∞	·0034	·0062	·0080	·0092	·0100

TABLE XXXVII^{bis}. 5 °/。 *and* 1 °/。 *Points for* $\sqrt{\beta_1}$, β_1 *and* β_2.

Size of Sample	$\sqrt{\beta_1}$		β_1		β_2			
	Lower and Upper Limits		Upper Limits		Lower Limits		Upper Limits	
	5 °/。	1 °/。	10 °/。	2 °/。	1 °/。	5 °/。	5 °/。	1 °/。
50	·533	·787	·285	·619	—	—	—	—
75	·445	·651	·198	·424	—	—	—	—
100	·389	·567	·152	·321	2·18	2·35	3·77	4·39
125	·350	·508	·123	·258	2·24	2·40	3·70	4·24
150	·321	·464	·103	·216	2·29	2·45	3·65	4·14
175	·298	·430	·089	·185	2·33	2·48	3·61	4·05
200	·280	·403	·078	·162	2·37	2·51	3·57	3·98
250	·251	·360	·063	·130	2·42	2·55	3·52	3·87
300	·230	·329	·053	·108	2·46	2·59	3·47	3·79
350	·213	·305	·045	·093	2·50	2·62	3·44	3·72
400	·200	·285	·040	·081	2·52	2·64	3·41	3·67
450	·188	·269	·035	·072	2·55	2·66	3·39	3·63
500	·179	·255	·032	·065	2·57	2·67	3·37	3·60
550	·171	·243	·029	·059	2·58	2·69	3·35	3·57
600	·163	·233	·027	·054	2·60	2·70	3·34	3·54
650	·157	·224	·025	·050	2·61	2·71	3·33	3·52
700	·151	·215	·023	·046	2·62	2·72	3·31	3·50
750	·146	·208	·021	·043	2·64	2·73	3·30	3·48
800	·142	·202	·020	·041	2·65	2·74	3·29	3·46
850	·138	·196	·019	·038	2·66	2·74	3·28	3·45
900	·134	·190	·018	·036	2·66	2·75	3·28	3·43
950	·130	·185	·017	·034	2·67	2·76	3·27	3·42
1000	·127	·180	·016	·032	2·68	2·76	3·26	3·41
1200	·116	·165	·013	·027	2·71	2·78	3·24	3·37
1400	·107	·152	·012	·023	2·72	2·80	3·22	3·34
1600	·100	·142	·010	·020	2·74	2·81	3·21	3·32
1800	·095	·134	·009	·018	2·76	2·82	3·20	3·30
2000	·090	·127	·008	·016	2·77	2·83	3·18	3·28
2500	·080	·114	·006	·013	2·79	2·85	3·16	3·25
3000	·073	·104	·005	·011	2·81	2·86	3·15	3·22
3500	·068	·096	·005	·009	2·82	2·87	3·14	3·21
4000	·064	·090	·004	·008	2·83	2·88	3·13	3·19
4500	·060	·085	·004	·007	2·84	2·88	3·12	3·18
5000	·057	·081	·003	·006	2·85	2·89	3·12	3·17

Tables to assist the Computation of Abruptness Coefficients for the correction of Moment-Coefficients in the case of Asymptotic Frequency.

TABLE XXXVIII.

To select "q."

Values of n_6'.

q	$+n_5'$	$-n_4'$	$+n_3'$	$-n_2'$	$+n_1'$
·00	4·000,00	6·000,00	4·000,00	1·000,00	0·000,00
·01	4·009,12	6·031,50	4·038,05+	1·017,18	·000,90
·02	4·018,27	6·063,16	4·076,44	1·034,64	·001,85−
·03	4·027,42	6·094,96	4·115,16	1·052,38	·002,85−
·04	4·036,60	6·126,91	4·154,23	1·070,39	·003,91
·05	4·045,79	6·159,01	4·193,64	1·088,70	·005,02
·06	4·055,00−	6·191,27	4·233,39	1·107,30	·006,20
·07	4·064,22	6·223,67	4·273,50−	1·126,19	·007,44
·08	4·073,46	6·256,23	4·313,95+	1·145,38	·008,74
·09	4·082,72	6·288,94	4·354,76	1·164,88	·010,11
·1	4·092,00	6·321,80	4·395,93	1·184,68	·011,55−
·2	4·185,69	6·659,03	4·827,95+	1·400,70	·030,27
·3	4·281,10	7·012,37	5·299,08	1·652,87	·058,90
·4	4·378,27	7·382,52	5·812,56	1·946,67	·101,00
·5	4·477,23	7·770,22	6·371,91	2·288,34	·161,15−
·6	4·478,00	8·176,24	6·980,93	2·684,99	·245,17
·7	4·680,63	8·601,38	7·643,67	3·144,68	·360,47
·8	4·785,16	9·046,46	8·364,55−	3·676,58	·516,39
·9	4·891,60	9·512,37	9·148,29	4·291,09	·724,67
1·0	5·000,00	10·000,00	10·000,00	5·000,00	1·000,00

TABLE XXXIX.

$n_1'\mu_1''$.

q	$-n_5'$	$+n_4'$	$-n_3'$	$+n_2'$	$-n_1'$
·00	·348,611,111	1·420,833,333	2·212,500,000	1·640,277,778	1·000,000,000
·01	·337,052,155+	1·377,748,898	2·154,269,510	1·608,085,274	·995,720,335−
·02	·325,920,901	1·336,150,029	2·097,842,168	1·576,701,212	·991,464,828
·03	·315,199,524	1·295,977,975+	2·043,151,833	1·546,099,611	·987,233,322
·04	·304,871,044	1·257,176,655+	1·990,135,231	1·516,255,532	·983,025,661
·05	·294,919,274	1·219,692,523	1·938,731,809	1·487,145,029	·978,841,691
·06	·285,328,782	1·183,474,435−	1·888,883,596	1·458,745,101	·974,681,257
·07	·276,084,849	1·148,473,524	1·840,535,076	1·431,033,645−	·970,544,209
·08	·267,173,435−	1·114,643,089	1·793,633,065−	1·403,989,417	·966,430,394
·09	·258,581,138	1·081,938,478	1·748,126,600	1·377,591,989	·962,339,662
·1	·250,295,166	1·050,316,992	1·703,966,827	1·351,821,712	·958,271,865+
·2	·181,846,692	·785,494,654	1·327,010,619	1·124,779,734	·918,823,364
·3	·133,473,847	·593,351,364	1·043,358,325+	·943,454,131	·881,512,010
·4	·098,847,171	·452,136,857	·827,163,395−	·796,849,912	·846,205,880
·5	·073,782,714	·347,188,907	·660,549,745+	·677,069,086	·812,781,803
·6	·055,461,552	·268,428,056	·530,900,040	·578,314,290	·781,125,134
·7	·041,952,952	·208,807,221	·429,151,209	·496,250,299	·751,128,978
·8	·031,915,415+	·163,326,298	·348,692,994	·427,582,408	·722,693,605+
·9	·024,404,997	·128,391,269	·284,638,888	·369,770,901	·695,725,905−
1·0	·018,750,000	·101,388,889	·233,333,333	·320,833,333	·670,138,889

TABLE XXXIX.—(*continued*).

$n_1'\mu_2''$.

q	$+n_5'$	$-n_4'$	$+n_3'$	$-n_2'$	$+n_1'$
·00	·509,722,222	2·068,055,556	3·190,277,778	2·298,611,111	1·000,000,000
·01	·491,437,690	1·999,661,471	3·097,350,764	2·246,736,419	·992,840,159
·02	·473,876,359	1·933,800,012	3·007,538,094	2·196,296,879	·985,741,618
·03	·457,006,444	1·870,365,381	2·920,718,901	2·147,243,645−	·978,703,782
·04	·440,797,722	1·809,256,787	2·836,777,756	2·099,529,893	·971,726,057
·05	·425,221,445+	1·750,378,175+	2·755,604,379	2·053,110,720	·964,807,860
·06	·410,250,258	1·693,637,976	2·677,093,379	2·007,943,052	·957,948,613
·07	·395,858,125−	1·638,948,868	2·601,144,002	1·963,985,555−	·951,147,744
·08	·382,020,257	1·586,227,555+	2·527,659,900	1·921,198,548	·944,404,687
·09	·368,713,047	1·535,394,560	2·456,548,902	1·879,543,929	·937,718,883
·1	·355,914,005−	1·486,374,019	2·387,722,815−	1·838,985,097	·931,089,778
·2	·251,616,015−	1·081,409,527	1·808,207,172	1·486,556,641	·867,799,632
·3	·179,805,027	·795,134,092	1·383,315,321	1·212,311,406	·809,612,958
·4	·129,708,367	·590,084,242	1·067,691,574	·996,220,560	·756,065,739
·5	·094,357,154	·441,521,782	·830,558,572	·824,113,680	·706,740,651
·6	·069,157,670	·332,794,025+	·650,612,131	·685,753,113	·661,261,889
·7	·051,032,190	·252,502,977	·512,849,951	·573,607,979	·619,290,643
·8	·037,889,121	·192,732,854	·406,547,787	·482,050,991	·580,521,082
·9	·028,289,036	·147,915,106	·323,937,439	·406,819,019	·544,676,846
1·0	·021,230,159	·114,087,302	·259,325,397	·344,642,857	·511,507,937

$n_1'\mu_3''$.

q	$-n_5'$	$+n_4'$	$-n_3'$	$+n_2'$	$-n_1'$
·00	·605,357,143	2·449,404,762	3·757,738,095+	2·663,690,476	1·000,000,000
·01	·582,394,737	2·363,294,726	3·640,294,889	2·597,670,256	·990,639,993
·02	·560,384,903	2·280,539,516	3·527,014,097	2·533,603,950+	·981,380,506
·03	·539,284,120	2·200,993,279	3·417,727,350−	2·471,422,128	·972,220,333
·04	·519,051,072	2·124,517,267	3·312,274,067	2·411,058,305+	·963,158,286
·05	·499,646,518	2·050,979,455−	3·210,501,048	2·352,448,797	·954,193,191
·06	·481,033,181	1·980,254,169	3·112,262,082	2·295,532,578	·945,323,891
·07	·463,175,633	1·912,221,748	3·017,417,588	2·240,251,153	·936,549,243
·08	·446,040,202	1·846,768,219	2·925,834,268	2·186,548,431	·927,868,119
·09	·429,594,868	1·783,784,996	2·837,384,791	2·134,370,613	·919,279,408
·1	·413,809,176	1·723,168,594	2·751,947,482	2·083,666,078	·910,782,009
·2	·286,496,368	1·227,568,195+	2·039,995,560	1·647,661,301	·830,598,706
·3	·200,564,156	·884,100,493	1·528,228,154	1·315,019,404	·758,439,437
·4	·141,785,267	·642,875,541	1·155,459,749	1·058,012,378	·693,416,763
·5	·101,108,297	·471,474,675+	·880,790,011	·857,268,881	·634,750,209
·6	·072,666,589	·348,427,881	·676,338,042	·698,975,747	·581,752,328
·7	·052,595,818	·259,280,016	·522,773,395−	·573,108,001	·533,816,687
·8	·038,314,297	·194,157,347	·406,493,821	·472,277,467	·490,407,578
·9	·028,075,486	·146,228,827	·317,801,752	·390,965,397	·451,051,083
1·0	·020,684,524	·110,714,286	·249,702,381	·325,000,000	·415,327,381

TABLE XXXIX.—(*continued*).

$n_1'\mu_4''$.

q	$+n_5'$	$-n_4'$	$+n_3'$	$-n_2'$	$+n_1'$
·00	·669,246,032	2·702,976,190	4·131,547,619	2·897,817,460	1·000,000,000
·01	·642,741,032	2·603,384,896	3·995,314,950−	2·820,816,125+	·988,853,670
·02	·617,377,098	2·507,829,578	3·864,123,682	2·746,214,176	·977,846,549
·03	·593,100,484	2·416,129,154	3·737,763,098	2·673,923,356	·966,976,723
·04	·569,860,225−	2·328,111,578	3·616,032,461	2·603,859,235+	·956,242,310
·05	·547,607,985−	2·243,613,341	3·498,740,475+	2·535,941,014	·945,641,453
·06	·526,297,902	2·162,478,996	3·385,704,789	2·470,091,342	·935,172,325+
·07	·505,886,451	2·084,560,716	3·276,751,518	2·406,236,148	·924,833,125−
·08	·486,332,315−	2·009,717,880	3·171,714,803	2·344,304,475+	·914,622,078
·09	·467,596,255−	1·937,816,682	3·070,436,388	2·284,228,330	·904,537,438
·1	·449,641,002	1·868,729,761	2·972,765,231	2·225,942,537	·894,577,482
·2	·306,041,101	1·308,603,282	2·165,697,799	1·728,979,624	·801,474,553
·3	·210,673,314	·926,641,096	1·594,834,843	1·355,881,989	·719,123,762
·4	·146,480,974	·662,652,275−	1·185,629,153	1·072,196,971	·646,172,548
·5	·102,760,653	·478,040,680	·888,868,775+	·854,114,913	·581,451,699
·6	·072,670,572	·347,586,985−	·671,432,205+	·684,846,886	·523,948,751
·7	·051,766,689	·254,541,071	·510,650,857	·552,347,524	·472,785,494
·8	·037,121,452	·187,617,231	·390,780,891	·447,843,394	·427,198,921
·9	·026,782,049	·139,114,259	·300,745,049	·364,858,945−	·386,525,054
1·0	·019,431,217	·103,716,931	·232,658,730	·298,558,201	·350,185,185+

TABLE XL.

a_1.

q	$+n_5'$	$-n_4'$	$+n_3'$	$-n_2'$	$-n_1'$
·00	·250,000,000	1·083,333,333	1·916,666,667	2·083,333,333	0·000,000,000
·01	·246,008,611	1·068,968,328	1·898,253,684	2·074,116,298	·000,782,964
·02	·242,080,946	1·054,792,317	1·880,009,840	2·064,920,978	·001,587,644
·03	·238,215,989	1·040,802,836	1·861,933,685−	2·055,747,506	·002,414,172
·04	·234,412,739	1·026,997,457	1·844,023,777	2·046,596,013	·003,262,680
·05	·230,670,209	1·013,373,780	1·826,278,688	2·037,466,628	·004,133,295−
·06	·226,987,430	·999,929,437	1·808,697,000	2·028,359,478	·005,026,144
·07	·223,363,450−	·986,662,091	1·791,277,305+	2·019,274,687	·005,941,353
·08	·219,797,328	·973,569,433	1·774,018,209	2·010,212,378	·006,879,045−
·09	·216,288,141	·960,649,187	1·756,918,324	2·001,172,673	·007,839,340
·1	·212,834,981	·947,899,104	1·739,976,276	1·992,155,690	·008,822,357
·2	·181,194,916	·829,282,795+	1·578,941,890	1·903,260,363	·019,927,030
·3	·154,258,466	·725,413,475−	1·432,255,805+	1·816,753,780	·033,420,447
·4	·131,326,390	·634,472,513	1·298,709,532	1·732,723,601	·049,390,268
·5	·111,803,399	·554,863,268	1·177,187,540	1·651,239,585−	·067,906,252
·6	·095,182,697	·485,184,345+	1·066,661,229	1·572,354,593	·089,021,260
·7	·081,032,830	·424,206,026	·966,183,145−	1·496,105,682	·112,772,349
·8	·068,986,483	·370,849,487	·874,881,452	1·422,515,258	·139,181,924
·9	·058,730,947	·324,168,505−	·791,954,670	1·351,592,256	·168,258,922
1·0	·050,000,000	·283,333,333	·716,666,667	1·283,333,333	·200,000,000

TABLE XL.—(*continued*).

a_2.

q	$-n_5'$	$+n_4'$	$-n_3'$	n_2'	$+n_1'$
·00	·916,666,667	3·750,000,000	5·750,000,000	+2·916,666,667	·000,000,000
·01	·897,111,401	3·679,008,348	5·657,850,251	+2·869,503,976	·004,403,976
·02	·877,946,899	3·609,234,592	5·566,913,486	+2·822,639,386	·008,906,053
·03	·859,165,668	3·540,659,092	5·477,175,700	+2·776,072,675−	·013,506,008
·04	·840,760,355+	3·473,262,514	5·388,623,028	+2·729,803,599	·018,203,599
·05	·822,723,744	3·407,025,817	5·301,241,751	+2·683,831,902	·022,998,568
·06	·805,048,753	3·341,930,259	5·215,018,285+	+2·638,157,305−	·027,890,638
·07	·787,728,433	3·277,957,383	5·129,939,189	+2·592,779,515−	·032,879,515−
·08	·770,755,963	3·215,089,019	5·045,991,157	+2·547,698,220	·037,964,887
·09	·754,124,652	3·153,307,278	4·963,161,021	+2·502,913,093	·043,146,426
·1	·737,827,933	3·092,594,546	4·881,435,747	+2·458,423,787	·048,423,787
·2	·591,903,392	2·540,577,512	4·122,177,451	+2·029,713,197	·106,379,863
·3	·473,059,295−	2·077,989,333	3·460,028,486	+1·630,086,531	·173,419,865−
·4	·376,468,985+	1·691,188,054	2·884,009,453	+1·258,949,162	·248,949,162
·5	·298,142,397	1·368,524,270	2·384,252,480	+ ·915,579,166	·332,245,832
·6	·234,783,986	1·100,060,211	1·951,902,751	+ ·599,145,877	·422,479,210
·7	·183,674,414	·877,327,182	1·579,027,019	+ ·308,727,749	·518,727,749
·8	·142,572,065+	·693,116,279	1·258,528,860	+ ·043,329,275+	·619,995,942
·9	·109,631,101	·541,297,966	·984,070,371	− ·198,103,166	·725,230,168
1·0	·083,333,333	·416,666,667	·750,000,000	− ·416,666,667	·833,333,333

a_3.

q	n_5'	n_4'	n_3'	n_2'	$-n_1'$
·00	+1·500,000,000	−5·500,000,000	+6·500,000,000	−2·500,000,000	·000,000,000
·01	+1·441,684,262	−5·284,817,276	+6·214,058,189	−2·347,590,832	·016,666,832
·02	+1·384,993,511	−5·074,991,588	+5·934,038,264	−2·197,253,138	·033,561,138
·03	+1·329,888,404	−4·870,411,158	+5·659,846,120	−2·048,975,159	·050,677,159
·04	+1·276,330,479	−4·670,966,312	+5·391,388,909	−1·902,745,073	·068,009,073
·05	+1·224,282,132	−4·476,549,446	+5·128,575,027	−1·758,550,999	·085,550,999
·06	+1·173,706,605−	−4·287,054,989	+4·871,314,097	−1·616,380,995+	·103,296,995+
·07	+1·124,567,960	−4·102,379,367	+4·619,516,955+	−1·476,223,067	·121,241,067
·08	+1·076,831,069	−3·922,420,967	+4·373,095,641	−1·338,065,161	·139,377,161
·09	+1·030,461,591	−3·747,080,106	+4·131,963,378	−1·201,895,174	·157,699,174
·10	+ ·985,425,960	−3·576,258,991	+3·896,034,564	−1·067,700,951	·176,200,951
·20	+ ·601,567,121	−2·096,408,368	+1·804,915,623	+ ·168,280,564	·369,719,430
·30	+ ·319,315,024	− ·973,802,729	+ ·148,185,297	+1·220,358,460	·574,141,540
·40	+ ·115,567,223	− ·137,146,415−	−1·142,401,078	+2·101,232,374	·782,767,626
·50	− ·027,950,850−	+ ·472,049,150+	−2·126,027,061	+2·823,720,407	·988,779,593
·60	− ·125,641,160	+ ·901,608,504	−2·853,857,785−	+3·400,609,712	1·185,390,288
·70	− ·188,806,494	+1·190,495,582	−3·369,980,897	+3·844,525,366	1·365,974,634
·80	− ·226,275,664	+1·370,328,908	−3·712,253,327	+4·167,817,389	1·524,182,611
·90	− ·244,908,050−	+1·466,652,499	−3·913,061,200	+4·382,465,400	1·654,034,600
1·00	− ·250,000,000	+1·500,000,000	−4·000,000,000	+4·500,000,000	1·750,000,000

TABLE XL.—(*continued*).

a_4.

q	n_5'	n_4'	n_3'	n_2'	$+n_1'$
·00	− 1·000,000,000	+ 3·000,000,000	− 3·000,000,000	+ 1·000,000,000	·000,000,000
·01	− ·852,025,239	+ 2·439,751,274	− 2·227,973,805+	+ ·562,600,217	·058,931,207
·02	− ·710,160,918	+ 1·900,662,836	− 1·481,309,257	+ ·135,986,141	·118,033,981
·03	− ·574,217,737	+ 1·382,159,227	− ·759,456,556	− ·279,963,720	·177,272,470
·04	− ·444,011,482	+ ·883,678,251	− ·061,875,366	− ·685,370,531	·236,610,909
·05	− ·319,362,904	+ ·404,670,698	+ ·611,965,328	− 1·080,355,121	·296,013,629
·06	− ·200,097,591	− ·055,399,924	+ 1·262,587,353	− 1·465,037,963	·355,445,077
·07	− ·086,045,855−	− ·497,057,650+	+ 1·890,503,478	− 1·839,539,171	·414,869,819
·08	+ ·022,957,391	− ·920,814,325+	+ 2·496,217,551	− 2·203,978,481	·474,252,559
·09	+ ·127,072,744	− 1·327,169,850+	+ 3·080,224,620	− 2·558,475,241	·533,558,149
·10	+ ·226,456,419	− 1·716,612,438	+ 3·643,011,069	− 2·903,148,400	·592,751,600
·20	+ ·991,498,580	− 4·780,350,105+	+ 8·204,797,398	− 5·835,442,087	1·170,957,913
·30	+ 1·426,582,291	− 6·611,859,902	+ 11·119,866,240	− 7·912,831,911	1·701,068,089
·40	+ 1·630,548,461	− 7·540,659,205+	+ 12·750,019,538	− 9·246,059,275−	2·152,340,725+
·50	+ 1·677,050,983	− 7·822,949,017	+ 13·394,673,376	− 9·939,850,404	2·497,649,596
·60	+ 1·620,390,233	− 7·656,196,570	+ 13·299,926,060	− 10·092,310,182	2·714,089,818
·70	+ 1·500,079,746	− 7·191,039,047	+ 12·666,499,084	− 9·794,499,593	2·783,400,407
·80	+ 1·344,408,582	− 6·540,970,693	+ 11·656,666,873	− 9·130,178,559	2·692,221,441
·90	+ 1·173,209,400	− 5·790,200,028	+ 10·400,282,735−	− 8·175,694,918	2·432,205,082
1·00	+ 1·000,000,000	− 5·000,000,000	+ 9·000,000,000	− 7·000,000,000	2·000,000,000

a_5.

q	$-n_5'$	$+n_4'$	$-n_3'$	$+n_2'$	$-n_1'$
·00	·000,000,000	·000,000,000	·000,000,000	·000,000,000	·000,000,000
·01	·445,496,981	1·729,231,540	2·467,592,290	1·481,479,543	·239,271,919
·02	·865,971,768	3·368,992,773	4·822,507,268	2·909,869,574	·476,973,830
·03	1·262,377,028	4·922,319,719	7·067,900,676	4·286,091,610	·712,936,877
·04	1·635,635,324	6·392,164,841	9·206,860,660	5·611,059,695+	·946,994,807
·05	1·986,639,964	7·781,399,054	11·242,408,959	6·885,680,352	1·178,984,023
·06	2·316,255,826	9·092,813,698	13·177,502,082	8·110,852,542	1·408,743,636
·07	2·625,320,164	10·329,122,460	15·015,032,460	9·287,467,631	1·636,115,512
·08	2·914,643,391	11·492,963,258	16·757,829,591	10·416,409,351	1·860,944,326
·09	3·185,009,843	12·586,900,087	18·408,661,152	11·498,553,767	2·083,077,601
·10	3·437,178,520	13·613,424,813	19·970,234,116	12·534,769,243	2·302,365,757
·20	5·108,247,070	20·671,060,293	31·230,998,122	20·556,313,787	4·308,006,213
·30	5·631,899,453	23·256,087,239	36·132,680,857	24·882,094,652	5·887,460,345−
·40	5·446,368,055+	22·912,696,933	36·536,517,313	26·250,525,738	6·943,714,262
·50	4·856,460,139	20·768,539,861	33·899,313,753	25·320,879,172	7·413,495,828
·60	4·069,250,659	17·631,833,783	29·345,635,431	22·674,644,444	7·267,115,556
·70	3·221,014,470	14·068,006,546	23·729,027,854	18·818,091,927	6·507,103,073
·80	2·397,418,260	10·459,866,822	17·683,686,565−	14·185,800,597	5·165,879,403
·90	1·648,548,321	7·054,564,765+	11·667,843,417	9·144,925,452	3·302,689,548
1·00	1·000,000,000	4·000,000,000	6·000,000,000	4·000,000,000	1·000,000,000

TABLE XLI.

K_1.

q	$-n_5$	$+n_4$	$-n_3$	$+n_2$	$-n_1$
·00	·329,861,111	1·338,194,444	2·061,805,556	1·470,138,889	1·000,000,000
·01	·318,568,509	1·296,065,411	2·004,793,940	1·438,551,783	·995,770,346
·02	·307,699,727	1·255,410,677	1·949,575,875+	1·407,772,430	·991,566,292
·03	·297,237,004	1·216,171,641	1·896,085,317	1·377,774,854	·987,387,694
·04	·287,163,418	1·178,292,368	1·844,259,083	1·348,534,117	·983,234,410
·05	·277,462,844	1·141,719,460	1·794,036,712	1·320,026,276	·979,106,298
·06	·268,119,906	1·106,401,913	1·745,360,324	1·292,228,334	·975,003,220
·07	·259,119,945−	1·072,291,004	1·698,174,492	1·265,118,189	·970,925,036
·08	·250,448,973	1·039,340,168	1·652,426,119	1·238,674,601	·966,871,608
·09	·242,093,647	1·007,504,891	1·608,064,330	1·212,877,142	·962,842,799
·10	·234,041,228	·976,742,606	1·565,040,355−	1·187,706,165+	·958,838,474
·20	·167,751,549	·719,982,999	1·198,971,727	·966,620,753	·920,112,912
·30	·121,248,708	·535,021,796	·925,404,352	·791,185,861	·883,694,319
·40	·088,243,920	·400,212,324	·718,559,151	·650,405,973	·849,464,178
·50	·064,587,541	·300,981,467	·560,618,977	·536,381,284	·817,312,508
·60	·047,489,724	·227,326,856	·439,018,337	·443,311,494	·787,137,511
·70	·035,044,500−	·172,268,464	·344,740,108	·366,857,498	·758,844,668
·80	·025,931,549	·130,864,835−	·271,215,077	·303,719,942	·732,346,008
·90	·019,225,117	·099,573,495−	·213,593,699	·251,353,867	·707,559,427
1·00	·014,269,180	·075,826,720	·168,253,968	·207,771,164	·684,408,069

K_2.

q	$+n_5$	$-n_4$	$+n_3$	$-n_2$	$+n_1$
·00	·517,030,423	2·098,313,492	3·237,202,381	2·322,585,979	1·000,000,000
·01	·498,631,864	2·029,513,077	3·143,762,752	2·270,462,907	·992,822,947
·02	·480,957,741	1·963,248,440	3·053,439,188	2·219,773,905−	·985,706,434
·03	·463,976,271	1·899,413,810	2·966,110,889	2·170,470,164	·978,649,853
·04	·447,657,229	1·837,908,420	2·881,662,486	2·122,504,900	·971,652,604
·05	·431,971,867	1·778,636,237	2·799,983,763	2·075,833,246	·964,714,093
·06	·416,892,828	1·721,505,715−	2·720,969,387	2·030,412,167	·957,833,732
·07	·402,394,074	1·666,429,550+	2·644,518,662	1·986,200,364	·951,010,940
·08	·388,450,815−	1·613,324,466	2·570,535,295−	1·943,158,195+	·944,245,142
·09	·375,039,440	1·562,110,999	2·498,927,170	1·901,247,595−	·937,535,770
·10	·362,137,457	1·512,713,303	2·429,606,145+	1·860,431,998	·930,882,262
·20	·256,876,419	1·104,161,810	1·845,271,878	1·505,400,628	·867,300,354
·30	·184,218,941	·814,637,133	1·415,826,097	1·228,512,138	·808,730,315+
·40	·133,384,811	·606,671,080	1·095,941,262	1·009,769,362	·754,702,916
·50	·097,396,255−	·455,513,105−	·854,856,798	·835,030,494	·704,797,878
·60	·071,650,047	·344,493,005−	·671,276,111	·694,083,399	·658,638,746
·70	·053,058,869	·262,192,026	·530,197,167	·579,419,632	·615,888,348
·80	·039,521,801	·200,671,843	·420,890,245+	·485,431,307	·576,244,734
·90	·029,590,594	·154,340,671	·335,577,272	·407,871,762	·539,437,561
1·00	·022,255,291	·119,212,963	·268,551,587	·343,485,450−	·505,224,868

TABLE XLI.—(*continued*).

K_3.

q	$-n_5$	$+n_4$	$-n_3$	$+n_2$	$-n_1$
·00	·608,630,952	2·465,575,397	3·792,757,937	2·710,813,492	1·000,000,000
·01	·585,638,062	2·379,353,058	3·675,164,710	2·644,710,924	·990,628,564
·02	·563,598,718	2·296,488,960	3·561,738,113	2·580,564,234	·981,357,720
·03	·542,469,355−	2·216,837,094	3·452,309,599	2·518,303,921	·972,186,265
·04	·522,208,610	2·140,258,563	3·346,718,413	2·457,863,432	·963,113,013
·05	·502,777,201	2·066,621,194	3·244,811,187	2·399,179,016	·954,136,792
·06	·484,137,807	1·995,799,175+	3·146,441,545+	2·342,189,579	·945,256,448
·07	·466,254,963	1·927,672,708	3·051,469,746	2·286,836,561	·936,470,838
·08	·449,094,957	1·862,127,690	2·959,762,339	2·233,063,807	·927,778,837
·09	·432,625,733	1·799,055,407	2·871,191,840	2·180,817,451	·919,179,332
·10	·416,816,800	1·738,352,255−	2·785,636,429	2·130,045,811	·910,671,226
·20	·289,300,542	1·241,987,489	2·072,634,697	1·693,435,417	·830,385,350+
·30	·203,200,400	·897,881,173	1·559,976,710	1·360,267,710	·758,129,818
·40	·144,271,796	·656,078,498	1·186,388,260	1·102,765,151	·693,011,813
·50	·103,452,959	·484,119,473	·910,906,829	·901,514,899	·634,242,178
·60	·074,871,564	·360,509,746	·705,610,152	·742,669,912	·581,121,770
·70	·054,660,732	·270,781,844	·551,142,670	·616,178,452	·533,029,822
·80	·040,238,187	·205,057,921	·433,889,389	·514,632,139	·489,414,089
·90	·029,857,965−	·156,508,214	·344,149,229	·432,497,975+	·449,782,394
1·00	·022,326,389	·120,357,143	·274,927,556	·365,595,238	·413,695,437

K_4.

q	$+n_5$	$-n_4$	$+n_3$	$-n_2$	$+n_1$
·00	·662,665,344	2·675,297,619	4·087,996,032	2·875,363,757	1·000,000,000
·01	·636,212,784	2·575,880,689	3·951,958,580	2·798,432,979	·988,847,698
·02	·610,902,433	2·480,504,764	3·820,970,516	2·723,906,711	·977,835,264
·03	·586,680,471	2·388,988,518	3·694,820,850+	2·651,696,614	·966,960,808
·04	·563,495,865−	2·301,159,668	3·573,308,580	2·581,718,176	·956,222,470
·05	·541,300,211	2·216,854,475−	3·456,242,152	2·513,890,514	·945,618,417
·06	·520,047,582	2·135,917,267	3·343,438,958	2·448,136,198	·935,146,843
·07	·499,694,393	2·058,200,002	3·234,724,866	2·384,381,075+	·924,805,969
·08	·480,199,261	1·983,561,846	3·129,933,770	2·322,554,108	·914,594,045
·09	·461,522,894	1·911,868,788	3·028,907,176	2·262,587,222	·904,509,343
·10	·443,627,963	1·842,993,268	2·931,493,809	2·204,415,162	·894,550,165−
·20	·300,654,914	1·285,120,281	2·127,284,329	1·708,818,399	·801,505,673
·30	·205,928,193	·905,557,548	1·559,652,170	1·337,449,772	·719,318,813
·40	·142,360,800	·643,993,579	1·153,886,009	1·055,784,436	·646,653,654
·50	·099,229,825+	·461,746,773	·860,644,280	·839,945,738	·582,354,092
·60	·069,681,936	·333,539,545−	·646,704,854	·673,083,211	·525,416,976
·70	·049,267,234	·242,584,380	·489,322,717	·543,095,568	·474,969,464
·80	·035,056,311	·177,573,968	·372,697,659	·441,159,109	·430,249,925+
·90	·025,097,232	·130,797,271	·285,712,548	·360,753,626	·390,591,817
1·00	·018,075,397	·096,937,831	·220,456,349	·297,003,968	·355,410,053

TABLE XLII.

Table for Calculating Occipital Index (Oc. I.) from Occipital Arc (S_3) and Chord (S_3').

S_3/S_3'	Oc. I.	S_3/S_3'	Oc. I.	S_3/S_3'	Oc. I.	S_3/S_3'	Oc. I.	S_3/S_3'	Oc. I.
1·050	98·22	1·100	74·47	1·150	65·00	1·200	60·00	1·250	57·05+
1·051	97·39	1·101	74·20	1·151	64·87	1·201	59·92	1·251	57·01
1·052	96·59	1·102	73·94	1·152	64·74	1·202	59·85+	1·252	56·96
1·053	95·81	1·103	73·68	1·153	64·61	1·203	59·78	1·253	56·92
1·054	95·05+	1·104	73·42	1·154	64·48	1·204	59·71	1·254	56·88
1·055	94·32	1·105	73·17	1·155	64·36	1·205	59·63	1·255	56·83
1·056	93·60	1·106	72·92	1·156	64·23	1·206	59·56	1·256	56·79
1·057	92·91	1·107	72·68	1·157	64·11	1·207	59·49	1·257	56·75
1·058	92·24	1·108	72·44	1·158	63·99	1·208	59·42	1·258	56·70
1·059	91·58	1·109	72·21	1·159	63·87	1·209	59·36	1·259	56·66
1·060	90·95−	1·110	71·98	1·160	63·76	1·210	59·29	1·260	56·62
1·061	90·32	1·111	71·74	1·161	63·64	1·211	59·22	1·261	56·58
1·062	89·72	1·112	71·52	1·162	63·52	1·212	59·15+	1·262	56·54
1·063	89·13	1·113	71·30	1·163	63·41	1·213	59·09	1·263	56·50
1·064	88·56	1·114	71·08	1·164	63·30	1·214	59·02	1·264	56·46
1·065	88·00	1·115	70·87	1·165	63·19	1·215	58·96	1·265	56·42
1·066	87·45−	1·116	70·66	1·166	63·08	1·216	58·89	1·266	56·38
1·067	86·92	1·117	70·45−	1·167	62·97	1·217	58·83	1·267	56·34
1·068	86·40	1·118	70·25−	1·168	62·86	1·218	58·77	1·268	56·30
1·069	85·89	1·119	70·04	1·169	62·76	1·219	58·71	1·269	56·26
1·070	85·39	1·120	69·84	1·170	62·65+	1·220	58·64	1·270	56·22
1·071	84·91	1·121	69·65−	1·171	62·55+	1·221	58·58	1·271	56·19
1·072	84·43	1·122	69·46	1·172	62·45−	1·222	58·52	1·272	56·15−
1·073	83·97	1·123	69·26	1·173	62·35−	1·223	58·46	1·273	56·11
1·074	83·52	1·124	69·08	1·174	62·25−	1·224	58·40	1·274	56·08
1·075	83·08	1·125	68·89	1·175	62·15−	1·225	58·35+	1·275	56·04
1·076	82·64	1·126	68·71	1·176	62·05+	1·226	58·29	1·276	56·00
1·077	82·22	1·127	68·53	1·177	61·95+	1·227	58·23	1·277	55·97
1·078	81·80	1·128	68·35+	1·178	61·86	1·228	58·17	1·278	55·93
1·079	81·40	1·129	68·18	1·179	61·77	1·229	58·12	1·279	55·90
1·080	81·00	1·130	68·01	1·180	61·67	1·230	58·06	1·280	55·86
1·081	80·61	1·131	67·84	1·181	61·58	1·231	58·01	1·281	55·83
1·082	80·23	1·132	67·67	1·182	61·49	1·232	57·95−	1·282	55·80
1·083	79·85+	1·133	67·50	1·183	61·40	1·233	57·90	1·283	55·76
1·084	79·49	1·134	67·34	1·184	61·31	1·234	57·84	1·284	55·73
1·085	79·13	1·135	67·18	1·185	61·22	1·235	57·79	1·285	55·70
1·086	78·78	1·136	67·02	1·186	61·13	1·236	57·74	1·286	55·67
1·087	78·43	1·137	66·86	1·187	61·05−	1·237	57·69	1·287	55·64
1·088	78·09	1·138	66·71	1·188	60·96	1·238	57·64	1·288	55·60
1·089	77·76	1·139	66·55+	1·189	60·87	1·239	57·58	1·289	55·57
1·090	77·43	1·140	66·40	1·190	60·79	1·240	57·53	1·290	55·54
1·091	77·11	1·141	66·25+	1·191	60·71	1·241	57·48	1·291	55·51
1·092	76·80	1·142	66·11	1·192	60·63	1·242	57·43	1·292	55·48
1·093	76·49	1·143	65·96	1·193	60·55−	1·243	57·38	1·293	55·44
1·094	76·18	1·144	65·82	1·194	60·46	1·244	57·34	1·294	55·41
1·095	75·88	1·145	65·68	1·195	60·38	1·245	57·29	1·295	55·38
1·096	75·59	1·146	65·54	1·196	60·31	1·246	57·24	1·296	55·35+
1·097	75·30	1·147	65·40	1·197	60·23	1·247	57·19	1·297	55·32
1·098	75·02	1·148	65·26	1·198	60·15+	1·248	57·15−	1·298	55·30
1·099	74·74	1·149	65·13	1·199	60·07	1·249	57·10	1·299	55·27
1·100	74·47	1·150	65·00	1·200	60·00	1·250	57·05+	1·300	55·24

TABLE XLII.—(*continued*).

S_3/S_3'	*Oc. I.*	S_3/S_3'	*Oc. I.*	S_3/S_3'	*Oc. I.*	S_3/S_3'	*Oc. I.*
1·300	55·24	1·350	54·12	1·400	53·46	1·450	53·13
1·301	55·21	1·351	54·10	1·401	53·45 +	1·451	53·13
1·302	55·18	1·352	54·09	1·402	53·44	1·452	53·12
1·303	55·16	1·353	54·07	1·403	53·44	1·453	53·12
1·304	55·13	1·354	54·06	1·404	53·43	1·454	53·11
1·305	55·10	1·355	54·04	1·405	53·42	1·455	53·11
1·306	55·07	1·356	54·02	1·406	53·41	1·456	53·11
1·307	55·05 −	1·357	54·01	1·407	53·40	1·457	53·10
1·308	55·02	1·358	53·99	1·408	53·39	1·458	53·10
1·309	55·00	1·359	53·98	1·409	53·38	1·459	53·09
1·310	54·97	1·360	53·96	1·410	53·37	1·460	53·09
1·311	54·94	1·361	53·94	1·411	53·36	1·461	53·09
1·312	54·92	1·362	53·93	1·412	53·35 +	1·462	53·09
1·313	54·89	1·363	53·91	1·413	53·35 −	1·463	53·08
1·314	54·87	1·364	53·90	1·414	53·34	1·464	53·08
1·315	54·84	1·365	53·88	1·415	53·33	1·465	53·08
1·316	54·82	1·366	53·87	1·416	53·32	1·466	53·08
1·317	54·79	1·367	53·85 +	1·417	53·32	1·467	53·08
1·318	54·77	1·368	53·84	1·418	53·31	1·468	53·07
1·319	54·74	1·369	53·82	1·419	53·31	1·469	53·07
1·320	54·72	1·370	53·81	1·420	53·30	1·470	53·07
1·321	54·70	1·371	53·80	1·421	53·29	1·471	53·07
1·322	54·68	1·372	53·78	1·422	53·28	1·472	53·07
1·323	54·65 +	1·373	53·77	1·423	53·28	1·473	53·06
1·324	54·63	1·374	53·75 +	1·424	53·27	1·474	53·06
1·325	54·61	1·375	53·74	1·425	53·26	1·475	53·06
1·326	54·59	1·376	53·73	1·426	53·25 +	1·476	53·06
1·327	54·57	1·377	53·72	1·427	53·25 −	1·477	53·06
1·328	54·54	1·378	53·70	1·428	53·24	1·478	53·05 +
1·329	54·52	1·379	53·69	1·429	53·24	1·479	53·05 +
1·330	54·50	1·380	53·68	1·430	53·23	1·480	53·05 −
1·331	54·48	1·381	53·67	1·431	53·22	1·481	53·05 −
1·332	54·46	1·382	53·66	1·432	53·22	1·482	53·05 −
1·333	54·44	1·383	53·64	1·433	53·21	1·483	53·05 −
1·334	54·42	1·384	53·63	1·434	53·21	1·484	53·05 −
1·335	54·40	1·385	53·62	1·435	53·20	1·485	53·04
1·336	54·38	1·386	53·61	1·436	53·20	1·486	53·04
1·337	54·36	1·387	53·60	1·437	53·19	1·487	53·04
1·338	54·34	1·388	53·59	1·438	53·19	1·488	53·04
1·339	54·32	1·389	53·58	1·439	53·18	1·489	53·04
1·340	54·30	1·390	53·57	1·440	53·18	1·490	53·04
1·341	54·28	1·391	53·55 +	1·441	53·17	1·491	53·04
1·342	54·26	1·392	53·54	1·442	53·17	1·492	53·04
1·343	54·25 −	1·393	53·53	1·443	53·16	1·493	53·04
1·344	54·23	1·394	53·52	1·444	53·16	1·494	53·04
1·345	54·21	1·395	53·51	1·445	53·15 +	1·495	53·03
1·346	54·19	1·396	53·50	1·446	53·15 −	1·496	53·03
1·347	54·17	1·397	53·49	1·447	53·14	1·497	53·03
1·348	54·16	1·398	53·48	1·448	53·14	1·498	53·03
1·349	54·14	1·399	53·47	1·449	53·13	1·499	53·03
1·350	54·12	1·400	53·46	1·450	53·13	1·500	53·03

TABLE XLIII.

Coefficients for Sheppard's Quadrature Formula (c).

p	C_1	C_2	C_3	p	C_1	C_2	C_3
6	+·2071429	+·3357143	+·4714286	54	+·1557006	+·1034971	+·0311473
7	·1957755	·2532407	·2108218	55	·1556195	·1033186	·0310489
8	·1883296	·2124868	·1369312	56	·1555414	·1031470	·0309545
9	·1830517	·1882653	·1037946	57	·1554662	·1029820	·0308639
10	·1791068	·1722411	·0854119	58	·1553936	·1028231	·0307767
11	·1760430	·1608670	·0738621	59	·1553235	·1026699	·0306929
12	·1735931	·1523810	·0659864	60	·1552559	·1025223	·0306122
13	·1715884	·1458097	·0602962	61	·1551906	·1023799	·0305345
14	·1699171	·1405724	·0560045	62	·1551274	·1022424	·0304596
15	·1685022	·1363012	·0526583	63	·1550663	·1021096	·0303874
16	·1672888	·1327519	·0499796	64	·1550071	·1019813	·0303177
17	·1662365	·1297561	·0477890	65	·1549498	·1018571	·0302503
18	·1653151	·1271939	·0459655	66	·1548944	·1017370	·0301852
19	·1645017	·1249776	·0444247	67	·1548406	·1016207	·0301223
20	·1637782	·1230418	·0431061	68	·1547884	·1015081	·0300614
21	·1631305	·1213364	·0419654	69	·1547378	·1013990	·0300025
22	·1625472	·1198227	·0409690	70	·1546887	·1012931	·0299445
23	·1620193	·1184701	·0400913	71	·1546410	·1011905	·0298902
24	·1615391	·1172542	·0393126	72	·1545946	·1010909	·0298366
25	·1611004	·1161553	·0386169	73	·1545496	·1009941	·0297846
26	·1606982	·1151573	·0379919	74	·1545058	·1009002	·0297341
27	·1603280	·1142469	·0374272	75	·1544632	·1008089	·0296852
28	·1599861	·1134131	·0369147	76	·1544218	·1007202	·0296376
29	·1596694	·1126466	·0364473	77	·1543814	·1006339	·0295914
30	·1593752	·1119396	·0360195	78	·1543422	·1005499	·0295465
31	·1591013	·1112855	·0356265	79	·1543039	·1004682	·0295029
32	·1588455	·1106784	·0352641	80	·1542666	·1003886	·0294604
33	·1586062	·1101136	·0349290	81	·1542303	·1003111	·0294190
34	·1583817	·1095867	·0346181	82	·1541948	·1002356	·0293788
35	·1581708	·1090941	·0343290	83	·1541603	·1001621	·0293396
36	·1579723	·1086325	·0340595	84	·1541265	·1000903	·0293015
37	·1577850	·1081991	·0338076	85	·1540936	·1000204	·0292643
38	·1576082	·1077914	·0335717	86	·1540615	·0999521	·0292280
39	·1574408	·1074072	·0333502	87	·1540301	·0998856	·0291926
40	·1572822	·1070444	·0331420	88	·1539995	·0998206	·0291582
41	·1571317	·1067014	·0329458	89	·1539695	·0997571	·0291245
42	·1569887	·1063765	·0327607	90	·1539403	·0996951	·0290917
43	·1568527	·1060684	·0325857	91	·1539116	·0996346	·0290596
44	·1567231	·1057759	·0324201	92	·1538837	·0995754	·0290283
45	·1565996	·1054976	·0322630	93	·1538563	·0995175	·0289977
46	·1564816	·1052328	·0321139	94	·1538295	·0994610	·0289678
47	·1563688	·1049803	·0319722	95	·1538034	·0994057	·0289386
48	·1562610	·1047393	·0318373	96	·1537777	·0993516	·0289101
49	·1561577	·1045091	·0317088	97	·1537526	·0992987	·0288821
50	·1560587	·1042890	·0315861	98	·1537280	·0992469	·0288548
51	·1559637	·1040783	·0314690	99	·1537040	·0991962	·0288281
52	·1558725	·1038765	·0313571	100	·1536804	·0991465	·0288020
53	·1557849	·1036829	·0312449				

TABLE XLIV. *For testing Correlations in Variate Difference Method.*

Table of Functions for Geometrical Decadence.

$n=$	0	1	2	3	4	5	6	7	8	9	10
$\epsilon=-1{\cdot}0$	1·0	2·0	2·666667	3·200000	3·657144	4·063492	4·432900	4·773892	5·092152	5·391690	5·675460
	4·0	**4·0**	**4·000000**	**4·000000**	**4·000000**	**4·000000**	**4·000000**	**4·000000**	**4·000000**	**4·000000**	**4·000000**
$-0{\cdot}9$	1·0	1·9	2·470000	2·908900	3·273375	3·588544	3·868073	4·120351	4·350953	4·563806	4·761794
	3·8	**3·9**	**3·925641**	**3·938538**	**3·946617**	**3·952281**	**3·956534**	**3·959875**	**3·962591**	**3·964852**	**3·966778**
$-0{\cdot}8$	1·0	1·8	2·280000	2·635200	2·920732	3·160823	3·368545	3·551856	3·716004	3·864657	4·000490
	3·6	**3·8**	**3·852632**	**3·879236**	**3·895928**	**3·907632**	**3·916412**	**3·923305**	**3·928902**	**3·933560**	**3·937514**
$-0{\cdot}7$	1·0	1·7	2·096667	2·378300	2·597260	2·776223	2·927253	3·057601	3·171987	3·273671	3·365004
	3·4	**3·7**	**3·781080**	**3·822230**	**3·848056**	**3·866138**	**3·879680**	**3·890289**	**3·898882**	**3·906017**	**3·912058**
$-0{\cdot}6$	1·0	1·6	1·920000	2·137600	2·301074	2·430903	2·537778	2·628011	2·705649	2·773438	2·833334
	3·2	**3·6**	**3·711111**	**3·767664**	**3·803116**	**3·827873**	**3·846351**	**3·860784**	**3·872429**	**3·882066**	**3·890197**
$-0{\cdot}5$	1·0	1·5	1·750000	1·912500	2·030357	2·121280	2·194298	2·254630	2·305556	2·349265	2·387288
	3·0	**3·5**	**3·642857**	**3·715686**	**3·761214**	**3·792880**	**3·816410**	**3·834702**	**3·849398**	**3·861503**	**3·871673**
$-0{\cdot}4$	1·0	1·4	1·586667	1·702400	1·783360	1·844018	1·891551	1·930008	1·961877	1·988787	2·011857
	2·8	**3·4**	**3·576471**	**3·666447**	**3·722448**	**3·761182**	**3·789801**	**3·811921**	**3·829596**	**3·844080**	**3·856190**
$-0{\cdot}3$	1·0	1·3	1·430000	1·506700	1·558403	1·596019	1·624793	1·647603	1·666177	1·681623	1·694687
	2·6	**3·3**	**3·512121**	**3·620104**	**3·686895**	**3·732772**	**3·766430**	**3·792275**	**3·812799**	**3·829521**	**3·843425**
$-0{\cdot}2$	1·0	1·2	1·280000	1·324800	1·353874	1·374415	1·389761	1·401690	1·411245	1·419079	1·425624
	2·4	**3·2**	**3·450000**	**3·576811**	**3·654619**	**3·707607**	**3·746168**	**3·775563**	**3·798749**	**3·817526**	**3·833051**
$-0{\cdot}1$	1·0	1·1	1·136667	1·156100	1·168231	1·176556	1·182634	1·187272	1·190930	1·193891	1·196337
	2·2	**3·1**	**3·390322**	**3·536726**	**3·625654**	**3·685609**	**3·728852**	**3·761554**	**3·787171**	**3·807785**	**3·824744**
$0{\cdot}0$	1·0	1·0	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000	1·000000
	2·0	**3·0**	**3·333333**	**3·500000**	**3·600000**	**3·666667**	**3·714286**	**3·750000**	**3·777778**	**3·800000**	**3·818182**
$0{\cdot}1$	1·0	0·9	·870000	·855900	·847774	·842508	·838824	·836104	·834015	·832361	·831019
	1·8	**2·9**	**3·279310**	**3·466771**	**3·577638**	**3·650634**	**3·702242**	**3·740631**	**3·770286**	**3·793873**	**3·813080**
$0{\cdot}2$	1·0	0·8	·746667	·723200	·710217	·702029	·696411	·692323	·689218	·686780	·684817
	1·6	**2·8**	**3·228571**	**3·437167**	**3·558496**	**3·637324**	**3·692483**	**3·733182**	**3·764415**	**3·789139**	**3·809176**
$0{\cdot}3$	1·0	0·7	·630000	·601300	·586060	·576695	·570381	·565845	·562432	·559772	·557642
	1·4	**2·7**	**3·181481**	**3·411292**	**3·542473**	**3·626522**	**3·684748**	**3·727381**	**3·759911**	**3·785541**	**3·806240**
$0{\cdot}4$	1·0	0·6	·520000	·489600	·474103	·464808	·458638	·454253	·450979	·448443	·446421
	1·2	**2·6**	**3·138461**	**3·389217**	**3·529420**	**3·617995**	**3·678774**	**3·722972**	**3·756534**	**3·782866**	**3·804076**
$0{\cdot}5$	1·0	0·5	·416667	·387500	·373214	·364832	·359341	·355473	·352603	·350391	·348633
	1·0	**2·5**	**3·100000**	**3·370965**	**3·519148**	**3·611481**	**3·674305**	**3·719723**	**3·754079**	**3·780934**	**3·802521**
$0{\cdot}6$	1·0	0·4	·320000	·294400	·282331	·275384	·270881	·267731	·265405	·263618	·262202
	0·8	**2·4**	**3·066667**	**3·356517**	**3·511419**	**3·606711**	**3·671094**	**3·717421**	**3·752342**	**3·779589**	**3·801440**
$0{\cdot}7$	1·0	0·3	·230000	·209700	·200460	·195224	·191856	·189512	·187788	·186466	·185420
	0·6	**2·3**	**3·039130**	**3·345780**	**3·505968**	**3·603410**	**3·668906**	**3·715886**	**3·751183**	**3·778684**	**3·800726**
$0{\cdot}8$	1·0	0·2	·146667	·132800	·126674	·123243	·121047	·119524	·118406	1·117550	·116874
	0·4	**2·2**	**3·018181**	**3·338547**	**3·502493**	**3·601332**	**3·667553**	**3·714923**	**3·750467**	**3·778147**	**3·800290**
$0{\cdot}9$	1·0	0·1	·070000	·063100	·060117	·058459	·057399	·056667	·056128	·055716	·055393
	0·2	**2·1**	**3·004762**	**3·334540**	**3·500553**	**3·600320**	**3·666918**	**3·714351**	**3·750048**	**3·777867**	**3·800053**
$1{\cdot}0$	1·0	0·0	·000000	·000000	·000000	·000000	·000000	·000000	·000000	·000000	·000000
	0·0	**[2·0]**	**[3·000000]**	**[3·333333]**	**[3·500000]**	**[3·600000]**	**[3·666667]**	**[3·714286]**	**[3·750000]**	**[3·777778]**	**[3·800000]**

The above table gives $2\phi(n, \epsilon)-1$ in ordinary type and $\left(4-\frac{2}{n+1}\right)\left\{\frac{2\phi(n+1, \epsilon)-1}{2\phi(n, \epsilon)-1}\right\}$ in heavy type for values of n from 0 to 10 and of ϵ from $-1{\cdot}0$ to $+1{\cdot}0$ at *intervals* of 0·1.

$$\left[\phi(n, \epsilon)=1-\frac{n}{n+1}\epsilon+\frac{n(n-1)}{(n+1)(n+2)}\epsilon^2-\dots(-1)^n\frac{n!}{(n+1)(n+2)\dots(2n)}\epsilon^n.\right]$$

TABLE XLV. *Evaluation of the Integral* $\int_0^\theta \cos^{n+1}\theta\, d\theta$ *for high values of n.*

Values of the Coefficients in the Formula on page ccxix.

n	c_0	c_4	c_6	c_8	c_{10}	c_{12}
100	1·0074782	·0075561	·0002519	·0003175 –	·0000394	·0000271
102	1·0073320	74069	2421	3053	371	255 +
4	1·0071914	72634	2328	2939	350 +	241
6	1·0070561	71254	2241	2831	331	227
8	1·0069257	69925 +	2158	2728	313	215 –
110	1·0068002	68645 +	2080	2632	296	203
112	1·0066790	67412	2006	2540	280	193
4	1·0065622	66221	1936	2453	266	183
6	1·0064493	65072	1870	2370	252	173
8	1·0063403	63962	1807	2292	240	165 –
120	1·0062348	62890	1747	2217	228	157
122	1·0061329	61852	1690	2146	217	149
4	1·0060342	60849	1636	2078	207	142
6	1·0059386	59877	1584	2013	197	135 +
8	1·0058461	58936	1535 –	1952	188	129
130	1·0057563	58024	1488	1893	179	123
132	1·0056693	57140	1443	1837	171	118
4	1·0055849	56283	1400	1783	164	113
6	1·0055029	55451	1359	1732	157	108
8	1·0054233	54643	1320	1682	150 –	103
140	1·0053460	53858	1282	1635 +	143	99
142	1·0052709	53095 +	1246	1590	138	95 –
4	1·0051978	52354	1212	1547	132	91
6	1·0051267	51633	1179	1505 +	127	87
8	1·0050576	50932	1147	1465 +	121	84
150	1·0049903	50250 –	1117	1427	117	80
152	1·0049248	49585 +	1087	1390	112	77
4	1·0048609	48938	1059	1354	108	74
6	1·0047987	48308	1032	1320	104	71
8	1·0047381	47693	1006	1287	100	69
160	1·0046790	47094	981	1256	96	66
162	1·0046213	46510	957	1225 +	93	64
4	1·0045651	45940	934	1196	89	61
6	1·0045101	45384	911	1167	86	59
8	1·0044566	44842	890	1140	83	57
170	1·0044042	44312	869	1114	80	55 +
172	1·0043531	43794	849	1088	77	53
4	1·0043031	43289	829	1064	75 –	51
6	1·0042543	42795 –	811	1040	72	50 –
8	1·0042066	42312	792	1017	70	48
180	1·0041599	41840	775 –	994	68	46
182	1·0041143	41378	758	973	65 +	45 –
4	1·0040696	40927	741	952	63	43
6	1·0040259	40485 –	726	932	61	42
8	1·0039832	40053	710	912	59	41
190	1·0039413	39629	695 +	893	57	39
192	1·0039003	39215 –	681	875 +	56	38
4	1·0038602	38809	667	857	54	37
6	1·0038208	38412	653	840	52	36
8	1·0037823	38022	640	823	51	35 –
200	1·0037445 +	37640	627	807	49	34

TABLE XLV.—(*continued*).

Values of the Coefficients.

n	c_0	c_4	c_6	c_8	c_{10}	c_{12}
202	1·0037075+	·0037266	·0000615−	·0000791	·0000048	·0000033
4	1·0036712	36900	603	776	46	32
6	1·0036356	36540	591	761	45+	31
8	1·0036007	36188	580	747	44	30
210	1·0035665−	35842	569	733	43	29
212	1·0035329	35502	558	719	41	28
4	1·0034999	35169	548	706	40	28
6	1·0034675+	34843	538	693	39	27
8	1·0034358	34522	528	680	38	26
220	1·0034046	34207	518	668	37	25+
222	1·0033739	33898	509	656	36	25−
4	1·0033439	33594	500−	644	35+	24
6	1·0033143	33296	491	633	34	23
8	1·0032853	33003	482	622	33	23
230	1·0032567	32715−	474	612	32	22
232	1·0032287	32432	466	601	32	22
4	1·0032011	32154	458	591	31	21
6	1·0031740	31881	450+	581	30	21
8	1·0031474	31612	443	571	29	20
240	1·0031212	31348	435+	562	28	20
242	1·0030954	31088	428	553	28	19
4	1·0030701	30832	421	544	27	19
6	1·0030452	30581	414	535+	26	18
8	1·0030206	30333	408	527	26	18
250	1·0029965+	30090	401	518	25+	17
252	1·0029727	29850+	395−	510	25−	17
4	1·0029494	29615−	389	502	24	17
6	1·0029264	29383	383	494	23	16
8	1·0029037	29154	377	487	23	16
260	1·0028814	28929	371	479	22	15+
262	1·0028594	28708	365+	472	22	15+
4	1·0028378	28490	360	465−	21	15−
6	1·0028165−	28275−	354	458	21	14
8	1·0027955−	28063	349	451	20	14
270	1·0027748	27855−	344	445−	20	14
272	1·0027544	27649	339	438	20	13
4	1·0027343	27447	334	432	19	13
6	1·0027145+	27248	329	426	19	13
8	1·0026950+	27051	324	420	18	13
280	1·0026758	26857	320	414	18	12
282	1·0026568	26666	315+	408	18	12
4	1·0026381	26478	311	402	17	12
6	1·0026197	26292	306	397	17	12
8	1·0026015+	26109	302	391	16	11
290	1·0025836	25929	298	386	16	11
292	1·0025659	25751	294	381	16	11
4	1·0025485−	25575+	290	375+	15+	11
6	1·0025313	25402	286	370	15+	10
8	1·0025143	25231	282	365+	15−	10
300	1·0024976	25062	278	361	15−	10

TABLE XLV.—(*continued*).

Values of the Coefficients.

n	c_0	c_4	c_6	c_8	c_{10}	c_{12}
302	1·0024810	·0024896	·0000275 –	·0000356	·0000014	·0000010
4	1·0024647	24732	271	351	14	10
6	1·0024486	24570	268	347	14	9
8	1·0024328	24410	264	342	13	9
310	1·0024171	24252	261	338	13	9
312	1·0024016	24096	257	334	13	9
4	1·0023863	23942	254	329	13	9
6	1·0023712	23790	251	325	12	9
8	1·0023563	23640	248	321	12	8
320	1·0023416	23492	245 –	317	12	8
322	1·0023271	23346	242	313	12	8
4	1·0023127	23202	239	309	12	8
6	1·0022986	23059	236	306	11	8
8	1·0022846	22918	233	302	11	8
330	1·0022707	22779	230	298	11	8
332	1·0022571	22641	227	295 –	11	7
4	1·0022435 +	22505 +	225 –	291	11	7
6	1·0022302	22371	222	288	10	7
8	1·0022170	22239	219	284	10	7
340	1·0022040	22107	217	281	10	7
342	1·0021911	21978	214	278	10	7
4	1·0021784	21850 –	212	275 –	10	7
6	1·0021658	21723	209	272	10	7
8	1·0021534	21598	207	268	9	6
350	1·0021411	21474	205 –	265 +	9	6
352	1·0021289	21352	202	262	9	6
4	1·0021169	21231	200	259	9	6
6	1·0021050 +	21112	198	257	9	6
8	1·0020933	20994	195 +	254	9	6
360	1·0020816	20877	193	251	8	6
362	1·0020702	20761	191	248	8	6
4	1·0020588	20647	189	245 +	8	6
6	1·0020475 +	20534	187	243	8	6
8	1·0020364	20422	185 –	240	8	5 +
370	1·0020254	20311	183	238	8	5 +
372	1·0020145 +	20202	181	235 +	8	5 +
4	1·0020038	20094	179	233	8	5 +
6	1·0019931	19987	177	230	7	5 +
8	1·0019826	19881	175 +	228	7	5 +
380	1·0019722	19776	173	225 +	7	5 –
382	1·0019619	19672	172	223	7	5 –
4	1·0019516	19569	170	221	7	5 –
6	1·0019415 +	19468	168	218	7	5 –
8	1·0019315 +	19367	166	216	7	5 –
390	1·0019216	19268	165 –	214	7	5 –
392	1·0019118	19169	163	212	7	4
4	1·0019021	19072	161	210	6	4
6	1·0018925 +	18975 +	160	208	6	4
8	1·0018830	18880	158	205 +	6	4
400	1·0018736	18785 +	157	203	6	4

TABLE XLVI. *For use in computing* $\int_0^\theta \cos^{n+1}\theta d\theta\,(N = n+1)$ *for values of* n *less than those provided for in Table XLV.*

Table of the Functions $\phi(x)$ *for computing* $\int_0^\theta \cos^N \theta d\theta$, *where* $x = 2\sqrt{N}\tan\frac{1}{2}\theta$.

x	$\phi_0(x)$	δ^2	δ^4	$\phi_1(x)$	δ^2	$\phi_2(x)$	δ^2	$\phi_3(x)$	δ^2	$\phi_4(x$	δ^2
0·0	·00000000	0	0	·0000000	0	·0000000	0	·0000000	0	·0000000	0
0·1	·03982784	− 39597	+1178	·0000331	+1966	·0000000	+ 16	·0000000	0	·0000000	0
0·2	·07925971	− 78016	+2296	·0002628	+3813	·0000016	+ 84	·0000000	+ 2	·0000000	0
0·3	·11791142	−114139	+3303	·0008738	+5436	·0000116	+ 257	·0000002	+ 9	·0000000	0
0·4	·15542174	−146960	+4151	·0020284	+6744	·0000473	+ 554	·0000013	+ 37	·0000000	+ 2
0·5	·19146246	−175630	+4804	·0038574	+7666	·0001384	+ 973	·0000061	+ 98	·0000002	+ 10
0·6	·22574688	−199496	+5240	·0064530	+8160	·0003268	+1489	·0000207	+ 216	·0000014	+ 25
0·7	·25803635$^-$	−218121	+5449	·0098646	+8216	·0006641	+2046	·0000569	+ 408	·0000051	+ 67
0·8	·28814460	−231298	+5434	·0140978	+7848	·0012060	+2577	·0001339	+ 686	·0000155$^+$	+ 142
0·9	·31593987	−239040	+5215$^-$	·0191158	+7097	·0020056	+3002	·0002795$^-$	+1040	·0000401	+ 269
1·0	·34134475$^-$	−241568	+4815$^+$	·0248435$^+$	+6029	·0031054	+3259	·0005291	+1451	·0000916	+ 455
1·1	·36433394	−239280	+4272	·0311741	+4721	·0045311	+3283	·0009238	+1871	·0001886	+ 694
1·2	·38493033	−232721	+3625$^+$	·0379768	+3256	·0062851	+3051	·0015056	+2245	·0003550$^-$	+ 973
1·3	·40319952	−222536	+2914	·0451051	+1728	·0083442	+2560	·0023119	+2503	·0006187	+1243
1·4	·41924334	−209437	+2183	·0524062	+ 218	·0106593	+1834	·0033685$^-$	+2580	·0010067	+1453
1·5	·43319280	−194155$^-$	+1465$^-$	·0597291	−1201	·0131578	+ 931	·0046831	+2428	·0015400	+1525
1·6	·44520071	−177408	+ 793	·0669319	−2469	·0157494	− 82	·0062405$^+$	+2011	·0022258	+1399
1·7	·45543454	−159869	+ 191	·0738878	−3538	·0183328	−1114	·0079990	+1334	·0030515$^+$	+1012
1·8	·46406968	−142138	− 325$^-$	·0804899	−4386	·0208048	−2092	·0098909	+ 428	·0039784	+ 350
1·9	·47128344	−124733	− 744	·0866534	−4999	·0230676	−2930	·0118256	− 645	·0049403	− 574
2·0	·47724987	−108072	−1064	·0923170	−5381	·0250374	−3581	·0136958	−1798	·0058448	−1687
2·1	·48213558	− 92474	−1288	·0974425$^-$	−5549	·0266491	−3998	·0153862	−2934	·0065806	−2885
2·2	·48609655$^+$	− 78164	−1423	·1020131	−5528	·0278610	−4173	·0167832	−3950	·0070279	−4027
2·3	·48927589	− 65276	−1481	·1060309	−5348	·0286556	−4109	·0177852	−4761	·0070725$^-$	−4969
2·4	·49180246	− 53870	−1475$^+$	·1095139	−5045	·0290393	−3837	·0183111	−5296	·0066202	−5567
2·5	·49379033	− 43939	−1418	·1124924	−4651	·0290393	−3395	·0183074	−5517	·0056112	−5730
2·6	·49533881	− 35426	−1324	·1150058	−4201	·0286998	−2836	·0177520	−5414	·0040292	−5390
2·7	·49653303	− 28237	−1205$^-$	·1170991	−3720	·0280767	−2207	·0166552	−5008	·0019082	−4571
2·8	·49744487	− 22253	−1072	·1188204	−3237	·0272329	−1560	·0150576	−4345	− ·0006699	−3331
2·9	·49813419	− 17340	− 934	·1202180	−2769	·0262331	− 943	·0130255$^-$	−3492	− ·0035811	−1788
3·0	·49865010	− 13362	− 799	·1213387	−2331	·0251390	− 381	·0106442	−2520	− ·0066711	− 97
3·1	·49903240	− 10183	− 671	·1222263	−1930	·0240068	+ 97	·0080109	−1511	− ·0097708	+1589
3·2	·49931286	− 7675$^+$	− 555$^-$	·1229209	−1575	·0228843	+ 479	·0052265$^+$	− 528	− ·0127116	+3105
3·3	·49951658	− 5722	− 451	·1234580	−1267	·0218097	+ 759	·0023893	+ 363	− ·0153419	+4335
3·4	·49966307	− 4219	− 361	·1238684	−1005	·0208110	+ 947	− ·0004116	+1123	− ·0175387	+5188
3·5	·49976737	− 3078	− 285$^-$	·1241783	− 787	·0199070	+1049	− ·0031002	+1724	− ·0192167	+5622
3·6	·49984089	− 2221	− 221	·1244095$^+$	− 606	·0191079	+1079	− ·0056164	+2156	− ·0203325$^+$	+5643
3·7	·49989220	− 1586	− 170	·1245801	− 461	·0184167	+1053	− ·0079170	+2423	− ·0208840	+5304
3·8	·49992765$^+$	− 1120	− 128	·1247046	− 348	·0178308	+ 987	− ·0099753	+2541	− ·0209051	+4669
3·9	·49995190	− 783	− 96	·1247943	− 258	·0173436	+ 892	− ·0117795$^+$	+2531	− ·0204593	+3833
4·0	·49996833	− 541	− 70	·1248582	− 188	·0169456	+ 785	− ·0133306	+2421	− ·0196302	+2890
4·1	·49997934	− 370	− 52	·1249033	− 136	·0166261	+ 672	− ·0146396	+2237	− ·0185121	+1935
4·2	·49998665$^+$	− 251	− 37	·1249348	− 99	·0163738	+ 562	− ·0157249	+2009	− ·0172005$^-$	+1030
4·3	·49999146	− 168	− 26	·1249564	− 68	·0161777	+ 462	− ·0166093	+1756	− ·0157859	+ 239
4·4	·49999459	− 111	− 18	·1249712	− 48	·0160278	+ 368	− ·0173181	+1498	− ·0143474	− 407
4·5	·49999660	− 73	− 13	·1249812	− 34	·0159147	+ 292	− ·0178771	+1249	− ·0129496	− 893
4·6	·49999789	− 47	− 8	·1249878	− 22	·0158308	+ 224	− ·0183112	+1023	− ·0116411	−1223
4·7	·49999870	− 30	− 6	·1249922	− 16	·0157693	+ 172	− ·0186430	+ 819	− ·0104549	−1409
4·8	·49999921	− 19	− 4	·1249950$^+$	− 9	·0157250$^-$	+ 127	− ·0188929	+ 645	− ·0094096	−1473
4·9	·49999952	− 12	− 3	·1249969	− 7	·0156934	+ 94	− ·0190783	+ 497	− ·0085116	−1448
5·0	·49999971	− 8	+ 2	·1249981	− 5	·0156712	+ 69	− ·0192140	+ 379	− ·0077584	−1350
∞	·50000000	—	—	·1250000	—	·0156250	—	− ·0195312	—	− ·0051270	—

TABLE XLVII.

Table of the Coefficients of the Expansion on page ccxxvi.

r	$_2B_0$	$_3B_0$	$_2B_1$	$_3B_1$	$_1B_2$	$_2B_2$	$_3B_2$
2·00	− ·0997356	+ ·012467	+ ·299207	+ ·31167	+ ·398942	+ 3·88969	+ 13·7760
2·05	− ·1013978	+ ·012886	+ ·297544	+ ·31043	+ ·378995+	+ 3·75347	+ 13·0566
2·10	− ·1030601	+ ·013312	+ ·295882	+ ·30919	+ ·359048	+ 3·61741	+ 12·3383
2·15	− ·1047223	+ ·013745−	+ ·294220	+ ·30796	+ ·339101	+ 3·48152	+ 11·6212
2·20	− ·1063846	+ ·014185−	+ ·292558	+ ·30674	+ ·319154	+ 3·34580	+ 10·9051
2·3	− ·1097091	+ ·015085+	+ ·289233	+ ·30432	+ ·279260	+ 3·07485−	+ 9·4765−
2·4	− ·1130336	+ ·016013	+ ·285909	+ ·30192	+ ·239365+	+ 2·80456	+ 8·0523
2·5	− ·1163582	+ ·016969	+ ·282584	+ ·29955+	+ ·199471	+ 2·53495−	+ 6·6326
2·6	− ·1196827	+ ·017952	+ ·279260	+ ·29721	+ ·159577	+ 2·26599	+ 5·2174
2·8	− ·1263317	+ ·020003	+ ·272611	+ ·29261	+ ·079788	+ 1·73008	+ 2·4003
3·0	− ·1329808	+ ·022163	+ ·265962	+ ·28812	+ ·000000	+ 1·19683	− 0·3989
3·2	− ·1396298	+ ·024435+	+ ·259312	+ ·28375−	− ·079788	+ 0·66623	− 3·1805−
3·4	− ·1462788	+ ·026818	+ ·252663	+ ·27948	− ·159577	+ 0·13830	− 5·9443
3·6	− ·1529279	+ ·029311	+ ·246014	+ ·27533	− ·239365+	− 0·38697	− 8·6906
3·8	− ·1595769	+ ·031915+	+ ·239365+	+ ·27128	− ·319154	− 0·90959	− 11·4193
4·0	− ·1662260	+ ·034630	+ ·232716	+ ·26735−	− ·398942	− 1·42954	− 14·1306
4·2	− ·1728750−	+ ·037456	+ ·226067	+ ·26352	− ·478731	− 1·94684	− 16·8245−
4·4	− ·1795240	+ ·040393	+ ·219418	+ ·25981	− ·558519	− 2·46147	− 19·5010
4·6	− ·1861731	+ ·043440	+ ·212769	+ ·25621	− ·638308	− 2·97345−	− 22·1603
4·8	− ·1928221	+ ·046599	+ ·206120	+ ·25272	− ·718096	− 3·48277	− 24·8023
5·0	− ·1994711	+ ·049868	+ ·199471	+ ·24934	− ·797885−	− 3·98942	− 27·4273
5·2	− ·2061202	+ ·053248	+ ·192822	+ ·24607	− ·877673	− 4·49342	− 30·0352
5·4	− ·2127692	+ ·056738	+ ·186173	+ ·24291	− ·957461	− 4·99476	− 32·6260
5·6	− ·2194183	+ ·060340	+ ·179524	+ ·23986	− 1·037250−	− 5·49344	− 35·2000
5·8	− ·2260673	+ ·064052	+ ·172875−	+ ·23693	− 1·117038	− 5·98945+	− 37·7571
6·0	− ·2327163	+ ·067876	+ ·166226	+ ·23410	− 1·196827	− 6·48281	− 40·2973
6·2	− ·2393654	+ ·071810	+ ·159577	+ ·23139	− 1·276615+	− 6·97351	− 42·8209
6·4	− ·2460144	+ ·075854	+ ·152928	+ ·22878	− 1·356404	− 7·46155+	− 45·3277
6·6	− ·2526634	+ ·080010	+ ·146279	+ ·22629	− 1·436192	− 7·94693	− 47·8180
6·8	− ·2593125−	+ ·084277	+ ·139630	+ ·22391	− 1·515981	− 8·42965+	− 50·2918
7·0	− ·2659615+	+ ·088654	+ ·132981	+ ·22163	− 1·595769	− 8·90971	− 52·7490
7·2	− ·2726106	+ ·093142	+ ·126332	+ ·21947	− 1·675558	− 9·38711	− 55·1899
7·4	− ·2792596	+ ·097741	+ ·119683	+ ·21742	− 1·755346	− 9·86185+	− 57·6144
7·6	− ·2859086	+ ·102451	+ ·113034	+ ·21548	− 1·835134	− 10·33393	− 60·0227
7·8	− ·2925577	+ ·107271	+ ·106385−	+ ·21366	− 1·914923	− 10·80336	− 62·4148
8·0	− ·2992067	+ ·112203	+ ·099736	+ ·21194	− 1·994711	− 11·27012	− 64·7907
8·2	− ·3058557	+ ·117245−	+ ·093087	+ ·21033	− 2·074500−	− 11·73422	− 67·1506
8·4	− ·3125048	+ ·122398	+ ·086437	+ ·20884	− 2·154288	− 12·19567	− 69·4945−
8·6	− ·3191538	+ ·127662	+ ·079788	+ ·20745−	− 2·234077	− 12·65445−	− 71·8224
8·8	− ·3258029	+ ·133036	+ ·073139	+ ·20618	− 2·313865+	− 13·11057	− 74·1344
9·0	− ·3324519	+ ·138522	+ ·066490	+ ·20501	− 2·393654	− 13·56404	− 76·4307
9·2	− ·3391009	+ ·144118	+ ·059841	+ ·20396	− 2·473442	− 14·01484	− 78·7112
9·4	− ·3457500−	+ ·149825−	+ ·053192	+ ·20302	− 2·553231	− 14·46299	− 80·9761
9·6	− ·3523990	+ ·155643	+ ·046543	+ ·20219	− 2·633019	− 14·90847	− 83·2253
9·8	− ·3590481	+ ·161572	+ ·039894	+ ·20147	− 2·712808	− 15·35130	− 85·4590
10·0	− ·3656971	+ ·167611	+ ·033245+	+ ·20086	− 2·792596	− 15·79147	− 87·6773

$_1B_0 = {_1B_1} = 0·3989\,4228.$

TABLE XLVII.—(*continued*).

Table of the Coefficients of the Expansion on page ccxxvi.

r	$_1B_3$	$_2B_3$	$_3B_3$	$_1B_4$	$_2B_4$	$_3B_4$	$_1B_5$
2·00	+ 1·99471	+ 27·8262	+ 249·90	+ 3·5905^{-}	+ 214·53	+ 3568	+ 51·46
2·05	+ 1 97676	+ 25·4089	+ 221·04	+ 2·9888	+ 186·59	+ 2895^{+}	+ 52·03
2·10	+ 1·96280	+ 23·0305^{+}	+ 192·66	+ 2·3793	+ 159·86	+ 2250^{+}	+ 53·00
2·15	+ 1·95282	+ 20·6912	+ 164·74	+ 1·7602	+ 134·31	+ 1633	+ 54·41
2·20	+ 1·94684	+ 18·3907	+ 137·29	+ 1·1298	+ 109·93	+ 1043	+ 56·26
2·3	+ 1·94684	+ 13·9063	+ 83·79	− 0·1723	+ 64·57	− 56	+ 61·36
2·4	+ 1·96280	+ 9·5770	+ 32·16	− 1·5415^{+}	+ 23·62	− 1051	+ 68·48
2·5	+ 1·99471	+ 5·4023	− 17·62	− 2·9921	− 13·09	− 1943	+ 77·79
2·6	+ 2·04258	+ 1·3819	− 65·53	− 4·5384	− 45·73	− 2736	+ 89·50^{-}
2·8	+ 2·18620	− 6·1977	− 155·81	− 7·9757	− 99·44	− 4034	+ 121·03
3·0	+ 2·39365^{+}	− 13·1651	− 238·70	− 11·9683	− 138·83	− 4968	+ 165·16
3·2	+ 2·66493	− 19·5234	− 314·24	− 16·6311	− 165·22	− 5559	+ 224·36
3·4	+ 3·00005^{-}	− 25·2759	− 382·46	− 22·0791	− 179·91	− 5828	+ 301·44
3·6	+ 3·39899	− 30·4257	− 443·38	− 28·4270	− 184·18	− 5797	+ 399·61
3·8	+ 3·86176	− 34·9761	− 497·04	− 35·7899	− 179·34	− 5487	+ 522·43
4·0	+ 4·38837	− 38·9301	− 543·48	− 44·2826	− 166·66	− 4921	+ 673·81
4·2	+ 4·97880	− 42·2911	− 582·71	− 54·0200	− 147·41	− 4118	+ 858·07
4·4	+ 5·63306	− 45·0621	− 614·77	− 65·1170	− 122·86	− 3101	+ 1079·87
4·6	+ 6·35116	− 47·2465^{-}	− 639·69	− 77·6884	− 94·26	− 1890	+ 1344·23
4·8	+ 7·13309	− 48·8473	− 657·50^{+}	− 91·8493	− 62·87	− 507	+ 1656·57
5·0	+ 7·97885^{-}	− 49·8678	− 668·23	− 107·7144	− 29·92	+ 1028	+ 2022·64
5·2	+ 8·88843	− 50·3111	− 671·91	− 125·3987	+ 3·35^{-}	+ 2693	+ 2448·58
5·4	+ 9·86185^{+}	− 50·1806	− 668·56	− 145·0171	+ 35·71	+ 4469	+ 2940·90
5·6	+10·89910	− 49·4792	− 658·22	− 166·6845^{-}	+ 65·94	+ 6334	+ 3506·46
5·8	+12·00018	− 48·2103	− 640·92	− 190·5157	+ 92·84	+ 8267	+ 4152·51
6·0	+13·16510	− 46·3770	− 616·69	− 216·6257	+ 115·19	+10249	+ 4886·64
6·2	+14·39384	− 43·9826	− 585·55^{-}	− 245·1293	+ 131·82	+12258	+ 5716·85^{-}
6·4	+15·68641	− 41·0301	− 547·53	− 276·1415^{-}	+ 141·51	+14275^{-}	+ 6651·45^{+}
6·6	+17·04281	− 37·5229	− 502·67	− 309·7771	+ 143·10	+16279	+ 7699·17
6·8	+18·46305^{-}	− 33·4641	− 450·99	− 346·1510	+ 135·42	+18250^{-}	+ 8869·09
7·0	+19·94711	− 28·8568	− 392·51	− 385·3782	+ 117·29	+20167	+10170·63
7·2	+21·49501	− 23·7044	− 327·28	− 427·5736	+ 87·56	+22017	+11613·63
7·4	+23·10674	− 18·0099	− 255·32	− 472·8519	+ 45·08	+23763	+13208·25^{+}
7·6	+24·78229	− 11·7765^{+}	− 176·65^{+}	− 521·3282	− 11·29	+25401	+14965·05^{+}
7·8	+26·52168	− 5·0075^{+}	− 91·31	− 573·1173	− 82·69	+26907	+16894·94
8·0	+28·32490	+ 2·2939	+ 0·69	− 628·3341	− 170·25^{-}	+28260	+19009·20
8·2	+30·19195^{+}	+ 10·1246	+ 99·30	− 687·0935^{+}	− 275·08	+29441	+21319·48
8·4	+32·12283	+ 18·4814	+ 204·50^{+}	− 749·5104	− 398·29	+30430	+23837·81
8·6	+34·11754	+ 27·3611	+ 316·27	− 815·6997	− 540·99	+31209	+26576·56
8·8	+36·17609	+ 36·7604	+ 434·57	− 885·7763	− 704·28	+31757	+29548·49
9·0	+38·29846	+ 46·6762	+ 559·38	− 959·8551	− 889·24	+32055^{-}	+32766·73
9·2	+40·48466	+ 57·1054	+ 690·68	−1038·0510	−1096·96	+32084	+36244·75^{-}
9·4	+42·73470	+ 68·0447	+ 828·42	−1120·4789	−1328·50^{+}	+31826	+39996·42
9·6	+45·04856	+ 79·4908	+ 972·60	−1207·2536	−1584·94	+31260	+44035·96
9·8	+47·42626	+ 91·4408	+1123·17	−1298·4901	−1867·34	+30368	+48377·96
10·0	+49·86779	+103·8912	+1280·11	−1394·3033	−2176·73	+29131	+53037·38

TABLE XLVII.—(*continued*).

Table of the Coefficients of the Expansion on page ccxxvi.

r	${}_2B_5$	${}_1C_1$	${}_2C_1$	${}_3C_1$	${}_1C_2$	${}_2C_2$	${}_3C_2$
2·00	+ 1786	+ ·000000	+ ·00000	+ 0·0000	+ 0·00000	+ 0·0000	+ 0·00
2·05	+ 1465^{-}	+ ·178412	+ ·48989	+ 1·1186	+ 0·68689	+ 9·9860	+ 61·84
2·10	+ 1164	+ ·252313	+ ·69176	+ 1·5791	+ 0·93356	+ 13·8631	+ 85·68
2·15	+ 883	+ ·309019	+ ·84594	+ 1·9305^{-}	+ 1·09702	+ 16·6617	+ 102·77
2·20	+ 621	+ ·356825^{-}	+ ·97532	+ 2·2250^{+}	+ 1·21320	+ 18·8737	+ 116·18
2·3	+ 150^{-}	+ ·437019	+1·19088	+ 2·7151	+ 1·35476	+ 22·2214	+ 136·17
2·4	− 256	+ ·504626	+1·37090	+ 3·1238	+ 1·41295^{+}	+ 24·6291	+ 150·21
2·5	− 604	+ ·564190	+1·52801	+ 3·4797	+ 1·41047	+ 26·3876	+ 160·09
2·6	− 899	+ ·618039	+1·66870	+ 3·7979	+ 1·35969	+ 27·6510	+ 166·80
2·8	− 1356	+ ·713650^{-}	+1·91496	+ 4·3533	+ 1·14184	+ 29·0408	+ 172·87
3·0	− 1673	+ ·797885^{-}	+2·12769	+ 4·8316	+ 0·79788	+ 29·2558	+ 171·32
3·2	− 1889	+ ·874039	+2·31620	+ 5·2541	+ 0·34962	+ 28·5461	+ 163·75^{-}
3·4	− 2038	+ ·944070	+2·48605^{+}	+ 5·6334	− 0·18881	+ 27·0696	+ 151·14
3·6	− 2151	+1·009253	+2·64088	+ 5·9782	− 0·80740	+ 24·9353	+ 134·22
3·8	− 2254	+1·070474	+2·78323	+ 6·2943	− 1·49866	+ 22·2230	+ 113·48
4·0	− 2368	+1·128379	+2·91498	+ 6·5862	− 2·25676	+ 18·9944	+ 89·32
4·2	− 2509	+1·183454	+3·03753	+ 6·8568	− 3·07698	+ 15·2981	+ 62·06
4·4	− 2690	+1·236077	+3·15200	+ 7·1089	− 3·95545^{-}	+ 11·1741	+ 31·96
4·6	− 2918	+1·286550^{+}	+3·25926	+ 7·3448	− 4·88889	+ 6·6558	− 0·77
4·8	− 3197	+1·335116	+3·36004	+ 7·5658	− 5·87451	+ 1·7713	− 35·95^{+}
5·0	− 3525^{-}	+1·381977	+3·45494	+ 7·7736	− 6·90988	− 3·4549	− 73·42
5·2	− 3896	+1·427299	+3·54446	+ 7·9693	− 7·99288	− 9·0015^{+}	− 113·03
5·4	− 4301	+1·471226	+3·62903	+ 8·1538	− 9·12160	− 14·8496	− 154·68
5·6	− 4725^{-}	+1·513880	+3·70900	+ 8·3282	−10·29438	− 20·9824	− 198·24
5·8	− 5149	+1·555363	+3·78472	+ 8·4932	−11·50969	− 27·3848	− 243·63
6·0	− 5552	+1·595769	+3·85644	+ 8·6493	−12·76615^{+}	− 34·0431	− 290·74
6·2	− 5905^{-}	+1·635177	+3·92442	+ 8·7973	−14·06252	− 40·9448	− 339·51
6·4	− 6177	+1·673657	+3·98888	+ 8·9375^{+}	−15·39764	− 48·0786	− 389·85^{+}
6·6	− 6333	+1·711272	+4·05001	+ 9·0707	−16·77046	− 55·4338	− 441·71
6·8	− 6332	+1·748077	+4·10798	+ 9·1971	−18·18001	− 63·0007	− 495·01
7·0	− 6133	+1·784124	+4·16296	+ 9·3171	−19·62537	− 70·7703	− 549·71
7·2	− 5685^{+}	+1·819457	+4·21507	+ 9·4312	−21·10570	− 78·7340	− 605·74
7·4	− 4938	+1·854116	+4·26447	+ 9·5394	−22·62022	− 86·8839	− 663·05^{-}
7·6	− 3836	+1·888139	+4·31125^{+}	+ 9·6423	−24·16819	− 95·2126	− 721·59
7·8	− 2319	+1·921560	+4·35554	+ 9·7402	−25·74891	−103·7130	− 781·34
8·0	− 322	+1·954410	+4·39742	+ 9·8331	−27·36174	−112·3786	− 842·22
8·2	+ 2221	+1·986717	+4·43700	+ 9·9214	−29·00606	−121·2029	− 904·23
8·4	+ 5383	+2·018506	+4·47435^{+}	+10·0053	−30·68129	−130·1802	− 967·30
8·6	+ 9240	+2·049803	+4·50957	+10·0851	−32·38688	−139·3046	−1031·42
8·8	+13870	+2·080628	+4·54271	+10·1607	−34·12231	−148·5707	−1096·52
9·0	+19356	+2·111004	+4·57384	+10·2325^{+}	−35·88707	−157·9735^{-}	−1162·61
9·2	+25787	+2·140949	+4·60304	+10·3006	−37·68070	−167·5078	−1229·62
9·4	+33252	+2.170481	+4·63036	+10·3653	−39·50275^{-}	−177·1691	−1297·56
9·6	+41846	+2·199616	+4·65585^{+}	+10·4265^{+}	−41·35278	−186·9527	−1366·38
9·8	+51667	+2·228370	+4·67958	+10·4845^{-}	−43·23038	−196·8542	−1436·04
10·0	+62817	+2·256758	+4·70158	+10·5394	−45·13517	−206·8695^{+}	−1506·55^{-}

TABLE XLVII.—(*continued*).

Table of the Coefficients of the Expansion on page ccxxvi.

r	$_1C_3$	$_2C_3$	$_3C_3$	$_1C_4$	$_2C_4$
2·00	+ 0·0000	+ 0·00	+ 0	+ 0·00	+ 0
2·05	+ 5·0361	+ 119·89	+ 1568	+ 26·34	+ 1380
2·10	+ 6·9411	+ 161·67	+ 2107	+ 34·18	+ 1813
2·15	+ 8·2964	+ 188·51	+ 2448	+ 38·15^{+}	+ 2058
2·20	+ 9·3631	+ 206·89	+ 2676	+ 39·82	+ 2197
2·3	+ 11·0085^{+}	+ 227·65^{+}	+ 2916	+ 38·52	+ 2278
2·4	+ 12·2927	+ 234·20	+ 2961	+ 32·70	+ 2198
2·5	+ 13·3995^{+}	+ 230·94	+ 2869	+ 23·27	+ 2018
2·6	+ 14·4374	+ 220·39	+ 2675^{-}	+ 10·63	+ 1778
2·8	+ 16·5852	+ 183·58	+ 2057	− 23·98	+ 1209
3·0	+ 19·1492	+ 132·45^{-}	+ 1221	− 71·81	+ 624
3·2	+ 22·4104	+ 72·39	+ 237	− 134·95^{+}	+ 100
3·4	+ 26·5850^{+}	+ 7·25^{-}	− 846	− 216·38	− 318
3·6	+ 31·8520	− 60·05^{-}	− 1990	− 319·73	− 600
3·8	+ 38·3658	− 127·10	− 3164	− 449·17	− 736
4·0	+ 46·2635^{+}	− 191·92	− 4343	− 609·32	− 721
4·2	+ 55·6697	− 252·77	− 5504	− 805·22	− 563
4·4	+ 66·6987	− 308·13	− 6628	− 1042·26	− 275^{+}
4·6	+ 79·4573	− 356·66	− 7699	− 1326·18	+ 122
4·8	+ 94·0456	− 397·13	− 8701	− 1663·02	+ 604
5·0	+ 110·5581	− 428·41	− 9618	− 2059·15^{-}	+ 1140
5·2	+ 129·0849	− 449·50^{-}	− 10440	− 2521·18	+ 1695^{+}
5·4	+ 149·7120	− 459·42	− 11153	− 3056·03	+ 2231
5·6	+ 172·5217	− 457·31	− 11746	− 3670·86	+ 2704
5·8	+ 197·5934	− 442·33	− 12209	− 4373·06	+ 3069
6·0	+ 225·0034	− 413·70	− 12531	− 5170·29	+ 3278
6·2	+ 254·8260	− 370·70	− 12704	− 6070·43	+ 3277
6·4	+ 287·1326	− 312·63	− 12719	− 7081·58	+ 3013
6·6	+ 321·9929	− 238·84	− 12567	− 8212·05^{+}	+ 2427
6·8	+ 359·4747	− 148·70	− 12240	− 9470·38	+ 1460
7·0	+ 399·6438	− 41·63	− 11731	− 10865·32	+ 50^{-}
7·2	+ 442·5647	+ 82·94	− 11032	− 12405·78	− 1868
7·4	+ 488·3000	+ 225·55^{-}	− 10137	− 14100·92	− 4359
7·6	+ 536·9113	+ 386·71	− 9038	− 15960·07	− 7494
7·8	+ 588·4587	+ 566·91	− 7729	− 17992·72	− 11341
8·0	+ 643·0009	+ 766·62	− 6205^{-}	− 20208·60	− 15973
8·2	+ 700·5957	+ 986·29	− 4458	− 22617·58	− 21465^{-}
8·4	+ 761·2997	+ 1226·36	− 2484	− 25229·71	− 27891
8·6	+ 825·1685^{-}	+ 1487·24	− 276	− 28055·24	− 35328
8·8	+ 892·2567	+ 1769·33	+ 2170	− 31104·56	− 43856
9·0	+ 962·6179	+ 2073·01	+ 4860	− 34388·26	− 53554
9·2	+ 1036·3050^{-}	+ 2398·65^{-}	+ 7799	− 37917·06	− 64504
9·4	+ 1113·3698	+ 2746·60	+ 10992	− 41701·88	− 76789
9·6	+ 1193·8636	+ 3117·21	+ 14444	− 45753·77	− 90492
9·8	+ 1277·8367	+ 3510·81	+ 18158	− 50083·96	− 105699
10·0	+ 1365·3388	+ 3927·70	+ 22140	− 54703·82	− 122497

TABLE XLVIII. *Table of Reciprocals of Powers of n.*

n	$n^{-\cdot 5}$	n^{-1} ·0	$n^{-1\cdot 5}$ ·00	n^{-2} ·000	$n^{-2\cdot 5}$ ·0000	n^{-3} ·00000
50	·1414 2136	200 0000	282 8427	400 0000	565 6854	800 0000
51	·1400 2801	196 0784	274 5647	384 4675+	538 3622	753 8579
52	·1386 7505−	192 3077	266 6828	369 8225−	512 8515+	711 1971
53	·1373 6056	188 6792	259 1709	355 9986	489 0017	671 6954
54	·1360 8276	185 1852	252 0051	342 9355+	466 6761	635 0658
55	·1348 3997	181 8182	245 1636	330 5785+	445 7520	601 0518
56	·1336 3062	178 5714	238 6261	318 8776	426 1181	569 4242
57	·1324 5324	175 4386	232 3741	307 7870	407 6739	539 9772
58	·1313 0643	172 4138	226 3904	297 2652	390 3283	512 5261
59	·1301 8891	169 4915+	220 6592	287 2738	373 9986	486 9047
60	·1290 9944	166 6667	215 1657	277 7778	358 6096	462 9630
61	1280 3688	163 9344	209 8965+	268 7450−	344 0927	440 5655+
62	·1270 0013	161 2903	204 8389	260 1457	330 3853	419 5898
63	·1259 8816	158 7302	199 9812	251 9526	317 4305−	399 9248
64	·1250 0000	156 2500	195 3125	244 1406	305 1758	381 4697
65	·1240 3473	153 8462	190 8227	236 6864	293 5733	364 1329
66	·1230 9149	151 5152	186 5023	229 5684	282 5792	347 8309
67	·1221 6944	149 2537	182 3425−	222 7668	272 1529	332 4877
68	·1212 6781	147 0588	178 3350+	216 2630	262 2574	318 0338
69	·1203 8585+	144 9275+	174 4723	210 0399	252 8583	304 4057
70	·1195 2286	142 8571	170 7469	204 0816	243 9242	291 5452
71	·1186 7817	140 8451	167 1523	198 3733	235 4258	279 3991
72	·1178 5113	138 8889	163 6821	192 9012	227 3363	267 9184
73	·1170 4115−	136 9863	160 3303	187 6525−	219 6306	257 0582
74	·1162 4764	135 1351	157 0914	182 6150+	212 2857	246 7771
75	·1154 7005+	133 3333	153 9601	177 7778	205 2801	237 0370
76	·1147 0787	131 5789	150 9314	173 1302	198 5940	227 8029
77	·1139 6058	129 8701	148 0007	168 6625+	192 2088	219 0422
78	·1132 2770	128 2051	145 1637	164 3655+	186 1073	210 7251
79	·1125 0879	126 5823	142 4162	160 2307	180 2737	202 8237
80	·1118 0340	125 0000	139 7542	156 2500	174 6928	195 3125
81	·1111 1111	123 4568	137 1742	152 4158	169 3509	188 1676
82	·1104 3153	121 9512	134 6726	148 7210	164 2349	181 3671
83	·1097 6426	120 4819	132 2461	145 1589	159 3326	174 8903
84	·1091 0895−	119 0476	129 8916	141 7234	154 6329	168 7183
85	·1084 6523	117 6471	127 6062	138 4083	150 1249	162 8333
86	·1078 3277	116 2791	125 3869	135 2082	145 7988	157 2189
87	·1072 1125+	114 9425+	123 2313	132 1178	141 6452	151 8596
88	·1066 0036	113 6364	121 1368	129 1322	137 6554	146 7412
89	·1059 9979	112 3596	119 1009	126 2467	133 8212	141 8502
90	·1054 0926	111 1111	117 1214	123 4568	130 1349	137·1742
91	·1048 2848	109 8901	115 1961	120 7584	126 5892	132 7015−
92	·1042 5721	108 6957	113 3231	118 1474	123 1772	128 4211
93	·1036 9517	107 5269	111 5002	115 6203	119 8927	124 3229
94	·1031 4212	106 3830	109 7257	113 1734	116 7294	120 3972
95	·1025 9784	105 2632	107 9977	110 8033	113 6818	116 6351
96	·1020 6207	104 1667	106 3147	108 5069	110 7444	113 0281
97	·1015 3462	103 0928	104 6749	106 2812	107 9122	109 5683
98	·1010 1525+	102 0408	103 0768	104 1233	105 1804	106 2482
99	·1005 0378	101 0101	101 5190	102 0304	102 5444	103 0610
100	·1000 0000	100 0000	100 0000	100 0000	100 0000	100 0000

TABLE XLVIII.—(*continued*).

n	$n^{-.5}$ ·0	n^{-1} ·00	$n^{-1.5}$ ·000	n^{-2} ·0000	$n^{-2.5}$ ·00000	n^{-3} ·000000
101	995 0372	990 0990	985 1853	980 2960	975 4310	970 5901
103	985 3293	970 8738	956 6304	942 5959	928 7673	915 1417
105	975 9001	952 3810	929 4286	907 0295−	885 1701	863 8376
107	966 7365−	934 5794	903 4920	873 4387	844 3851	816 2979
109	957 8263	917 4312	878 7397	841 6800	806 1832	772 1835−
111	949 1580	900 9009	855 0973	811 6224	770 3579	731 1914
113	940 7209	884 9558	832 4964	783 1467	736 7224	693 0502
115	932 5048	869 5652	810 8737	756 1437	705 1076	657 5162
117	924 5003	854 7009	790 1713	730 5136	675 3601	624 3706
119	916 6985−	840 3361	770 3348	706 1648	647 3402	593 4158
121	909 0909	826 4463	751 3148	683 0135−	620 9213	564 4739
123	901 6696	813 0081	733 0647	660 9822	595 9876	537 3839
125	894 4272	800 0000	715 5418	640 0000	572 4334	512 0000
127	887 3565+	787 4016	698 7059	620 0012	550 1621	488 1900
129	880 4509	775 1938	682 5201	600 9254	529 0853	465 8337
131	873 7041	763 3588	666 9497	582 7166	509 1219	444 8219
133	867 1100	751 8797	651 9624	565 3231	490 1973	425 0549
135	860 6630	740 7407	637 5281	548 6968	472 2430	406 4421
137	854 3577	729 9270	623 6187	532 7934	455 1961	388 9003
139	848 1889	719 4245−	610 2079	517 5716	438 9985−	372 3536
141	842 1519	709 2199	597 2709	502 9928	423 5964	356 7325−
143	836 2420	699 3007	584 7846	489 0215−	408 9403	341 9731
145	830 4548	689 6552	572 7275−	475 6243	394 9844	328 0167
147	824 7861	680 2721	561 0790	462 7701	381 6863	314 8096
149	819 2319	671 1409	549 8201	450 4302	369 0068	302 3021
151	813 7885−	662 2517	538 9328	438 5773	356 9091	290 4485+
153	808 4521	653 5948	528 4001	427 1861	345 3595−	279 2066
155	803 2193	645 1613	518 2060	416 2331	334 3265−	268 5375−
157	798 0869	636 9427	508 3356	405 6960	323 7807	258 4051
159	793 0516	628 9308	498 7746	395 5540	313 6947	248 7761
161	788 1104	621 1180	489 5096	385 7876	304 0432	239 6196
163	783 2604	613 4969	480 5279	376 3785−	294 8024	230 9070
165	778 4989	606 0606	471 8175+	367 3095−	285 9500+	222 6118
167	773 8232	598 8024	463 3672	358 5643	277 4654	214 7092
169	769 2308	591 7160	455 1662	350 1278	269 3291	207 1762
171	764 7191	584 7953	447 2042	341 9856	261 5229	199 9916
173	760 2859	578 0347	439 4716	334 1241	254 0298	193 1353
175	755 9289	571 4286	431 9594	326 5306	246 8339	186 5889
177	751 6460	564 9718	424 6588	319 1931	239 9202	180 3351
179	747 4351	558 6592	417 5615−	312 1001	233 2746	174 3576
181	743 2941	552 4862	410 6598	305 2410	226 8838	168 6414
183	739 2213	546 4481	403 9461	298 6055+	220 7355+	163 1724
185	735 2146	540 5405+	397 4133	292 1841	214 8180	157 9373
187	731 2724	534 7594	391 0548	285 9676	209 1202	152 9238
189	727 3930	529 1005+	384 8640	279 9474	203 6318	148 1203
191	723 5746	523 5602	378 8349	274 1153	198 3429	143 5159
193	719 8158	518 1347	372 9615+	268 4636	193 2443	139 1003
195	716 1149	512 8205+	367 2384	262 9849	188 3274	134 8640
197	712 4705−	507 6142	361 6601	257 6722	183 5838	130 7981
199	708 8812	502 5126	356 2217	252 5189	179 0059	126 8939
200	707 1068	500 0000	353 5534	250 0000	176 7767	125 0000

TABLE XLIX. **Values of the Differences of the Powers of Zero.**

Table of $q(p, s) = \dfrac{\Delta^p 0^{p+s}}{\Gamma(p+s+1)}$ *from* $p = 1$ *to* 20 *and* $s = 0$ *to* 20.

Values of p.

Values of s.

s	1	2	3	4	5
0	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000
1	·500,000,000,000	1·000,000,000,000	1·500,000,000,000	2·000,000,000,000	2·500,000,000,000
2	·166,666,666,667	·583,333,333,333	1·250,000,000,000	2·166,666,666,667	3·333,333,333,333
3	·041,666,666,667	·250,000,000,000	·750,000,000,000	1·666,666,666,667	3·125,000,000,000
4	·008,333,333,333	·086,111,111,111	·358,333,333,333	1·012,500,000,000	2·298,611,111,111
5	·001,388,888,889	·025,000,000,000	·143,750,000,000	·513,888,888,889	1·406,250,000,000
6	·000,198,412,698	·006,299,603,175	·050,016,534,392	·225,562,169,312	·741,732,804,233
7	·000,024 801,587	·001,405,423,280	·015,426,587,302	·087,632,275,132	·345,568,783,069
8	·000,002,755,732	·000,281,635,802	·004,284,060,847	·030,638,778,660	·144,695,216,049
9	·000,000,275,573	·000,051,256,614	·001,083,829,365	·009,760,802,469	·055,162,863,757
10	·000,000,025,052	·000,008,546,944	·000,252,086,841	·002,860,825,517	·019,341,229,758

s	6	7	8	9	10
0	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000
1	3·000,000,000,000	3·500,000,000,000	4·000,000,000,000	4·500,000,000,000	5·000,000,000,000
2	4·750,000,000,000	6·416,666,666,667	8·333,333,333,333	10·500,000,000,000	12·916,666,666,667
3	5·250,000,000,000	8·166,666,666,667	12·000,000,000,000	16·875,000,000,000	22·916,666,666,667
4	4·529,166,666,667	8·079,166,666,667	13·386,111,111,111	20·950,000,000,000	31·333,333,333,333
5	3·237,500,000,000	6·601,388,888,889	12·300,000,000,000	21·375,000,000,000	35·138,888,888,889
6	1·989,616,402,116	4·625,925,925,926	9·671,957,671,958	18·628,174,603,175−	33·604,414,682,540
7	1·077,777,777,778	2·851,851,851,852	6·679,365,079,365+	14·235,491,071,429	28·141,121,031,746
8	·523,916,997,354	1·575,358,796,296	4·127,361,937,831	9·721,510,416,667	21·034,795,249,118
9	·231,631,944,444	·790,558,449,074	2·314,315,476,190	6·017,912,946,429	14·238,267,471,340
10	·094,114,940,326	·364,277,277,988	1·190,485,668,524	3·414,504,607,083	8·826,386,039,212 *

s	1	2	3	4	5
11	·000,000,002,088	·000,001,315,236	·000,054,300,445−	·000,777,366,923	·006,287,061,463
12	·000,000,000,161	·000,000,187,914	·000,010,897,672	·000,197,066,149	·001,907,096,356
13	·000,000,000,011	·000,000,025,057	·000,002,048,012	·000,046,850,391	·000,542,762,985+
14	·000,000,000,001	·000,000,003,132	·000,000,361,967	·000,010,491,635−	·000,145,593,321
15	·000,000,000,000	·000,000,000,368	·000,000,060,389	·000,002,221,479	·000,036,953,700
16	·000,000,000,000	·000,000,000,041	·000,000,009,542	·000,000,446,204	·000,008,904,739
17	·000,000,000,000	·000,000,000,004	·000,000,001,432	·000,000,085,264	·000,002,043,183
18	·000,000,000,000	·000,000,000,000	·000,000,000,205−	·000,000,015,540	·000,000,447,548
19	·000,000,000,000	·000,000,000,000	·000,000,000,028	·000,000,002,707	·000,000,093,803
20	·000,000,000,000	·000,000,000,000	·000,000,000,000	·000,000,000,452	·000,000,018,851

s	6	7	8	9	10
11	·035,436,000,631	·155,444,052,796	·566,707,251,082	1·791,545,336,174	5·056,157,797,803
12	·012,447,698,996	·061,854,855,924	·251,424,842,802	·875,558,648,133	2·696,234,748,153
13	·004,102,251,152	·023,084,987,476	·104,575,173,440	·400,963,836,098	1·346,608,080,109
14	·001,274,353,342	·008,119,780,273	·040,979,983,168	·172,934,537,974	·633,142,757,534
15	·000,374,659,155−	·002,702,776,182	·015,194,003,252	·070,548,202,960	·281,476,384,198
16	·000,104,608,335−	·000,854,421,374	·005,349,474,876	·027,323,164,021	·118,769,057,007
17	·000,027,822,135−	·000,257,321,024	·001,794,174,688	·010,079,078,784	·047,721,531,774
18	·000,007,067,421	·000,074,028,765−	·000,574,831,831	·003,551,303,538	·018,311,726,897
19	·000,001,718,694	·000,020,393,546	·000,176,363,075−	·001,198,178,554	·006,727,553,604
20	·000,000,400,972	·000,005,391,171	·000,051,929,785−	·000,387,964,657	·002,371,839,420

* The table thus far was computed by K. P. and E. M. E. from the formula

$$q(p, s) = \frac{p}{p+s}\{q(p, s-1) + q(p-1, s)\}$$

and checked by the formula

$$\Delta^p 0^{p+10} = p^{p+10} - p(p-1)^{p+10} + \frac{p(p-1)}{2!}(p-2)^{p+10} - \ldots + (-1)^r \frac{p!}{(p-r)!\,r!}(p-r)^{p+10} + \ldots.$$

It was calculated for a special investigation, but it was thought that it might be of value to other computers.

TABLE XLIX.—(*continued*).

Values of *p*.

Values of *s*.

s	*11*	*12*	*13*	*14*	*15*
0	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000
1	5·500,000,000,000	6·000,000,000,000	6·500,000,000,000	7·000,000,000,000	7·500,000,000,000
2	15·583,333,333,333	18·500,000,000,000	21·666,666,666,667	25·083,333,333,333	28·750,000,000,000
3	30·250,000,000,000	39·000,000,000,000	49·291,666,666,667	61·250,000,000,000	75·000,000,000,000
4	45·161,111,111,111	63·120,833,333,333	85·962,500,000,000	114·498,611,111,111	149·604,166,666,667
5	55·206,250,000,000	83·525,000,000,000	122·407,638,888,889	174·562,500,000,000	243·125,000,000,000
6	57·465,724,206,349	93·993,816,137,566	148·064,153,439,153	225·838,657,407,407	334·974,041,005,291
7	52·315,294,312,169	92·405,753,968,254	156·305,439,814,815−	254·762,731,481,481	402·093,253,968,254
8	42·465,841,324,956	80·922,957,175,926	146·855,674,327,601	255·575,349,151,235−	428·914,306,382,275+
9	31·187,259,837,963	64·062,981,150,794	124·633,750,964,506	231·431,626,157,407	412·716,207,837,302
10	20·959,528,792,806	46·375,914,514,691	96·657,637,009,981	191·385,403,514,310	362·460,966,810,967
11	13·007,843,295,304	30·982,830,161,736	69·138,586,384,680	145·893,434,343,434	293·281,385,281,385+
12	7·510,646,020,784	19·246,738,091,260	45·960,368,727,489	103·305,893,961,266	220·326,266,245,918
13	4·059,574,796,242	11·187,030,186,001	28·573,699,456,745+	68·382,011,401,932	154·665,148,739,919
14	2·064,795,723,662	6·116,227,342,921	16·702,557,347,988	42·542,284,374,960	102·003,844,714,593
15	·992,653,584,094	3·159,502,634,229	9·221,670,706,029	24·989,495,556,339	63·496,670,135,466
16	·452,801,816,745−	1·548,130,478,989	4·827,841,910,525+	13·914,757,484,537	37·457,142,396,776
17	·196,634,172,633	·721,971,579,981	2·404,919,179,220	7·370,176,557,826	21·012,805,759,969
18	·081,531,203,270	·321,401,113,301	1·143,295,606,541	3·724,644,071,910	11·244,295,378,127
19	·032,361,544,187	·136,940,383,544	·520,095,870,972	1·800,798,763,647	5·755,188,591,959
20	·012,324,749,022	·055,974,424,712	·226,936,783,148	·834,949,931,033	2·824,345,081,282

s	*16*	*17*	*18*	*19*	*20*
0	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000	1·000,000,000,000
1	8·000,000,000,000	8·500,000,000,000	9·000,000,000,000	9·500,000,000,000	10·000,000,000,000
2	32·666,666,666,667	36·833,333,333,333	41·250,000,000,000	45·916,666,666,667	50·833,333,333,333
3	90·666,666,666,667	108·375,000,000,000	128·250,000,000,000	150·416,666,666,667	175·000,000,000,000
4	192·216,666,666,667	243·336,111,111,111	304·025,000,000,000	375·408,333,333,333	458·673,611,111,111
5	331·688,888,888,889	444·337,500,000,000	585·675,000,000,000	760·857,638,888,889	975·625,000,000,000
6	484·845,767,195,767	686·787,632,275,132	954·346,974,206,349	1303·555,505,952,381	1753·215,773,809,524
7	617·001,058,201,058	923·516,989,087,302	1352·062,053,571,429	1940·643,601,190,476	2736·192,129,629,630
8	697·276,909,722,222	1102·139,851,190,476	1699·062,857,142,857	2561·274,915,123,457	3783·905,031,966,490
9	710·395,595,238,095+	1185·119,330,357,143	1922·788,125,000,000	3042·757,062,940,917	4708·042,824,074,074
10	660·219,422,799,423	1161·879,955,691,171	1983·000,909,015,753	3292·737,981,626,784	5333·853,870,467,239
11	565·037,515,899,738	1048·485,607,751,623	1881·612,320,752,165−	3277·088,524,840,001	5555·446,706,649,832
12	448·779,304,083,232	877·707,017,282,501	1655·591,602,820,799	3023·255,562,114,684	5361·688,917,977,822
13	332·934,870,523,118	686·030,403,089,851	1359·651,487,302,958	2602·351,060,591,725+	4826·690,896,102,756
14	231·967,314,793,446	503·418,103,355,356	1047·976,644,745,302	2101·703,830,345,561	4075·526,309,675,481
15	152·497,540,608,471	348·455,185,855,783	761·690,089,418,773	1600·131,896,338,893	3243·233,260,579,640
16	94·977,341,502,623	228·434,938,336,149	524·183,838,223,194	1153·199,970,190,847	2442·462,905,983,605−
17	56·237,647,157,621	142·336,292,746,885−	342·781,781,641,755−	789·545,924,578,318	1747·031,800,303,742
18	31·756,208,252,117	84·559,214,770,943	213·670,498,206,349	515·165,190,078,613	1190·629,994,938,081
19	17·148,067,128,720	48·028,438,674,841	127·312,996,320,579	321·239,093,199,596	775·317,481,096,245−
20	8·876,627,648,890	26·145,571,013,606	72·690,900,316,193	191·914,612,225,641	483·616,046,660,943

TABLE L^a.

Table of Deviates of Type I Curves Measured from the Mean in Terms of the Standard Deviation. $I_x(p, q) = 0{\cdot}05$.

β_1.

β_2.	0·00	0·01	0·03	0·05	0·10	0·15	0·20	0·30	0·40	0·50	0·60	0·70	0·80	0·90	1·00	1·20	1·40	1·60	1·80	2·00	2·20	2·40	2·60	2·80	3·00
2·4	1·65−	1·61	1·58	1·55+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·6	1·65−	1·61	1·58	1·57	1·52	1·49	1·45+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·8	1·65−	1·62	1·59	1·57	1·54	1·51	1·48	1·42	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·0	1·64	1·62	1·59	1·58	1·55−	1·52	1·49	1·44	1·39	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·2	—	—	—	—	1·55+	1·53	1·50+	1·46	1·42	1·37	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·4	—	—	—	—	—	—	—	1·47	1·43	1·39	1·35−	1·30	—	—	—	—	—	—	—	—	—	—	—	—	—
3·6	—	—	—	—	—	—	—	—	1·45−	1·41	1·37	1·33	1·28	—	—	—	—	—	—	—	—	—	—	—	—
3·8	—	—	—	—	—	—	—	—	—	1·42	1·39	1·35+	1·31	1·27	—	—	—	—	—	—	—	—	—	—	—
4·0	—	—	—	—	—	—	—	—	—	—	1·40	1·37	1·34	1·30	1·26	—	—	—	—	—	—	—	—	—	—
4·2	—	—	—	—	—	—	—	—	—	—	—	—	1·36	1·32	1·28	1·20	1·11	—	—	—	—	—	—	—	—
4·4	—	—	—	—	—	—	—	—	—	—	—	—	—	1·34	1·31	1·24	1·15	1·06	—	—	—	—	—	—	—
4·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·32	1·26	1·19	1·10	1·01	—	—	—	—	—	—
4·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·28	1·21	1·14	1·05+	·97	—	—	—	—	—
5·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·24	1·17	1·09	1·01	—	—	—	—	—
5·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·26	1·20	1·13	1·05−	·97	—	—	—	—
5·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·22	1·16	1·08	1·01	·93	—	—	—
5·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·18	1·11	1·04	·97	·89	—	—
5·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·20	1·14	1·07	1·00	·93	—	—
6·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·16	1·10	1·03	·96	·89	—
6·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·13	1·06	1·00	·93	·86
6·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·15−	1·09	1·03	·96	·89
6·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·11	1·05+	·99	·93
6·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·08	1·02	·96
7·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·10	1·04	·98
7·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·07	1·01
7·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·03
7·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·05+

Additional values of deviates: (1) $\beta_1 = 4{\cdot}0$, $\beta_2 = 7{\cdot}8$, ·81.
(2) $\beta_1 = 4{\cdot}0$, $\beta_2 = 9{\cdot}0$, ·95−.

TABLE L^b.

Table of Deviates of Type I Curves Measured from the Mean in Terms of the Standard Deviation. $I_x(p, q) = 0{\cdot}95$.

β_1.

β_2	0·00	0·01	0·03	0·05	0·10	0·15	0·20	0·30	0·40	0·50	0·60	0·70	0·80	0·90	1·00	1·20	1·40	1·60	1·80	2·00	2·20	2·40	2·60	2·80	3·00
2·4	1·65$^-$	1·69	1·71	1·73	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·6	1·65$^-$	1·68	1·71	1·73	1·76	1·79	1·81	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·8	1·65$^-$	1·68	1·70	1·72	1·75$^-$	1·77	1·80	1·84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·0	1·64	1·67	1·69	1·71	1·74	1·76	1·78	1·82	1·86	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·2	—	—	—	—	1·73	1·75$^-$	1·77	1·80	1·84	1·87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·4	—	—	—	—	—	—	—	1·79	1·82	1·85$^+$	1·88	1·92	—	—	—	—	—	—	—	—	—	—	—	—	—
3·6	—	—	—	—	—	—	—	—	1·80	1·83	1·86	1·89	1·92	—	—	—	—	—	—	—	—	—	—	—	—
3·8	—	—	—	—	—	—	—	—	—	1·82	1·84	1·87	1·90	1·93	—	—	—	—	—	—	—	—	—	—	—
4·0	—	—	—	—	—	—	—	—	—	—	1·83	1·85$^+$	1·88	1·90	1·93	—	—	—	—	—	—	—	—	—	—
4·2	—	—	—	—	—	—	—	—	—	—	—	—	1·86	1·88	1·91	1·96	2·02	—	—	—	—	—	—	—	—
4·4	—	—	—	—	—	—	—	—	—	—	—	—	—	1·86	1·89	1·93	1·99	2·04	—	—	—	—	—	—	—
4·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·87	1·91	1·96	2·01	2·07	—	—	—	—	—	—
4·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·89	1·94	1·98	2·04	2·09	—	—	—	—	—
5·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·92	1·96	2·01	2·06	—	—	—	—	—
5·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·90	1·94	1·98	2·03	2·08	—	—	—	—
5·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·92	1·96	2·00	2·05$^+$	2·10	—	—	—
5·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·94	1·98	2·02	2·07	2·12	—	—
5·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·92	1·96	2·00	2·04	2·09	—	—
6·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·94	1·98	2·02	2·06	2·11	—
6·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·96	1·99	2·04	2·08	2·13
6·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·94	1·97	2·01	2·05$^+$	2·10
6·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·96	1·99	2·03	2·07
6·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·97	2·01	2·04
7·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·96	1·99	2·02
7·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·97	2·00
7·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·98
7·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·97

Additional values of deviates: (1) for $\beta_1 = 4{\cdot}0$, $\beta_2 = 7{\cdot}8$, 2·11.
(2) $\beta_1 = 4{\cdot}0$, $\beta_2 = 9{\cdot}0$, 2·00.

TABLE L^e.

Table of Deviates of Type I Curves Measured from the Mean in Terms of the Standard Deviation. $I_x(p, q) = 0\cdot005$.

β_1.

β_2	0·00	0·01	0·03	0·05	0·10	0·15	0·20	0·30	0·40	0·50	0·60	0·70	0·80	0·90	1·00	1·20	1·40	1·60	1·80	2·00	2·20	2·40	2·60	2·80	3·00
2·4	2·26	2·14	2·05	1·98*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·6	2·38	2·27	2·18	2·12	1·98	1·87	1·76*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·8	2·49	2·38	2·30	2·23	2·10	1·99	1·89	1·71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·0	2·58	2·48	2·39	2·33	2·21	2·11	2·01	1·84	1·68	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·2	—	—	—	—	2·30	2·20	2·11	1·95$^-$	1·79	1·65$^-$	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·4	—	—	—	—	—	—	—	2·04	1·90	1·76	1·62	1·50$^-$	—	—	—	—	—	—	—	—	—	—	—	—	—
3·6	—	—	—	—	—	—	—	—	1·99	1·85$^+$	1·72	1·60	1·48	—	—	—	—	—	—	—	—	—	—	—	—
3·8	—	—	—	—	—	—	—	—	—	1·94	1·82	1·70	1·58	1·47	—	—	—	—	—	—	—	—	—	—	—
4·0	—	—	—	—	—	—	—	—	—	—	1·90	1·78	1·67	1·56	1·45$^+$	—	—	—	—	—	—	—	—	—	—
4·2	—	—	—	—	—	—	—	—	—	—	—	—	1·75$^+$	1·65$^-$	1·54	1·35$^-$	1·18	1·04	—	—	—	—	—	—	—
4·4	—	—	—	—	—	—	—	—	—	—	—	—	—	1·73	1·62	1·43	1·25$^+$	1·11	—	—	—	—	—	—	—
4·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·70	1·51	1·33	1·18	1·04	—	—	—	—	—	—
4·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·58	1·41	1·25$^-$	1·11	0·99	—	—	—	—	—
5·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·48	1·31	1·17	1·04	—	—	—	—	—
5·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·55$^-$	1·38	1·23	1·10	0·99	—	—	—	—
5·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·45$^-$	1·30	1·16	1·04	0·94	—	—	—
5·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·36	1·22	1·10	0·99	0·90	—	—
5·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·42	1·28	1·15$^+$	1·04	0·95$^-$	—	—
6·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·34	1·21	1·09	0·99	0·90	—
6·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·26	1·15$^-$	1·04	0·95$^-$	0·87
6·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·32	1·20	1·09	0·99	0·91
6·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·25$^-$	1·14	1·04	0·95$^-$
6·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·18	1·08	0·99
7·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·23	1·13	1·03
7·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·17	1·07
7·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·11
7·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1·16

* These two values have been extrapolated at distances of ·25 and ·33 times the argument interval respectively, and if used must be accepted with caution.

TABLE L[d].

Table of Deviates of Type I Curves Measured from the Mean in Terms of the Standard Deviation. $I_x(p, q) = 0{\cdot}995$.

β_1.

β_2	0·00	0·01	0·03	0·05	0·10	0·15	0·20	0·30	0·40	0·50	0·60	0·70	0·80	0·90	1·00	1·20	1·40	1·60	1·80	2·00	2·20	2·40	2·60	2·80	3·00
2·4	2·26	2·35+	2·41	2·44*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·6	2·38	2·48	2·54	2·57	2·63	2·66	2·68*	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2·8	2·49	2·58	2·64	2·68	2·73	2·77	2·80	2·83	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·0	2·58	2·66	2·72	2·76	2·82	2·86	2·89	2·93	2·95+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·2	—	—	—	—	2·89	2·93	2·96	3·01	3·04	3·06	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3·4	—	—	—	—	—	—	—	3·07	3·11	3·13	3·15−	3·16	—	—	—	—	—	—	—	—	—	—	—	—	—
3·6	—	—	—	—	—	—	—	—	3·16	3·19	3·22	3·23	3·24	—	—	—	—	—	—	—	—	—	—	—	—
3·8	—	—	—	—	—	—	—	—	—	3·24	3·27	3·29	3·30	3·31	—	—	—	—	—	—	—	—	—	—	—
4·0	—	—	—	—	—	—	—	—	—	—	3·31	3·34	3·36	3·37	3·38	—	—	—	—	—	—	—	—	—	—
4·2	—	—	—	—	—	—	—	—	—	—	—	—	3·40	3·42	3·43	3·45+	3·45−	3·43	—	—	—	—	—	—	—
4·4	—	—	—	—	—	—	—	—	—	—	—	—	—	3·45+	3·47	3·50+	3·52	3·51	—	—	—	—	—	—	—
4·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·51	3·54	3·57	3·57	3·56	—	—	—	—	—	—
4·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·57	3·60	3·63	3·63	3·62	—	—	—	—	—
5·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·63	3·67	3·68	3·68	—	—	—	—	—
5·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·66	3·70	3·72	3·73	3·74	—	—	—	—
5·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·72	3·75+	3·77	3·78	3·79	—	—	—
5·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·77	3·80	3·82	3·83	3·84	—	—
5·8	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·78	3·83	3·85+	3·87	3·88	—	—
6·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·84	3·88	3·90	3·92	3·93	—
6·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·89	3·92	3·95−	3·96	3·98
6·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·90	3·94	3·97	3·99	4·01
6·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·95−	3·98	4·01	4·03
6·8	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3·99	4·03	4·06
7·0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4·00	4·04	4·07
7·2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4·05−	4·08
7·4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4·09
7·6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4·10

* These two values have been extrapolated at distances of ·25 and ·33 times the argument interval respectively, and if used must be accepted with caution.

Table for determining the Mode $\breve{r}$ of a Frequency Distribution of considerable Size n when the Correlation in the Sampled Population is known to be ρ.

The required value of the mode is

$$\breve{r} = \rho + \frac{\nu_1(\rho)}{n-1} + \frac{\nu_2(\rho)}{(n-1)^2} + \frac{\nu_3(\rho)}{(n-1)^3} + \frac{\nu_4(\rho)}{(n-1)^4},$$

when ρ is positive; if ρ be negative $\breve{r}$ has the same value as for ρ positive, but with opposite sign.

TABLE LI[a]. *Functions required in determining the Mode of a large or fairly large Sample.*

ρ	$\nu_1(\rho)$	$\nu_2(\rho)$	$\nu_3(\rho)$	$\nu_4(\rho)$
·00	0	0	0	0
·05	·12468,75000	+ ·37872,26953	+ 1·13249,90199	+ 3·36913,85919
·10	·24750,00000	+ ·74237,62500	+ 2·18002,51688	+ 6·33154,83878
·15	·36656,25000	+ 1·07636,49609	+ 3·06395,34936	+ 8·53428,44284
·20	·48000,00000	+ 1·36704,00000	+ 3·71804,16000	+ 9·72192,80640
·25	·58593,75000	+ 1·60217,28516	+ 4·09383,77380	+ 9·77504,47690
·30	·68250,00000	+ 1·77142,87500	+ 4·16514,90563	+ 8·72821,01391
·35	·76781,25000	+ 1·86684,01172	+ 3·93125,67461	+ 6·77045,11170
·40	·84000,00000	+ 1·88328,00000	+ 3·41856,48000	+ 4·22414,17680
·45	·89718,75000	+ 1·81893,55078	+ 2·68036,91046	+ 1·50278,32653
·50	·93750,00000	+ 1·67578,12500	+ 1·79443,35938	− ·94981,38428
·55	·95906,25000	+ 1·46005,27734	+ ·85806,01815	− 2·73364,05345
·60	·96000,00000	+ 1·18272,00000	− ·01966,08000	− 3·57140,42880
·65	·93843,75000	+ ·85996,06641	− ·72873,29366	− 3·38017,64160
·70	·89250,00000	+ ·51363,37500	− 1·17258,21188	− 2·31971,93665
·75	·82031,25000	+ ·17175,29297	− 1·28614,42566	− ·79706,28440
·80	·72000,00000	− ·13104,00000	− 1·05802,56000	+ ·59787,92160
·85	·58968,75000	− ·35300,16797	− ·55704,89418	+ 1·25603,36730
·90	·42750,00000	− ·44481,37500	+ ·03650,10188	+ ·84819,10191
·95	·23156,25000	− ·34910,94141	+ ·39461,98756	− ·19874,71356
1·00	0	0	0	0

The above Table will give the value of $\breve{r}$ correctly to about the sixth figure if $n = 100$ or more, to about the fourth figure if $n = 25$ or more. Below 25 it can only serve as a "taking off point" for more accurate approximations, and these are fairly troublesome if n be very low. It will be found best not to interpolate for the separate ν's but for the expression as a whole.

Table for determining the "most likely" value $\hat{\rho}$ of the Correlation in a Sampled Population from the knowledge of the Correlation r in a Sample of Size n, when n is considerable and it is legitimate to distribute ignorance equally.

The required value is

$$\hat{\rho} = r - \frac{\lambda_1(r)}{n-1} - \frac{\lambda_2(r)}{(n-1)^2} - \frac{\lambda_3(r)}{(n-1)^3},$$

when r is positive; if r be negative $\hat{\rho}$ has the same value as for r positive, but with opposite sign.

TABLE LI[b]. *Functions required in determining the "most probable" value $\hat{\rho}$ of the Correlation.*

r	$\lambda_1(r)$	$\lambda_2(r)$	$\lambda_3(r)$
·00	0	0	0
·05	·02493,75000	− ·00615,64453	− ·00317,92000
·10	·04950,00000	− ·01175,62500	− ·00667,19813
·15	·07331,25000	− ·01626,62109	− ·01073,47255
·20	·09600,00000	− ·01920,00000	− ·01551,36000
·25	·11718,75000	− ·02014,16016	− ·02099,99084
·30	·13650,00000	− ·01876,87500	− ·02699,79938
·35	·15356,25000	− ·01487,63672	− ·03310,98746
·40	·16800,00000	− ·00840,00000	− ·03874,08000
·45	·17943,75000	+ ·00056,07422	− ·04312,99059
·50	·18750,00000	+ ·01171,87500	− ·04541,01563
·55	·19181,25000	+ ·02457,59766	− ·04470,17533
·60	·19200,00000	+ ·03840,00000	− ·04024,32000
·65	·18768,75000	+ ·05220,05859	− ·03156,41987
·70	·17850,00000	+ ·06470,62500	− ·01870,45688
·75	·16406,25000	+ ·07434,08203	− ·00248,33679
·80	·14400,00000	+ ·07920,00000	+ ·01517,76000
·85	·11793,75000	+ ·07702,79297	+ ·03087,17070
·90	·08550,00000	+ ·06519,37500	+ ·03926,26688
·95	·04631,25000	+ ·04066,81641	+ ·03257,27752
1·00	0	0	0

The above Table will give $\hat{\rho}$ correct to five figures if $n = 25$ or over and correct to four figures if $n = 10$ or over. It is best not to interpolate for the separate λ's, but for the function as a whole.

TABLE LII. *Values of* γ_1.

ρ = Multiple Correlation Coefficient in Parent Population.

N	$\rho=0$	$\rho=\cdot1$	$\rho=\cdot2$	$\rho=\cdot3$	$\rho=\cdot4$	$\rho=\cdot5$	$\rho=\cdot6$	$\rho=\cdot7$	$\rho=\cdot8$	$\rho=\cdot9$	$\rho=1\cdot0$
3	·500 0000^e	·497 4916	·489 8639	·476 7929	·457 6776	·431 5231	·396 6996	·350 4140	·287 3394	·194 7771	$\gamma_1=0$ throughout
4	·666 6667	·662 6552	·650 4805–	·629 7020	·599 5127	·558 6019	·504 8836	·434 9287	·342 5947	·214 7098	
5	·750 0000^e	·744 9874	·729 7967	·703 9493	·666 5772	·616 2920	·550 9352	·467 0746	·358 8647	·214 7865–	
6	·800 0000	·794 2730	·776 9367	·747 5077	·705 1162	·648 3886	·575 2286	·482 3934	·364 5810	·212 0292	
7	·833 3333	·827 0708	·808 1306	·776 0392	·729 9499	·668 5399	·589 8216	·490 7889	·366 6893	·209 2399	
8	·857 1429	·850 4640	·830 2798	·796 1328	·747 2098	·682 2515–	·599 3905–	·495 8553	·367 3848	·206 8786	
9	·875 0000	·867 9883	·846 8112	·811 0298	·759 8680	·692 1325–	·606 0737	·499 1362	·367 4822	·204 9492	
10	·888 8889	·881 6049	·859 6170	·822 5056	·769 5313	·699 5654	·610 9686	·501 3787	·367 3186	·203 3748	
11	·900 0000	·892 4893	·869 8268	·831 6120	·777 1412	·705 3462	·614 6887	·502 9781	·367 0441	·202 0788	
12	·909 0909	·901 3883	·878 1560	·839 0113	·783 2842	·709 9629	·617 6007	·504 1586	·366 7291	·200 9995–	
13	·916 6667	·908 7997	·885 0795+	·845 1405–	·788 3441	·713 7305+	·619 9357	·505 0551	·366 4072	·200 0899	
14	·923 0769	·915 0675–	·890 9251	·850 2997	·792 5824	·716 8607	·621 8458	·505 7521	·366 0942	·199 3146	
15	·928 5714	·920 4374	·895 9258	·854 7017	·796 1830	·719 5009	·623 4348	·506 3051	·365 7975+	·198 6470	
16	·933 3333	·925 0894	·900 2524	·858 5012	·799 2788	·721 7567	·624 7757	·506 7515+	·365 5199	·198 0666	
17	·937 5000^e	·929 1583	·904 0324	·861 8137	·801 9687	·723 7055+	·625 9214	·507 1173	·365 2619	·197 5579	
18	·941 1765–	·932 7474	·907 3630	·864 7270	·804 3271	·725 4056	·626 9108	·507 4209	·365 0229	·197 1085+	
19	·944 4444	·935 9367	·910 3200	·867 3089	·806 4115–	·726 9012	·627 7733	·507 6759	·364 8018	·196 7089	
20	·947 3684	·938 7895	·912 9627	·869 6130	·808 2668	·728 2269	·628 5313	·507 8923	·364 5972	·196 3513	
21	·950 0000^e	·941 3564	·915 3387	·871 6815+	·809 9288	·729 4099	·629 2029	·508 0776	·364 4077	·196 0294	
22	·952 3810	·943 6783	·917 4864	·873 5489	·811 4260	·730 4719	·629 8016	·508 2377	·364 2320	·195 7384	
23	·954 5455–	·945 7887	·919 4371	·875 2431	·812 7817	·731 4305–	·630 3382	·508 3768	·364 0689	·195 4738	
24	·956 5217	·947 7152	·921 2169	·876 7871	·814 0150–	·732 2999	·630 8217	·508 4988	·363 9171	·195 2325–	
25	·958 3333	·949 4809	·922 8471	·878 1999	·815 1417	·733 0921	·631 2607	·508 6062	·363 7757	·195 0113	
50	·979 5918	·970 1765+	·941 8878	·894 5964	·828 0836	·742 0365+	·636 0401	·509 5673	·361 9643	·192 4322	
100	·989 8990	·980 1941	·951 0569	·902 4191	·834 1662	·746 1358	·638 1161	·509 8429	·360 9965–	·191 1971	
200	·994 9748	·985 1232	·955 5563	·906 2394	·837 1137	·748 0967	·639 0813	·509 9355–	·360 5013	·190 5938	
400	·997 4937	·987 5681	·957 7851	·908 1271	·838 5644	·749 0554	·639 5464	·509 9712	·360 2513	·190 2957	

TABLE LII *bis*. *Values of* γ_2.

ρ = multiple correlation coefficient in parent population.

N	$\rho=0$	$\rho=\cdot1$	$\rho=\cdot2$	$\rho=\cdot3$	$\rho=\cdot4$	$\rho=\cdot5$	$\rho=\cdot6$	$\rho=\cdot7$	$\rho=\cdot8$	$\rho=\cdot9$	$\rho=1\cdot0$
3	·375 0000[e]	·372 4937	·364 8983	·351 9747	·333 2885	·308 1460	·275 4675	·233 5373	·179 4323	·107 3932	$\gamma_2=0$ throughout
4	·533 3333	·528 7543	·514 9245	·491 5596	·458 1615	·413 9809	·357 9592	·288 6614	·204 2769	·103 3340	
5	·625 0000[e]	·618 7437	·599 9000	·568 2444	·523 4070	·464 8896	·392 1267	·304 6799	·202 9060	·090 7534	
6	·685 7143	·678 0919	·655 1842	·616 8793	·563 0261	·493 5091	·408 4240	·308 5062	·196 3093	·080 2621	
7	·729 1667	·720 4167	·694 1694	·650 4492	·589 3602	·511 2142	·416 8017	·307 9994	·189 2911	·072 4402	
8	·761 9048	·752 2115	·723 1804	·674 9803	·607 9805	·522 9222	·421 2652	·305 9241	·182 9972	·066 6492	
9	·787 5000[e]	·777 0076	·745 6250	·693 6651	·621 7588	·531 0590	·423 6466	·303 3544	·177 6088	·062 2889	
10	·808 0808	·796 9032	·763 5103	·708 3551	·632 3174	·536 9375	·424 8626	·300 7280	·173 0497	·058 9315	
11	·825 0000[e]	·813 2292	·778 0992	·720 1968	·640 6374	·541 3193	·425 4021	·298 2218	·169 1896	·056 2887	
12	·839 1608	·826 8713	·790 2266	·729 9390	·647 3439	·544 6706	·425 5401	·295 9003	·165 9037	·054 1657	
13	·851 1905	·838 4441	·800 4668	·738 0896	·652 8528	·547 2896	·425 4371	·293 7793	·163 0858	·052 4291	
14	·861 5384	·848 3864	·809 2288	·745 0063	·657 4508	·549 3742	·425 1897	·291 8522	·160 6501	·050 9860	
15	·870 5357	·857 0213	·816 8104	·750 9476	·661 3413	·551 0599	·424 8575	·290 1046	·158 5286	·049 7700	
16	·878 4314	·864 5913	·823 4353	·756 1045	·664 6719	·552 4422	·424 4778	·288 5192	·156 6673	·048 7326	
17	·885 4167	·871 2823	·829 2736	·760 6217	·667 5529	·553 5893	·424 0747	·287 0785	·155 0230	·047 8384	
18	·891 6409	·877 2395	·834 4572	·764 6106	·670 0676	·554 5517	·423 6630	·285 7662	·153 5612	·047 0598	
19	·897 2221	·882 5772	·839 0908	·768 1579	·672 2801	·555 3668	·423 2526	·284 5679	·152 2541	·046 3765	
20	·902 2556	·887 3877	·843 2571	·771 3331	·674 2408	·556 0630	·422 8491	·283 4706	·151 0788	·045 7721	
21	·906 8182	·891 7453	·847 0233	·774 1910	·675 9898	·556 6624	·422 4575	·282 4630	·150 0169	·045 2338	
22	·910 9731	·895 7098	·850 4445	·776 7769	·677 5588	·557 1820	·422 0789	·281 5353	·149 0532	·044 7517	
23	·914 7728	·899 3363	·853 5659	·779 1278	·678 9738	·557 6355	·421 7147	·280 6785	·148 1749	·044 3171	
24	·918 2608	·902 6624	·856 4254	·781 2741	·680 2560	·558 0334	·421 3656	·279 8856	·147 3711	·043 9240	
25	·921 4743	·905 7253	·859 0544	·783 2410	·681 4230	·558 3846	·421 0318	·279 1496	·146 6331	·043 5661	
50	·960 3841	·942 6956	·890 4692	·806 2600	·694 4546	·561 4768	·416 1002	·269 9046	·137 9239	·039 5739	
100	·980 0980	·961 3408	·906 0742	·817 3368	·700 2710	·562 2454	·413 0324	·265 0540	·133 7050−	·037 7758	
200	·990 0248	·970 7058	·913 8476	·822 7588	·702 9974	·562 4365+	·411 3599	·262 5877	·131 6374	·036 9231	
400	·995 0062	·975 3992	·917 7265+	·825 4397	·704 3143	·562 4842	·410 4906	·261 3463	·130 6148	·036 5079	

TABLE LIII.

Inverse Factorials (Glaisher's Table).

n	$1/n!$	n	$1/n!$
1	1·000 000 000 000	*26*	0·247 959 626 322/10^{26}
2	0·500 000 000 000	*27*	0·918 368 986 380/10^{28}
3	0·166 666 666 667	*28*	0·327 988 923 707/10^{29}
4	0·416 666 666 667/10	*29*	0·113 099 628 864/10^{30}
5	0·833 333 333 333/10^{2}	*30*	0·376 998 762 882/10^{32}
6	0·138 888 888 889/10^{2}	*31*	0·121 612 504 155/10^{33}
7	0·198 412 698 413/10^{3}	*32*	0·380 039 075 485/10^{35}
8	0·248 015 873 016/10^{4}	*33*	0·115 163 356 208/10^{36}
9	0·275 573 192 240/10^{5}	*34*	0·338 715 753 552/10^{38}
10	0·275 573 192 240/10^{6}	*35*	0·967 759 295 863/10^{40}
11	0·250 521 083 854/10^{7}	*36*	0·268 822 026 629/10^{41}
12	0·208 767 569 879/10^{8}	*37*	0·726 546 017 915/10^{43}
13	0·160 590 438 368/10^{9}	*38*	0·191 196 320 504/10^{44}
14	0·114 707 455 977/10^{10}	*39*	0·490 246 975 651/10^{46}
15	0·764 716 373 182/10^{12}	*40*	0·122 561 743 913/10^{47}
16	0·477 947 733 239/10^{13}	*41*	0·298 931 082 714/10^{49}
17	0·281 145 725 435/10^{14}	*42*	0·711 740 673 129/10^{51}
18	0·156 192 069 686/10^{15}	*43*	0·165 521 086 774/10^{52}
19	0·822 063 524 662/10^{17}	*44*	0·376 184 288 123/10^{54}
20	0·411 031 762 331/10^{18}	*45*	0·835 965 084 718/10^{56}
21	0·195 729 410 634/10^{19}	*46*	0·181 731 540 156/10^{57}
22	0·889 679 139 245/10^{21}	*47*	0·386 662 851 396/10^{59}
23	0·386 817 017 063/10^{22}	*48*	0·805 547 607 075/10^{61}
24	0·161 173 757 110/10^{23}	*49*	0·164 397 470 832/10^{62}
25	0·644 695 028 438/10^{25}	*50*	0·328 794 941 663/10^{64}

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TABLE LIV.

Reciprocals of the First Hundred Integers, to 12, 16 *and* 20 *decimal places.*

1	1·0000 0000 0000 0000 0000	51	·0196 0784 3137 2549 0196
2	·5000 0000 0000 0000 0000	52	·0192 3076 9230* 7692 3077
3	·3333 3333 3333 3333 3333	53	·0188 6792 4528 3018† 8679
4	·2500 0000 0000 0000 0000	54	·0185 1851 8518* 5185 1852
5	·2000 0000 0000 0000 0000	55	·0181 8181 8181* 8181† 8182
6	·1666 6666 6666* 6666† 6667	56	·0178 5714 2857 1428† 5714
7	·1428 5714 2857 1428† 5714	57	·0175 4385 9649 1228 0702
8	·1250 0000 0000 0000 0000	58	·0172 4137 9310 3448 2759
9	·1111 1111 1111 1111 1111	59	·0169 4915 2542 3728† 8136
10	·1000 0000 0000 0000 0000	60	·0166 6666 6666* 6666† 6667
11	·0909 0909 0909 0909 0909	61	·0163 9344 2622* 9508 1967
12	·0833 3333 3333 3333 3333	62	·0161 2903 2258 0645 1613
13	·0769 2307 6923 0769 2308	63	·0158 7301 5873 0158† 7302
14	·0714 2857 1428* 5714 2857	64	·0156 2500 0000 0000 0000
15	·0666 6666 6666* 6666† 6667	65	·0153 8461 5384* 6153† 8462
16	·0625 0000 0000 0000 0000	66	·0151 5151 5151* 5151† 5152
17	·0588 2352 9411* 7647 0588	67	·0149 2537 3134 3283† 5821
18	·0555 5555 5555* 5555† 5556	68	·0147 0588 2352* 9411† 7647
19	·0526 3157 8947 3684 2105+	69	·0144 9275 3623 1884 0580
20	·0500 0000 0000 0000 0000	70	·0142 8571 4285* 7142† 8571
21	·0476 1904 7619 0476 1905−	71	·0140 8450 7042 2535 2113
22	·0454 5454 5454* 5454† 5455−	72	·0138 8888 8888* 8888† 8889
23	·0434 7826 0869* 5652 1739	73	·0136 9863 0136* 9863 0137
24	·0416 6666 6666* 6666† 6667	74	·0135 1351 3513* 5135 1351
25	·0400 0000 0000 0000 0000	75	·0133 3333 3333 3333 3333
26	·0384 6153 8461* 5384† 6154	76	·0131 5789 4736* 8421 0526
27	·0370 3703 7037 0370 3704	77	·0129 8701 2987 0129† 8701
28	·0357 1428 5714 2857 1429	78	·0128 2051 2820* 5128 2051
29	·0344 8275 8620* 6896† 5517	79	·0126 5822 7848 1012† 6582
30	·0333 3333 3333 3333 3333	80	·0125 0000 0000 0000 0000
31	·0322 5806 4516 1290 3226	81	·0123 4567 9012 3456† 7901
32	·0312 5000 0000 0000 0000	82	·0121 9512 1951 2195 1220
33	·0303 0303 0303 0303 0303	83	·0120 4819 2771 0843 3735−
34	·0294 1176 4705* 8823† 5294	84	·0119 0476 1904* 7619 0476
35	·0285 7142 8571 4285† 7143	85	·0117 6470 5882 3529 4118
36	·0277 7777 7777* 7777† 7778	86	·0116 2790 6976* 7441† 8605−
37	·0270 2702 7027 0270 2703	87	·0114 9425 2873* 5632 1839
38	·0263 1578 9473* 6842 1052	88	·0113 6363 6363* 6363† 6364
39	·0256 4102 5641 0256 4103	89	·0112 3595 5056 1797† 7528
40	·0250 0000 0000 0000 0000	90	·0111 1111 1111 1111 1111
41	·0243 9024 3902 4390 2439	91	·0109 8901 0989 0109† 8901
42	·0238 0952 3809* 5238 0952	92	·0108 6956 5217 3913 0435−
43	·0232 5581 3953 4883† 7209	93	·0107 5268 8172 0430 1075+
44	·0227 2727 2727 2727 2727	94	·0106 3829 7872 3404 2553
45	·0222 2222 2222 2222 2222	95	·0105 2631 5789 4736 8421
46	·0217 3913 0434* 7826 0870	96	·0104 1666 6666* 6666† 6667
47	·0212 7659 5744* 6808† 5106	97	·0103 0927 8350* 5154† 6392
48	·0208 3333 3333 3333 3333	98	·0102 0408 1632* 6530† 6122
49	·0204 0816 3265 3061 2245−	99	·0101 0101 0101 0101 0101
50	·0200 0000 0000 0000 0000	100	·0100 0000 0000 0000 0000

The dots above the figures mark in the usual manner the figures which recur. The asterisks mark figures which must be raised by unity, if the corresponding reciprocals be used to twelve figures only, while the daggers refer in like manner to figures which must be raised by unity when the values are used to sixteen figures. The recurrence dots enable 75 °/₀ of the entries to be used to any number of figures beyond twenty that may be desired

TABLE LV. *The First Ten Powers of the First Hundred Natural Numbers.*

1ST POW.	2ND POWER.	3RD POWER.	4TH POWER.	5TH POWER.	6TH POWER.
1	1	1	1	1	1
2	4	8	16	32	64
3	9	27	81	243	729
4	16	64	256	1 024	4 096
5	25	125	625	3 125	15 625
6	36	216	1 296	7 776	46 656
7	49	343	2 401	16 807	117 649
8	64	512	4 096	32 768	262 144
9	81	729	6 561	59 049	531 441
10	100	1 000	10 000	100 000	1 000 000
11	121	1 331	14 641	161 051	1 771 561
12	144	1 728	20 736	248 832	2 985 984
13	169	2 197	28 561	371 293	4 826 809
14	196	2 744	38 416	537 824	7 529 536
15	225	3 375	50 625	759 375	11 390 625
16	256	4 096	65 536	1 048 576	16 777 216
17	289	4 913	83 521	1 419 857	24 137 569
18	324	5 832	104 976	1 889 568	34 012 224
19	361	6 859	130 321	2 476 099	47 045 881
20	400	8 000	160 000	3 200 000	64 000 000
21	441	9 261	194 481	4 084 101	85 766 121
22	484	10 648	234 256	5 153 632	113 379 904
23	529	12 167	279 841	6 436 343	148 035 889
24	576	13 824	331 776	7 962 624	191 102 976
25	625	15 625	390 625	9 765 625	244 140 625
26	676	17 576	456 976	11 881 376	308 915 776
27	729	19 683	531 441	14 348 907	387 420 489
28	784	21 952	614 656	17 210 368	481 890 304
29	841	24 389	707 281	20 511 149	594 823 321
30	900	27 000	810 000	24 300 000	729 000 000
31	961	29 791	923 521	28 629 151	887 503 681
32	1 024	32 768	1 048 576	33 554 432	1 073 741 824
33	1 089	35 937	1 185 921	39 135 393	1 291 467 969
34	1 156	39 304	1 336 336	45 435 424	1 544 804 416
35	1 225	42 875	1 500 625	52 521 875	1 838 265 625
36	1 296	46 656	1 679 616	60 466 176	2 176 782 336
37	1 369	50 653	1 874 161	69 343 957	2 565 726 409
38	1 444	54 872	2 085 136	79 235 168	3 010 936 384
39	1 521	59 319	2 313 441	90 224 199	3 518 743 761
40	1 600	64 000	2 560 000	102 400 000	4 096 000 000
41	1 681	68 921	2 825 761	115 856 201	4 750 104 241
42	1 764	74 088	3 111 696	130 691 232	5 489 031 744
43	1 849	79 507	3 418 801	147 008 443	6 321 363 049
44	1 936	85 184	3 748 096	164 916 224	7 256 313 856
45	2 025	91 125	4 100 625	184 528 125	8 303 765 625
46	2 116	97 336	4 477 456	205 962 976	9 474 296 896
47	2 209	103 823	4 879 681	229 345 007	10 779 215 329
48	2 304	110 592	5 308 416	254 803 968	12 230 590 464
49	2 401	117 649	5 764 801	282 475 249	13 841 287 201
50	2 500	125 000	6 250 000	312 500 000	15 625 000 000

TABLE LV.—(*continued*).

1ST POW.	7TH POWER.	8TH POWER.	9TH POWER.	10TH POWER.
1	1	1	1	1
2	128	256	512	1 024
3	2 187	6 561	19 683	59 049
4	16 384	65 536	262 144	1 048 576
5	78 125	390 625	1 953 125	9 765 625
6	279 936	1 679 616	10 077 696	60 466 176
7	823 543	5 764 801	40 353 607	282 475 249
8	2 097 152	16 777 216	134 217 728	1 073 741 824
9	4 782 969	43 046 721	387 420 489	3 486 784 401
10	10 000 000	100 000 000	1 000 000 000	10 000 000 000
11	19 487 171	214 358 881	2 357 947 691	25 937 424 601
12	35 831 808	429 981 696	5 159 780 352	61 917 364 224
13	62 748 517	815 730 721	10 604 499 373	137 858 491 849
14	105 413 504	1 475 789 056	20 661 046 784	289 254 654 976
15	170 859 375	2 562 890 625	38 443 359 375	576 650 390 625
16	268 435 456	4 294 967 296	68 719 476 736	1 099 511 627 776
17	410 338 673	6 975 757 441	118 587 876 497	2 015 993 900 449
18	612 220 032	11 019 960 576	198 359 290 368	3 570 467 226 624
19	893 871 739	16 983 563 041	322 687 697 779	6 131 066 257 801
20	1 280 000 000	25 600 000 000	512 000 000 000	10 240 000 000 000
21	1 801 088 541	37 822 859 361	794 280 046 581	16 679 880 978 201
22	2 494 357 888	54 875 873 536	1 207 269 217 792	26 559 922 791 424
23	3 404 825 447	78 310 985 281	1 801 152 661 463	41 426 511 213 649
24	4 586 471 424	110 075 314 176	2 641 807 540 224	63 403 380 965 376
25	6 103 515 625	152 587 890 625	3 814 697 265 625	95 367 431 640 625
26	8 031 810 176	208 827 064 576	5 429 503 678 976	141 167 095 653 376
27	10 460 353 203	282 429 536 481	7 625 597 484 987	205 891 132 094 649
28	13 492 928 512	377 801 998 336	10 578 455 953 408	296 196 766 695 424
29	17 249 876 309	500 246 412 961	14 507 145 975 869	420 707 233 300 201
30	21 870 000 000	656 100 000 000	19 683 000 000 000	590 490 000 000 000
31	27 512 614 111	852 891 037 441	26 439 622 160 671	819 628 286 980 801
32	34 359 738 368	1 099 511 627 776	35 184 372 088 832	1 125 899 906 842 624
33	42 618 442 977	1 406 408 618 241	46 411 484 401 953	1 531 578 985 264 449
34	52 523 350 144	1 785 793 904 896	60 716 992 766 464	2 064 377 754 059 776
35	64 339 296 875	2 251 875 390 625	78 815 638 671 875	2 758 547 353 515 625
36	78 364 164 096	2 821 109 907 456	101 559 956 668 416	3 656 158 440 062 976
37	94 931 877 133	3 512 479 453 921	129 961 739 795 077	4 808 584 372 417 849
38	114 415 582 592	4 347 792 138 496	165 216 101 262 848	6 278 211 847 988 224
39	137 231 006 679	5 352 009 260 481	208 728 361 158 759	8 140 406 085 191 601
40	163 840 000 000	6 553 600 000 000	262 144 000 000 000	10 485 760 000 000 000
41	194 754 273 881	7 984 925 229 121	327 381 934 393 961	13 422 659 310 152 401
42	230 539 333 248	9 682 651 996 416	406 671 383 849 472	17 080 198 121 677 824
43	271 818 611 107	11 688 200 277 601	502 592 611 936 843	21 611 482 313 284 249
44	319 277 809 664	14 048 223 625 216	618 121 839 509 504	27 197 360 938 418 176
45	373 669 453 125	16 815 125 390 625	756 680 642 578 125	34 050 628 916 015 625
46	435 817 657 216	20 047 612 231 936	922 190 162 669 056	42 420 747 482 776 576
47	506 623 120 463	23 811 286 661 761	1 119 130 473 102 767	52 599 132 235 830 049
48	587 068 342 272	28 179 280 429 056	1 352 605 460 594 688	64 925 062 108 545 024
49	678 223 072 849	33 232 930 569 601	1 628 413 597 910 449	79 792 266 297 612 001
50	781 250 000 000	39 062 500 000 000	1 953 125 000 000 000	97 656 250 000 000 000

TABLE LV.—(*continued*).

1ST POW.	2ND POWER.	3RD POWER.	4TH POWER.	5TH POWER.	6TH POWER.
51	2 601	132 651	6 765 201	345 025 251	17 596 287 801
52	2 704	140 608	7 311 616	380 204 032	19 770 609 664
53	2 809	148 877	7 890 481	418 195 493	22 164 361 129
54	2 916	157 464	8 503 056	459 165 024	24 794 911 296
55	3 025	166 375	9 150 625	503 284 375	27 680 640 625
56	3 136	175 616	9 834 496	550 731 776	30 840 979 456
57	3 249	185 193	10 556 001	601 692 057	34 296 447 249
58	3 364	195 112	11 316 496	656 356 768	38 068 692 544
59	3 481	205 379	12 117 361	714 924 299	42 180 533 641
60	3 600	216 000	12 960 000	777 600 000	46 656 000 000
61	3 721	226 981	13 845 841	844 596 301	51 520 374 361
62	3 844	238 328	14 776 336	916 132 832	56 800 235 584
63	3 969	250 047	15 752 961	992 436 543	62 523 502 209
64	4 096	262 144	16 777 216	1 073 741 824	68 719 476 736
65	4 225	274 625	17 850 625	1 160 290 625	75 418 890 625
66	4 356	287 496	18 974 736	1 252 332 576	82 653 950 016
67	4 489	300 763	20 151 121	1 350 125 107	90 458 382 169
68	4 624	314 432	21 381 376	1 453 933 568	98 867 482 624
69	4 761	328 509	22 667 121	1 564 031 349	107 918 163 081
70	4 900	343 000	24 010 000	1 680 700 000	117 649 000 000
71	5 041	357 911	25 411 681	1 804 229 351	128 100 283 921
72	5 184	373 248	26 873 856	1 934 917 632	139 314 069 504
73	5 329	389 017	28 398 241	2 073 071 593	151 334 226 289
74	5 476	405 224	29 986 576	2 219 006 624	164 206 490 176
75	5 625	421 875	31 640 625	2 373 046 875	177 978 515 625
76	5 776	438 976	33 362 176	2 535 525 376	192 699 928 576
77	5 929	456 533	35 153 041	2 706 784 157	208 422 380 089
78	6 084	474 552	37 015 056	2 887 174 368	225 199 600 704
79	6 241	493 039	38 950 081	3 077 056 399	243 087 455 521
80	6 400	512 000	40 960 000	3 276 800 000	262 144 000 000
81	6 561	531 441	43 046 721	3 486 784 401	282 429 536 481
82	6 724	551 368	45 212 176	3 707 398 432	304 006 671 424
83	6 889	571 787	47 458 321	3 939 040 643	326 940 373 369
84	7 056	592 704	49 787 136	4 182 119 424	351 298 031 616
85	7 225	614 125	52 200 625	4 437 053 125	377 149 515 625
86	7 396	636 056	54 700 816	4 704 270 176	404 567 235 136
87	7 569	658 503	57 289 761	4 984 209 207	433 626 201 009
88	7 744	681 472	59 969 536	5 277 319 168	464 404 086 784
89	7 921	704 969	62 742 241	5 584 059 449	496 981 290 961
90	8 100	729 000	65 610 000	5 904 900 000	531 441 000 000
91	8 281	753 571	68 574 961	6 240 321 451	567 869 252 041
92	8 464	778 688	71 639 296	6 590 815 232	606 355 001 344
93	8 649	804 357	74 805 201	6 956 883 693	646 990 183 449
94	8 836	830 584	78 074 896	7 339 040 224	689 869 781 056
95	9 025	857 375	81 450 625	7 737 809 375	735 091 890 625
96	9 216	884 736	84 934 656	8 153 726 976	782 757 789 696
97	9 409	912 673	88 529 281	8 587 340 257	832 972 004 929
98	9 604	941 192	92 236 816	9 039 207 968	885 842 380 864
99	9 801	970 299	96 059 601	9 509 900 499	941 480 149 401
100	10 000	1 000 000	100 000 000	10 000 000 000	1 000 000 000 000

TABLE LV.—(*continued*).

1ST POW.	7TH POWER.	8TH POWER.	9TH POWER.	10TH POWER.
51	897 410 677 851	45 767 944 570 401	2 334 165 173 090 451	119 042 423 827 613 00
52	1 028 071 702 528	53 459 728 531 456	2 779 905 883 635 712	144 555 105 949 057 02
53	1 174 711 139 837	62 259 690 411 361	3 299 763 591 802 133	174 887 470 365 513 04
54	1 338 925 209 984	72 301 961 339 136	3 904 305 912 313 344	210 832 519 264 920 57
55	1 522 435 234 375	83 733 937 890 625	4 605 366 583 984 375	253 295 162 119 140 62
56	1 727 094 849 536	96 717 311 574 016	5 416 169 448 144 896	303 305 489 096 114 17
57	1 954 897 493 193	111 429 157 112 001	6 351 461 955 384 057	362 033 331 456 891 24
58	2 207 984 167 552	128 063 081 718 016	7 427 658 739 644 928	430 804 206 899 405 82
59	2 488 651 484 819	146 830 437 604 321	8 662 995 818 654 939	511 116 753 300 641 40
60	2 799 360 000 000	167 961 600 000 000	10 077 696 000 000 000	604 661 760 000 000 00
61	3 142 742 836 021	191 707 312 997 281	11 694 146 092 834 141	713 342 911 662 882 60
62	3 521 614 606 208	218 340 105 584 896	13 537 086 546 263 552	839 299 365 868 340 22
63	3 938 980 639 167	248 155 780 267 521	15 633 814 156 853 823	984 930 291 881 790 84
64	4 398 046 511 104	281 474 976 710 656	18 014 398 509 481 984	1 152 921 504 606 846 97
65	4 902 227 890 625	318 644 812 890 625	20 711 912 837 890 625	1 346 274 334 462 890 62
66	5 455 160 701 056	360 040 606 269 696	23 762 680 013 799 936	1 568 336 880 910 795 77
67	6 060 711 605 323	406 067 677 556 641	27 206 534 396 294 947	1 822 837 804 551 761 44
68	6 722 988 818 432	457 163 239 653 376	31 087 100 296 429 568	2 113 922 820 157 210 62
69	7 446 353 252 589	513 798 374 428 641	35 452 087 835 576 229	2 446 194 060 654 759 80
70	8 235 430 000 000	576 480 100 000 000	40 353 607 000 000 000	2 824 752 490 000 000 00
71	9 095 120 158 391	645 753 531 245 761	45 848 500 718 449 031	3 255 243 551 009 881 20
72	10 030 613 004 288	722 204 136 308 736	51 998 697 814 228 992	3 743 906 242 624 487 42
73	11 047 398 519 097	806 460 091 894 081	58 871 586 708 267 913	4 297 625 829 703 557 64
74	12 151 280 273 024	899 194 740 203 776	66 540 410 775 079 424	4 923 990 397 355 877 37
75	13 348 388 671 875	1 001 129 150 390 625	75 084 686 279 296 875	5 631 351 470 947 265 62
76	14 645 194 571 776	1 113 034 787 454 976	84 590 643 846 578 176	6 428 888 932 339 941 37
77	16 048 523 266 853	1 235 736 291 547 681	95 151 694 449 171 437	7 326 680 472 586 200 64
78	17 565 568 854 912	1 370 114 370 683 136	106 868 920 913 284 608	8 335 775 831 236 199 42
79	19 203 908 986 159	1 517 108 809 906 561	119 851 595 982 618 319	9 468 276 082 626 847 20
80	20 971 520 000 000	1 677 721 600 000 000	134 217 728 000 000 000	10 737 418 240 000 000 00
81	22 876 792 454 961	1 853 020 188 851 841	150 094 635 296 999 121	12 157 665 459 056 928 80
82	24 928 547 056 768	2 044 140 858 654 976	167 619 550 409 708 032	13 744 803 133 596 058 62
83	27 136 050 989 627	2 252 292 232 139 041	186 940 255 267 540 403	15 516 041 187 205 853 44
84	29 509 034 655 744	2 478 758 911 082 496	208 215 748 530 929 664	17 490 122 876 598 091 77
85	32 057 708 828 125	2 724 905 250 390 625	231 616 946 283 203 125	19 687 440 434 072 265 62
86	34 792 782 221 696	2 992 179 271 065 856	257 327 417 311 663 616	22 130 157 888 803 070 97
87	37 725 479 487 783	3 282 116 715 437 121	285 544 154 243 029 527	24 842 341 419 143 568 84
88	40 867 559 636 992	3 596 345 243 055 296	316 478 381 828 866 048	27 850 097 600 940 212 22
89	44 231 334 895 529	3 936 588 805 702 081	350 356 403 707 485 209	31 181 719 929 966 183 60
90	47 829 690 000 000	4 304 672 100 000 000	387 420 489 000 000 000	34 867 844 010 000 000 00
91	51 676 101 935 731	4 702 525 276 151 521	427 929 800 129 788 411	38 941 611 811 810 745 40
92	55 784 660 123 648	5 132 188 731 375 616	472 161 363 286 556 672	43 438 845 422 363 213 82
93	60 170 087 060 757	5 595 818 096 650 401	520 411 082 988 487 293	48 398 230 717 929 318 24
94	64 847 759 419 264	6 095 689 385 410 816	572 994 802 228 616 704	53 861 511 409 489 970 17
95	69 833 729 609 375	6 634 204 312 890 625	630 249 409 724 609 375	59 873 693 923 837 890 62
96	75 144 747 810 816	7 213 895 789 838 336	692 533 995 824 480 256	66 483 263 599 150 104 57
97	80 798 284 478 113	7 837 433 594 376 961	760 231 058 654 565 217	73 742 412 689 492 826 04
98	86 812 553 324 672	8 507 630 225 817 856	833 747 762 130 149 888	81 707 280 688 754 689 02
99	93 206 534 790 699	9 227 446 944 279 201	913 517 247 483 640 899	90 438 207 500 880 449 00
100	100 000 000 000 000	10 000 000 000 000 000	1000 000 000 000 000 000	100 000 000 000 000 000 00

TABLE LVI.

Constants occasionally useful.

	Absolute Values	Logs
$\pi=$	3·14159 26535 89793 23846 26433 83280	0·49714 98726 94133 85435 12682 88291
$\frac{1}{\pi}=$	0·31830 98861 83790 67153 77675 26745	$\bar{1}$·50285 01273 05866 14564 87317 11709
$\frac{1}{2\pi}=$	0·15915 49430 91895 33576 88837 63373	$\bar{1}$·20182 01316 41884 95043 49928 16985
$\frac{1}{\sqrt{2\pi}}=$	0·39894 22804 01432 67793 99460 59938	$\bar{1}$·60091 00658 20942 47521 74964 08493
$\frac{180}{\pi}=$	57·29577 95130 82320 87679 81548 14111	1·75812 26324 09172 21545 25264 12944
$\sqrt{2}=$	1·41421 35623 73095 04880 16887 24210	0·15051 49978 31990 59760 68694 47362
$\frac{1}{\sqrt{2}}=$	0·70710 67811 86547 52440 08443 62105	$\bar{1}$·84948 50021 68009 40239 31305 52638
$\sqrt{\frac{2}{\pi}}=$	0·79788 45608 02865 35587 98921 19876	$\bar{1}$·90194 00614 84923 67043 12353 03217
mod $=\log_e 10=$	2·30258 50929 94045 68401 79914 54684	— — — —
mod $=\log_{10} e=$	0·43429 44819 03251 82765 11289 18917	— — — —
$e=$	2·71828 18284 59045 23536 02874 71353	0·43429 44819 03251 82765 11289 18917

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CHAPTER IX. Earl[illegible] [illegible]ic Researches searches. Trans[illegible] to Anthropolo[illegible]

[illegible]ical Investiga- [illegible]

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