

TABLES OF RANDOM NORMAL DEVIATES

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FOREWORD

The present series was published in 1934 in *Sankhyā*, Vol. 1, pp. 289-328, with an introduction explaining its uses and especially describing the results of elaborate statistical tests carried out on the series. These tests showed that the series was of satisfactory quality, which was, of course, somewhat equivalent to confirming the quality of Tippett's random numbers. Since then a number of persons, including some workers of the Indian Statistical Institute, have detected errors in the conversion work.¹

When we first became aware of the discrepancies we found that certain portions of the table had been changed in quite an arbitrary manner. In the early days of *Sankhyā*, we did not have a printing press of our own. We had purchased some mathematical and other types and we arranged for the matter to be composed in my own residence. The composed pages were then placed in flat boxes with closed covers and were carried to the Art Press where the printing was done. It is possible that some of the composed matter, but not all, had been accidentally disturbed at the last stage and the men on the spot had re-arranged the matter before printing it. We believe this is a plausible explanation.

Revised tables were accordingly prepared in the Institute in 1952. In 1954, it was learnt that Miss Lorrain Schwartz had independently prepared a set of the tables in the Statistical Laboratory at Berkeley, California. A copy of the revised table was then sent to Berkeley, and Professor Henry Scheffé in his letter of 4 June 1955 informed us that the two tables checked perfectly.

The revised table is now being published along with a fresh introduction. It has been considered advisable to re-examine the series. The tests applied are broadly similar to those applied on the other series of the same type, but naturally there are some differences in respect of details.

5 April, 1958

P. C. MAHALANOBIS

¹ Mr. Dan Teichroew, in a letter from North Carolina dated 10 May 1952 pointed out some discrepancies between the *Sankhyā* series and a short table by E. L. Dodd (based on Tippett's *Truc*) published in *Boletín Matemático*, Vol. 15, 1942.

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I. GENERAL INTRODUCTION

1.1. The advantages of having tables of random sampling numbers were first realised by Professor Karl Pearson, at whose instance L. H. C. Tippett compiled a set of 41,600 random digits about 1925 and published them as *Tracts for Computers*, no. XV, in 1927. Since then different series of such numbers have appeared, culminating in the publication by the RAND Corporation in 1955 of a series of 'a million random digits.'

1.2. Besides making possible for the first time the rapid and rigorous selection of (even large) samples from diverse kinds of existent populations, these numbers lent themselves to a variety of uses covered by the now familiar term "model sampling". Briefly, model sampling provides an experimental method for investigating sampling distributions of various statistics, and can therefore be used for demonstrating known results of sampling theory.

1.3. As much of statistical theory centres round the normal distribution, model sampling was soon found to involve, very frequently, the conversion of random numbers into random normal deviates, a process tedious for any large-scale work. This naturally suggested the systematic conversion of tables for random sampling numbers to derive corresponding tables for random normal deviates. The work was actually carried out with Tippett's series by P. C. Mahalanobis and others of the Indian Statistical Institute, and the resulting table of 10,400 deviates appeared in 1934, in *Sankhyā*, Vol. 1, pp. 289-328. The need for more extensive tables was felt by Wold in connection with studies in time series analysis. Wold (1948) converted Kendall and Babington Smith's (1939) table of 100,000 random digits into a table of 25,000 random normal deviates issued as *Tracts for Computers*, no. XXV. Still more extensive tables were required in connection with problems solved by what have come to be known as Monte Carlo methods, and recently the RAND Corporation has published a series of 100,000 such deviates derived from half of their 'a million random digits'.

1.4. Artificial random samples from a normal population are frequently used for the experimental confirmation and/or illustration of known *normal theory* results. They are also of use in obtaining information on theoretically or numerically intractable sampling distributions of statistics. As an important sub-class of this latter type of situations we have the case where only the limiting distribution (as 'sample size' n tends to infinity) is known, but one wants to know how far, and for what value of n onwards, this limiting distribution can be trusted. As emphasised by

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Wold, such experimental work on sampling distributions generally requires longer and more carefully constructed series of random normal deviates.

1.5. Classic examples of the use of model sampling experiments are provided by "Student's" pioneer work (Pearson and Wishart, 1942). (In the absence of random sampling numbers, Student used card sampling, cards corresponding to individuals of the existent population.) His paper on "The probable error of a mean" contained experimental confirmation of the theoretical results derived, the artificial samples being taken from an actual (bivariate) population very nearly normal. The same method was adopted in his paper entitled "Probable error of a correlation coefficient" to obtain preliminary insight into the exact distribution of sample correlation coefficient r in small samples for the case where the population correlation coefficient $\rho = 0$; and again, in a similar manner, for studying the Probable error of Dr. Spearman's correlation coefficient."

1.6. References (Hojo, 1931; Pepper, 1932; Pearson, 1932; Rider, 1932) cited at the end of this introduction contain further examples of model sampling experiments. In the absence of tables of random normal deviates, these investigations were done on the basis of Tippett's numbers.

1.7. Tables of random normal deviates are frequently used for constructing artificial time series for model sampling experiments. As examples one may cite the experimental studies on the applicability of large sample tests to time series of short length, and on the estimation of parameters in a recursive system (Matthai and Kansal, 1951; Rao and Som, 1951; Das, 1951).

2. CONSTRUCTION AND USES

2.1. The present tables have been constructed by the method indicated in (Illustration I, p. iv of) K. Pearson's foreword to Tippett's tables. Refinements of the type described in the introduction to Wold's series have not been adopted. However, this omission does not seem to have affected the quality of the series appreciably, as shown by the satisfactory results of tests of significance reported below, based on distributions of range for sample sizes $n = 10, 11, 12,$ and 15 .

2.2. The tables were constructed by punched card methods. Tippett's four-digit random numbers were punched into one set of cards, and the corresponding normal deviates were read off from The Kelley Statistical Tables (1948) transferred to another set of punched cards.¹

2.3. Any entry in the present table is a random sample from a normal population having zero mean and unit s.d. If x be the entry, then $m + \sigma x$ ($\sigma \geq 0$) gives a random sample from a normal population having mean m and s.d. σ .¹

¹ Instructions to Machine Tabulation Section were as follows:

"...This may be done by using Kelley's Table (already punched in cards) and collating the four-digit random numbers against Kelley's μ -values, when they (random numbers) are 5,000 or above, but against $(1-\mu)$ -values when they are less than 5,000. ...The normal deviate corresponding to random numbers equal to or exceeding 5,000 will be positive, while those corresponding to random numbers below 5,000 will be negative."

2.4. In order to form samples of any given size one may take the required number of entries vertically, horizontally or in any other way. Strictly, however, one should read the table vertically, exhausting one column after another, (this being the manner of using the table in carrying out the statistical tests,) although it is very unlikely that reading in other directions would lead to biased samples. In any case, it is not advisable to multiply the sample size by reading off the tables in various directions, for this might give rise to unwanted correlations. For large-scale work requiring larger number of deviates, one should use the other two tables.

2.5. The common procedure of 'opening at a page haphazardly etc.' may be refined as follows. First, select one plate number i at random from among plate numbers 1 to 28, then a column number j from among numbers 1 to 8, and lastly, one row number k from among 1 to 50. Then start at the k -th deviate from top along the j -th column of the i -th plate, and read vertically, exhausting one column before going to the top of the next.

2.6. The usual procedure of rounding can be followed when normal deviates with fewer places of decimals are wanted. As regards figures ending with a 5 (or 50), one might raise or keep unchanged the last figure to be retained according as the next deviate has the sign '+' or '-'.

2.7. A table of random normal deviates can be used for sampling from theoretical distributions related to the normal distribution, which between themselves cover a wide area of the Pearsonian family of curves. This indirect method may suffice for most investigations in non-normal theory.

2.8. Another use of random normal deviates has been described in the introduction to Wold's table. Suppose one requires to draw a random sample from a four-variate normal population, with means 2.5, -17.2, 24.0 and 140.0 respectively, and a dispersion matrix

$$\Lambda = \begin{pmatrix} 32.95 & 7.43 & 1.78 & 3.97 \\ 7.43 & 10.24 & 1.17 & 2.43 \\ 1.78 & 1.17 & 3.06 & 1.78 \\ 3.97 & 2.43 & 1.78 & 12.25 \end{pmatrix}$$

The first step is to find a triangular matrix of the form

$$P = \begin{pmatrix} p_{11} & - & - & - \\ p_{21} & p_{22} & - & - \\ p_{31} & p_{32} & p_{33} & - \\ p_{41} & p_{42} & p_{43} & p_{44} \end{pmatrix}$$

such that $PP' = \Lambda$, where P' is the transpose of P . The solutions come out as follows :

$$P = \begin{pmatrix} 5.740209 & - & - & - \\ 1.294378 & 2.926531 & - & - \\ 0.310093 & 0.262639 & 1.701430 & - \\ 0.691612 & 0.524441 & 0.839175 & 3.285182 \end{pmatrix}$$

¹ Throughout the table, '+' and '-' signs of deviates have been indicated by codes '1' and '2' respectively. (Vide footnotes on any plate.)

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One has then to read four values of random normal deviates denoted by say, x_1 , x_2 , x_3 and x_4 . Suppose $x_1 = -1.194$, $x_2 = -1.406$, $x_3 = 0.868$, and $x_4 = 0.076$. If now one calculates

$$y_1 = p_{11}x_1 + 2.5 = -4.354,$$

$$y_2 = p_{21}x_1 + p_{22}x_2 - 17.2 = -22.860,$$

$$y_3 = p_{31}x_1 + p_{32}x_2 + p_{33}x_3 + 24.0 = 24.737,$$

$$y_4 = p_{41}x_1 + p_{42}x_2 + p_{43}x_3 + p_{44}x_4 + 140.0 = 138.016.$$

then (y_1, y_2, y_3, y_4) is a random sample from the multi-normal population specified above.

2.9. As mentioned in Karl Pearson's foreword to Tippet's *Tracts*, and later, more explicitly, in the introduction to Kendall and Babington Smith's *Tracts*, all the small sub-samples of random digits or random normal deviates in such tables are not expected to pass any or all statistical test or tests. Rather if the construction of the tables has been alright, a proportion of sub-samples (indicated by the level of significance) should fail to satisfy the test. These patches are not suitable for use by themselves but should in all fairness be included when large number of deviates are being utilised.

2.10. Sub-samples failing to satisfy the different tests of (local) quality at the 1% level of significance are listed below. Notes are also being given on the body of the tables at appropriate places.

1. Plate nos. 7 (whole) and 8 (cols. 1 to 4): failed in tests based on range with sample size $n=6$ (see below).

2. Plate no. 17 (whole): —do— with $n=2$.

3. THE NORMALITY OF THE SAMPLE

3.1. The value of the present table depends on how far the deviates are independent random samples from a standard normal population. This point has been tested in two different ways, both of which involved heavy computational labour. The first was to compare the frequency distribution of these deviates with the theoretical distribution, for the whole sample and its various sub-samples. The other was to use these tables for model sampling experiments on the distribution of range (for various sizes of samples) and then to compare the distributions of range thus obtained with the known normal theory distributions tabulated by Pearson and Hartley (1942). These two series of tests are being reported in this and in the following sections.

3.2. In preparing frequency distributions of the deviates the intervals used were of length 0.2, i.e. one-fifth of the standard deviation, which is, of course, quite adequate. (The intervals were: ..., -0.2 to 0, 0 to 0.2, 0.2 to 0.4, etc.) Separate frequency distributions were prepared for each of the 104 exclusive sets of 100 entries occurring in two consecutive columns in the tables. The χ^2 -test of goodness of fit was applied to each of these 104 distributions. When pooling class-intervals so as to avoid very small expected frequencies, Cochran's (1952) recommendations were followed throughout the present investigation. For the χ^2 -tests being reported in

paragraphs 3.2 to 3.5, the 'minimum expectation' was taken to be 1 at both the tails. Thus for frequency distributions of 100 deviates, the pooled class-intervals were: $-\infty$ to -2.0 , -2.0 to -1.8 , ..., 1.8 to 2.0 , 2.0 to $+\infty$. Fourteen of the χ^2 -values were significant at the 10% level, out of which 4 exceeded the 5% level but none exceeded the 1% level. The sum of these 104 χ^2 's came out as 2174.0, which is obviously non-significant, since the degrees of freedom corresponding to this figure, which is a χ^2 , is 2184.

3.3. Table 1 shows the frequency distribution of these 104 values of χ^2 , together with a comparison with the normal theory distribution of χ^2 with 21 degrees of freedom. The value of χ^2 with 15 degrees of freedom was 13.840.

TABLE 1. OBSERVED AND EXPECTED FREQUENCY DISTRIBUTIONS OF 104 GOODNESS OF FIT χ^2 's WITH 21 d.f.

class-interval	observed frequency (f_o)	expected frequency (f_e)
(1)	(2)	(3)
0.0- 2.0 } 2.0- 4.0 }	0 } 0 }	0.002 0.057
4.0- 6.0 } 6.0- 8.0 }	0 } 0 }	0.446 1.888
8.0-10.0 }	5 }	1.888
10.0-12.0 }	2 }	4.086
12.0-14.0 }	7 }	7.282
14.0-16.0 }	8 }	10.396
16.0-18.0 }	15 }	12.648
18.0-20.0 }	14 }	13.285
20.0-22.0 }	12 }	12.002
22.0-24.0 }	11 }	11.071
24.0-26.0 }	8 }	9.007
26.0-28.0 }	5 }	0.895
28.0-30.0 }	4 }	5.000
30.0-32.0 }	7 }	3.478
32.0-34.0 }	4 }	2.320
34.0-36.0 }	2 }	1.494
36.0-38.0 }	0 }	1.254
38.0- ∞	0 }	1.020
total	104	104.000

χ^2 with 15 d.f. = 13.840.

3.4. The frequency distributions for all the 400 entries in each of the 26 plates were then obtained by combining the four distributions, each for 100 entries, prepared from the same page of the tables. The χ^2 -test was applied to each of these distributions. The class-intervals after pooling were: $-\infty$ to -2.6 , -2.6 to -2.4 , ..., 2.4 to 2.6 , 2.6 to $+\infty$. Three of these 26 χ^2 's were significant at the 10% probability level, out of which two were significant at the 5% level, but none at the 1% level. The sum of these values is only 706.78, which is a χ^2 with 702 d.f.

3.5. The frequency distribution for the entire set of 10,400 deviates was obtained by pooling these 26 distributions, each for 400 entries. This distribution is given in Table 2. For purposes of application of the χ^2 -test, the class-intervals were: $-\infty$ to -3.6 , -3.6 to -3.4 , ..., 3.4 to 3.6 , and 3.6 to $+\infty$. The value of χ^2 with 37 d.f. is 42.124, which indicates satisfactory fit.

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TABLE 2. OBSERVED AND EXPECTED FREQUENCY DISTRIBUTIONS OF 10,400 NORMAL DEVIATES

class-interval	observed frequency (f_o)	expected frequency (f_e)	class-interval	observed frequency (f_o)	expected frequency (f_e)
(1)	(2)	(3)	(1)	(2)	(3)
$-\infty$ to -4.0	0	1.655	0.0 to 0.2	820	824.301
-4.0 to -3.8	1		0.2 to 0.4	766	782.086
-3.8 to -3.6	1		0.4 to 0.6	713	731.382
-3.6 to -3.4	4	1.849	0.6 to 0.8	690	648.036
-3.4 to -3.2	4	3.842	0.8 to 1.0	647	553.281
-3.2 to -3.0	3	6.893	1.0 to 1.2	480	463.290
-3.0 to -2.8	16	12.534	1.2 to 1.4	349	366.855
-2.8 to -2.6	26	21.993	1.4 to 1.6	272	269.957
-2.6 to -2.4	40	36.778	1.6 to 1.8	185	196.238
-2.4 to -2.2	67	59.341	1.8 to 2.0	129	137.074
-2.2 to -2.0	93	92.006	2.0 to 2.2	97	92.006
-2.0 to -1.8	177	137.074	2.2 to 2.4	69	59.341
-1.8 to -1.6	211	196.238	2.4 to 2.6	35	36.778
-1.6 to -1.4	271	269.957	2.6 to 2.8	19	21.993
-1.4 to -1.2	336	350.866	2.8 to 3.0	0	12.534
-1.2 to -1.0	468	463.290	3.0 to 3.2	3	6.893
-1.0 to -0.8	537	553.281	3.2 to 3.4	3	3.842
-0.8 to -0.6	668	648.936	3.4 to 3.6	1	1.849
-0.6 to -0.4	776	731.382	3.6 to 3.8	1	1.655
-0.4 to -0.2	790	792.086	3.8 to ∞	0	
-0.2 to 0.0	842	824.301			
			total	10,400	10,400.000

$$\chi^2 (37 \text{ d.f.}) = 42.124$$

3.6. In addition to the above, it is possible to test the deviations of sample frequency constants from corresponding theoretical values. This has been done for the whole sample on the basis of the distribution presented in Table 2. Results shown in Table 3 seem to be fairly satisfactory.

TABLE 3. FREQUENCY CONSTANTS FOR THE ENTIRE SAMPLE (OF 10,400 NORMAL DEVIATES)

sl. no.	statistic		standard error	critical ratio
	symbol	value		
(1)	(2)	(3)	(4)	(5)
1	\bar{z}	-0.0223840	0.0098058	-2.283
2	s	1.0065680	0.0093337	0.947
3	β_1	0.0004940	0.0240192	0.021
4	β_2	2.0492832	0.0480384	-1.656
5	β_3	-0.0226882	0.024019	-0.945
6	β_4	3.0275448	0.090977	0.287
7	β_5	-0.3091378	0.203117	-1.176
8	β_6	14.6403318	0.988881	-0.364

4. TESTS BASED ON SAMPLE RANGES

4.1. The normal deviates, read vertically, were grouped into mutually exclusive pairs, and the absolute differences between them calculated. This gave the range for a random sample of size 2 from a standard normal population. Such calculations were done for the whole table, so that there were 200 samples per plate and 5,200 samples in all. The frequency distribution of each set of 200 ranges was compared with the theoretical distribution by the χ^2 -test. Class-intervals were, after pooling: 0.0 to 0.2, 0.2 to 0.4, ..., 3.0 to 3.2, 3.2 to 3.6, 3.6 to ∞ . The first line in Table 4 shows that 5 out of these 26 χ^2 's were significant at the 10% level; only 1 crossed the 5% level but not the 1% level, and one value was beyond the 1% point. The total of these 26 values, which is itself a χ^2 with 442 d.f., was 450.365 only. The χ^2 -test was also applied to the frequency distribution of all the 5,200 ranges taken together. First line of Table 5 shows that this was non-significant.

4.2. In exactly the same manner, frequency distributions of sample ranges were prepared for other sizes of sample, viz., n (size of sample) = 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, and 15. (In each case, the process of forming samples started from the left-hand top corner of page 1, but as will be seen from cols. (1) to (3) of Table 4, for certain sample sizes the process did not cover the whole of the present 'Table'.) These observed distributions were compared with the corresponding normal theory distributions by the χ^2 -test, which was applied (as in the case for $n = 2$) to the 'pooled' distributions of the entire set of sample ranges for any given n as well as to the distributions for suitable 'sub-sets' of 100 or 120 or 200 such sample ranges. As before, the χ^2 's for the 'sub-sets' were combined by straightforward pooling. As a general rule, for $n = 3$ upwards, the 'minimum expectation' was taken to be 2 at the lower end and 1 at the upper. The results of all such tests are summarised in Tables 4 and 5. The over-all position seems to be satisfactory.

TABLE 4. RESULTS OF χ^2 -TESTS ON FREQUENCY DISTRIBUTIONS OF 'SUB-SETS' OF SAMPLE RANGES

sample size (n)	no. of 'sub-sets'	no. of sample ranges per 'sub-set'	common d.f. for χ^2 's	no. of χ^2 's significant at different levels			pooled χ^2 -test	
				10%	5%	1%	d.f.	χ^2 -value
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2	26	200	17	3	1	1	442	450.365
3	11	100	18		1		198	101.318
4	15	100	19	1			285	282.459
5	13	100	10		1		247	230.326
6	10	100	17	1		1	170	191.380
7	5	100	18	1			90	101.888
8	5	100	17	1	1		85	106.829
9	5	100	17		1		85	86.053
10	8	120	18				144	128.246
11	5	100	16				80	65.605
12	5	100	16				80	77.160
15	5	120	16				80	54.766

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TABLE 5. RESULTS OF χ^2 -TESTS ON 'POOLED' FREQUENCY DISTRIBUTIONS OF SAMPLE RANGES

sample size (n)	number of sample ranges in 'pooled' distribution	results of χ^2 -test	
		d.f.	χ^2 -value
(1)	(2)	(3)	(4)
2	5200	26	23.432
3	1100	24	26.740
4	1500	25	16.331
5	2080	27	23.285
6	1000	24	19.713
7	500	22	19.548
8	500	22	30.530
9	500	22	14.102
10	060	34	16.592
11	500	22	13.412
12	500	21	17.573
15	600	21	18.053

4.3. For each value of n , the mean of sample ranges (\bar{R}_n) was worked out from the 'pooled' frequency distribution of the entire set of ranges. These values were thereafter compared with the corresponding theoretical means (d_n), using exact values of standard deviation. Results shown in Table 6 seem to be fairly satisfactory.

TABLE 6. DEVIATION OF SAMPLE MEANS OF RANGES FROM THEORETICAL MEANS

sample size (n)	no. of sample ranges in 'pooled' distribution	observed mean range (\bar{R}_n)	theoretical mean (d_n)	critical ratio $(\bar{R}_n - d_n)/s.e.$
(1)	(2)	(3)	(4)	(5)
2	5200	1.1551	1.12834	2.280
3	1100	1.7313	1.69287	1.446
4	1500	2.0805	2.05875	0.957
5	2080	2.3557	2.32693	1.571
6	1000	2.5486	2.53441	0.529
7	500	2.7220	2.70436	0.473
8	500	2.8788	2.84720	0.802
9	500	3.0232	2.97003	1.472
10	060	3.0977	3.07751	0.785
11	500	3.1624	3.17287	-0.297
12	500	3.2768	3.25846	0.527
15	600	3.5170	3.47183	1.467

4.4. It should be appreciated that for the higher values of n , such tests are believed to be very sensitive to deviations from normality near the tails of the distribution and especially to the existence of what are called "rogue" observations in the sample.

5. TESTS OF RANDOMNESS

5.1. For the sake of interest, another series of tests based on the theory of runs was applied to the whole table. The theory of these tests will be found in Kendall (1946, Vol. 2, pp. 124-127). These tests, it must be noted, are tests of certain aspects of randomness and are not in any way concerned with normality.

5.2. The 104 sets of 100 deviates were considered separately. For each set, the signs of differences between successive values of normal deviates, when the table is read vertically, (one column after another.) were given. A sequence of π consecutive '+' or '-' signs, preceded and followed by the opposite sign, was taken as a phase of length n . The number of turning points i.e. peaks or troughs, was one greater than the number of phases.

5.3. If p be the number of turning points in a random series of N terms, the first four moments of p are known. For large values of N , the distribution of p is known to be approximately normal. For $N = 100$, in particular, we have $E(p) = 65.3$, $\sigma(p) = 4.178$, $\beta_1(p) = 0.0005498$ and $\beta_2(p) = 2.0761$. Ignoring the slight departure from normality, the frequency distribution for the 104 values of p , one for each set, was prepared and compared with the normal distribution having mean = 65.3, and s.d. = 4.178. The observed and expected distributions are shown in Table 7. (Class-intervals were, after pooling: $-\infty$ to 56.5, 56.5 to 57.5, ..., 73.5 to 74.5, 74.5 to $+\infty$. The 'minimum allowable expectation' was taken to be 1. Goodness of fit χ^2 came out to be 25.639, which for 19 degrees of freedom is non-significant.

TABLE 7. OBSERVED AND EXPECTED¹ FREQUENCY DISTRIBUTIONS OF p , THE NUMBER OF TURNING POINTS IN SETS OF 100 DEVIATES

no. of turning points (p)	observed frequency (f_o)	expected frequency (f_e)
(1)	(2)	(3)
upto 51	0	0.049
52	1	0.063
53	0	0.131
54	2	0.257
55	0	0.477
56	0	0.836
57	0	1.385
58	2	2.055
59	5	3.146
60	5	4.396
61	5	5.799
62	11	7.224
63	13	8.490
64	8	9.440
65	6	9.902
66	6	9.808
67	7	9.174
68	7	8.102
69	14	6.757
70	6	5.321
71	2	3.857
72	5	2.779
73	2	1.781
74	1	1.178
75 & above	0	1.483
	104	104.000

¹ Expected frequencies were calculated on the assumption of normality, with $E(p) = 65.3$, and $\sigma(p) = 4.17798$.

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5.4. For each set of 100 deviates, the frequency distribution of observed phase lengths was prepared. Phases of length 3 or more were pooled together. The use of such frequency distributions for tests of randomness has been studied by Wallis and Moore (1941). The probability of a phase of length d in a series of length N is

$$\text{given (approximately) by the formula } \frac{6(d^2+3d+1)(N-d-3)}{(d+3)!(2N-7)}.$$

The expected frequencies were adjusted so as to add up to the observed number of phases. If χ^2 is then calculated in the usual manner, one has to consider 2.5 as the appropriate d.f. if $\chi^2 > 6.3$. For lower values of χ^2 , $\frac{6}{7} \chi^2$ can be tested as a χ^2 with d.f. 2.

5.5. Such tests were carried out for all the 104 distributions. In 7 cases the values were significant at the 10% level; out of these 7 values, 2 exceeded the 5% level, but none exceeded the 1% level.

6. ACKNOWLEDGEMENT

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TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 1

row no.	col. no.	1	2	3	4	5	6	7	8
		2 0538	1 0424	2 0265	1 2037	1 0834	1 0230	2 0476	1 0167
		2 0210	1 1669	2 1017	2 1082	1 0584	1 0089	2 1126	2 0616
		2 0604	1 0669	2 0410	2 0584	2 0368	2 1232	1 0500	1 0736
		2 1589	1 0062	2 1220	1 0281	1 0255	1 0888	2 0193	1 1183
	5	2 0597	1 1368	2 1078	1 1296	1 0625	1 0282	1 1183	1 0371
		1 0220	2 0565	2 0003	2 0971	2 0547	1 0297	1 0271	2 0594
		1 1449	2 0685	2 0413	1 0111	1 1145	1 0261	1 0012	2 0618
		2 0841	1 0786	2 0958	1 0676	2 1725	1 1007	1 1155	1 0556
		1 1715	2 0572	1 1578	2 0340	2 0645	1 1185	2 0858	1 0389
	10	1 0932	2 1003	2 0867	1 0007	2 0405	1 0550	2 0256	1 0568
		1 0168	2 0382	1 1464	1 0331	1 0357	1 0615	1 0806	1 0786
		2 1271	1 0493	2 1169	1 0402	2 0772	1 0003	2 1454	2 0705
		1 0479	1 0028	1 0173	2 0312	1 0629	2 0403	1 0968	1 0365
		2 0827	2 0770	2 0028	1 0827	2 0564	2 1015	1 0243	1 0120
	15	1 0142	2 0059	2 0638	1 0070	2 0889	1 0385	1 0188	1 1723
		2 0124	2 0912	2 0443	2 0255	1 1630	2 0192	2 0572	1 2612
		2 0789	1 0378	1 0174	1 1483	1 0726	2 0967	1 0108	1 0725
		1 0501	2 0224	1 0625	1 0483	2 1189	1 0591	2 1136	1 0021
		1 0931	2 0221	2 0220	1 1645	1 0165	2 0271	1 0238	2 0435
	20	1 0811	2 0329	1 0239	1 1983	2 0596	2 0199	2 0001	1 1106
		1 1542	1 0561	2 0459	2 1449	2 0537	2 1274	1 0350	2 0127
		2 0403	1 0330	1 0260	1 1541	2 0428	2 1242	2 1050	2 0050
		1 1337	2 0981	1 0018	2 1503	1 0388	2 1330	2 0100	2 0178
		1 1423	1 1473	2 0584	1 0553	2 0239	2 0815	1 0331	2 0647
	25	1 0766	2 0316	2 0555	1 0723	2 2362	1 0528	2 1123	2 0881
		1 1946	1 1872	1 0627	2 2929	1 1719	2 0896	2 2270	2 0878
		1 1572	1 1412	1 1169	1 1534	2 0085	2 1755	1 0445	1 0141
		2 1186	2 0366	1 0251	2 0508	1 1290	1 0153	2 0723	1 0694
		2 1470	2 0251	2 0239	2 1015	2 0964	2 1091	1 0061	2 0144
	30	1 0345	2 0254	2 0307	2 0780	1 0909	2 0122	1 0345	2 0390
		2 1074	1 0569	2 0343	2 0980	2 1524	2 0401	2 0141	2 0500
		1 0536	1 1273	1 0528	1 0170	1 0697	1 0436	2 0925	2 0481
		2 0456	2 0588	2 1379	1 1313	1 1207	1 0043	1 1008	1 1351
		1 0814	2 0017	1 0190	1 0295	1 0403	1 1081	2 0406	1 1325
	35	1 1160	2 0382	1 1268	2 1419	1 0354	2 2759	2 0637	1 0249
		2 0671	1 0605	1 1147	2 3891	2 0806	2 0704	2 0358	1 0045
		2 2007	2 0705	1 2077	1 0424	1 1930	2 0969	1 1377	2 1079
		2 0522	1 1043	1 0506	1 1582	2 0570	2 1463	2 1242	2 0485
		1 0671	2 2012	1 0814	2 0722	2 0614	2 0024	2 0690	2 0288
	40	1 0047	2 0906	2 0785	1 1540	2 1615	2 0872	2 0919	2 0813
		2 1178	2 0680	2 0680	1 1759	2 2473	2 0320	1 2214	1 0024
		2 0277	2 0081	1 0778	1 0390	1 1354	2 0476	2 0223	2 0354
		2 1230	2 0764	2 0964	2 0745	2 0329	1 0912	2 1112	2 1056
		2 0909	1 0746	1 0146	1 0569	1 1663	2 1994	1 0766	1 0187
	45	1 0308	1 1748	1 1778	2 0802	1 0754	2 0808	1 0007	2 1588
		2 0062	2 0121	2 0598	1 0849	2 0090	2 1180	1 0613	1 0974
		2 1659	1 0522	2 0492	1 0006	2 0028	2 1006	1 2095	1 0469
		2 0015	2 0523	2 1062	2 0580	2 1045	2 1299	1 0613	2 0312
		2 0018	1 2024	1 0682	2 0254	2 0564	2 1590	2 0257	1 0675
	50	2 0723	2 0697	1 0569	2 1948	2 0243	2 0226	2 0473	1 2066

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 2

row no.	col. no.	1	2	3	4	5	6	7	8
	2	1148	2 0566	1 0030	2 0247	2 0336	1 1030	2 0638	1 0123
	1	0111	2 0022	2 1327	1 0563	2 0051	2 1121	1 1127	2 0760
	2	0450	2 0732	2 0224	1 2248	2 0056	2 0123	2 0936	2 0646
	1	0775	2 1885	1 1267	2 0786	1 0765	2 1437	2 1159	1 0577
5	1	0485	2 0203	2 0360	1 0018	2 0132	2 0496	2 1455	2 0013
	1	1391	2 0302	1 1374	2 0797	1 0452	1 1807	1 0880	2 0487
	1	0080	2 1290	2 1528	1 0380	2 0042	1 1131	1 1190	1 1068
	2	2328	2 0056	1 0854	1 1417	2 0797	2 0761	1 0010	1 1097
	2	0715	1 0763	1 1595	1 0578	1 0986	2 0261	2 1341	1 0669
10	2	1803	1 0069	2 0254	2 1941	1 1443	1 0197	1 0184	2 2727
	1	0791	1 1891	1 0065	2 0186	1 2251	2 0021	2 1289	1 1352
	2	0671	2 0188	2 1018	2 2007	2 2284	1 0392	1 1111	2 0074
	1	0423	2 0873	2 0490	1 1372	1 0291	1 0226	2 1457	2 0284
	1	0459	2 1065	1 1345	2 0060	1 2334	2 0315	1 0640	2 0604
15	2	0110	1 0842	1 1102	2 0422	1 0822	2 0038	2 0172	1 1794
	1	0178	1 2267	2 0688	2 1345	2 0219	1 0431	2 1406	1 0289
	2	0212	2 1060	2 0557	2 1458	2 1129	1 1275	2 1025	2 1051
	2	0124	2 0683	2 0361	1 0077	1 0719	1 0562	2 1269	2 0701
	2	0080	2 1544	1 2160	2 0136	1 0168	1 0729	2 1183	2 0730
20	1	0436	2 0373	1 2115	1 1396	2 1639	1 0378	1 0089	1 1248
	1	0386	2 1840	1 0806	1 0920	2 1371	1 0865	1 0178	2 0883
	2	0971	2 0179	2 0894	1 0080	2 0382	1 1271	1 0664	2 0296
	2	1117	2 1173	2 0428	1 1219	2 0267	1 0461	2 0954	2 1848
	1	0008	2 0246	2 0814	1 2079	1 1101	2 0443	1 0580	1 0285
25	1	0795	2 0831	1 0039	2 0841	2 0542	2 1983	1 0729	2 0567
	2	0848	1 1277	2 1272	1 0602	1 0739	2 0214	1 0890	1 0604
	1	2536	2 1375	1 0664	2 0270	1 0842	2 1368	1 0198	2 0131
	2	1838	1 2378	2 0003	1 0769	1 0505	2 1359	2 0846	1 2288
	1	2338	1 0811	2 0218	1 0475	2 1995	2 1109	1 0647	1 1190
30	2	0989	1 0793	1 1645	2 0225	2 1261	2 0531	1 0273	1 1295
	2	0908	2 1183	2 0309	1 0320	2 1628	2 1481	2 0751	1 0073
	2	1634	2 1997	1 0241	1 0470	2 1076	1 0714	2 0034	2 0077
	2	1622	2 0239	1 1366	1 0351	2 0807	1 0950	2 0356	1 0386
	1	0637	1 0639	1 0404	2 1008	2 0212	2 1718	2 0389	2 0321
35	2	0437	2 0323	1 0800	1 0520	1 0797	1 0602	2 0104	1 1740
	1	0488	2 0664	1 0670	1 1746	1 1332	2 0613	2 0008	2 0999
	1	1274	2 0490	2 0361	2 1784	2 1249	1 0342	1 1266	2 0197
	1	1408	2 0720	2 1759	2 0460	2 0990	1 0993	2 0154	2 2081
	1	1958	1 0836	1 0546	1 2036	2 1024	1 0888	2 0132	2 0880
40	2	0778	2 0803	2 0561	1 0185	2 1008	1 0760	2 0015	1 2404
	1	0503	2 0500	2 0814	2 0432	2 0143	1 1669	2 1843	1 1799
	2	0420	2 0367	2 1785	1 0236	2 0273	1 0598	1 1070	1 0220
	1	1997	1 0136	2 0071	1 0132	2 0315	2 0477	2 0337	2 0151
	1	1516	1 0145	1 0119	2 2075	1 0605	1 0522	2 0274	1 0604
45	1	0192	1 0332	2 0370	1 0307	2 0521	1 0304	1 1020	2 0825
	1	0482	1 0886	2 0137	2 0542	1 2543	1 1863	2 0362	1 0959
	1	0417	1 0457	2 0016	2 2478	2 1761	1 1225	2 0062	1 0644
	2	0633	2 0188	1 1163	1 1009	2 0168	1 1277	2 1146	2 1601
	1	0478	2 0026	1 1672	2 0378	1 0395	1 0740	1 2518	1 1017
50	2	0120	1 0763	2 0282	1 0596	2 1112	1 0558	2 0026	1 0417

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 3

row no.	col. no.	1	2	3	4	5	6	7	8
5	2	0996	2 0505	1 0809	1 0428	1 0075	1 0023	1 1071	1 0455
	2	0012	1 0522	1 0061	1 0352	1 0022	2 0814	1 0970	2 1849
	1	2217	2 1752	1 0451	2 0650	1 0891	2 0200	2 1097	1 1546
	2	0622	1 0831	2 0551	1 1129	2 2079	1 2071	1 0585	1 0879
	1	0204	2 0169	1 0435	1 2175	1 1605	2 1364	1 1033	2 1192
10	1	0953	2 1213	1 1374	1 1682	2 1045	2 1354	2 0721	2 0639
	2	0491	2 1979	2 1426	1 0854	1 2848	1 1353	2 1301	2 1833
	2	0711	2 0849	2 1216	2 0493	2 1191	2 2167	2 0287	2 0423
	2	2661	2 0136	1 1114	1 0074	1 0882	1 0189	1 0659	2 0792
	2	0706	2 0007	2 1681	2 0897	1 0540	2 0498	1 0485	1 0764
15	1	0251	1 0453	1 1191	2 0565	1 0055	2 0428	1 0177	1 0348
	2	1284	2 1372	1 1824	1 0555	2 2254	1 0056	2 1163	2 0030
	1	0498	2 0007	2 0231	2 0054	1 1872	1 1138	2 0231	2 0247
	1	0786	1 0235	1 0899	2 2226	1 1184	1 0172	1 0058	1 0446
	2	0027	1 0312	1 1441	1 1446	2 0781	2 1875	2 1373	1 0366
20	2	1261	1 1361	1 0102	2 0941	1 0020	2 0269	2 1252	1 0308
	1	1366	1 0805	2 1353	1 0543	1 0218	2 0685	1 1985	1 0811
	2	1135	1 1086	2 0404	2 2312	2 1484	2 0321	2 0053	1 2280
	1	1577	2 0300	1 0192	1 0848	2 0349	1 1417	2 1150	2 0896
	1	1376	2 0033	1 1453	1 0292	2 0133	1 0844	1 0039	2 0801
25	1	0710	2 0383	1 1393	2 0939	1 0195	1 0009	1 1441	2 1332
	1	0011	2 0379	1 0035	2 0240	2 0165	1 0462	1 1408	2 0056
	1	0076	2 0625	2 0987	2 0997	2 1820	1 0467	2 0283	2 1580
	2	0335	1 0007	1 0332	2 0113	1 1658	1 0219	1 0018	2 1071
	2	2175	2 0691	1 0123	2 0641	1 0107	2 1866	1 1985	2 0887
30	2	0559	1 0784	2 1181	2 0952	2 0754	2 0167	2 0033	2 1504
	1	0815	1 0127	2 1715	2 0496	2 1284	2 0600	2 1007	2 0672
	2	0849	1 1003	1 0590	1 0951	2 0657	1 0949	1 2834	2 0023
	2	1289	2 0685	2 0908	2 0333	1 0722	2 0533	2 0848	2 0492
	1	0693	1 0142	2 0696	2 2186	2 2330	1 1726	1 1477	1 1238
35	1	1372	2 1237	2 1721	2 0202	2 0847	2 1243	2 0498	2 0792
	1	0476	1 0486	2 2727	1 2008	2 0995	1 1171	1 0226	2 0266
	2	0335	2 0092	1 1200	1 0600	2 1027	2 0325	1 0975	1 0827
	1	0335	2 2442	2 0611	2 1591	2 0904	2 0327	1 0163	2 0724
	2	0126	2 0980	1 1815	2 0292	2 0523	2 1199	1 1885	1 0225
40	2	0632	2 0702	2 1720	2 1087	1 0535	1 1311	2 1721	1 0133
	1	0222	2 1228	1 0924	2 0666	2 0027	1 0283	1 0247	1 1009
	2	0195	2 0523	1 0530	2 1099	1 2073	2 0210	2 0154	1 0860
	2	0877	2 1585	1 1631	2 0484	2 1773	2 1239	2 0174	1 0845
	1	0259	2 1412	2 0311	1 1165	2 0147	2 1238	2 0347	1 0197
45	1	0503	1 0590	1 0537	2 1274	1 1017	2 0745	2 0145	2 0600
	1	0310	2 1536	1 0813	2 1079	1 1529	2 1095	2 0376	1 1537
	2	0490	1 0419	1 0947	2 1194	1 0177	2 0402	2 0542	2 1081
	2	0297	1 0037	2 1802	1 0601	1 1785	2 1696	1 0899	2 0593
	1	2304	2 0085	2 0711	2 1201	1 0182	2 0275	1 1074	1 0389
50	1	1074	1 0007	2 0172	2 1548	2 1208	1 0047	1 1318	2 0044
	2	0850	1 0814	2 0278	1 1179	2 0797	2 2290	2 0136	2 0552
	1	0165	2 0450	2 0303	1 0962	2 0660	1 1900	2 1188	1 1387
	1	0192	2 1421	2 0686	2 0021	2 0203	1 1545	2 0173	0000
	1	1798	2 2660	1 0553	1 1187	1 1307	2 1779	2 0117	1 0470

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 4

row no.	col. no.	1	2	3	4	5	6	7	8
	2	0841	2 0262	1 2120	1 0165	2 2304	2 0274	1 0961	1 2473
	1	0140	2 1082	3 0988	2 0407	2 0474	2 2370	1 1070	2 0304
	2	1437	2 0496	1 1256	1 0004	2 0674	2 0336	2 0675	1 0379
	2	1015	2 1722	2 0612	1 0254	1 1159	2 1812	2 0580	1 0172
5	1	2280	2 0380	1 0748	2 1109.	1 2304	2 0129	2 0733	1 0055
	2	0225	1 0204	2 0818	2 0140	2 1596	2 1125	1 0097	2 0568
	1	1872	1 0160	1 0586	1 0344	2 1128	2 0057	2 0188	2 0396
	2	0502	1 0705	1 0654	2 1231	1 0512	1 0354	1 0421	1 0295
	2	0583	2 0481	2 1547	1 0118	2 0009	2 0050	1 1133	1 1522
10	2	1720	1 1551	1 1443	1 0947	1 0917	2 0101	1 0352	1 1363
	1	0189	2 0449	1 0247	1 2042	1 0440	1 0403	2 0078	1 0092
	2	1730	1 1063	1 1200	1 0901	1 2088	1 0626	1 1567	1 1323
	1	1043	2 0075	2 0726	1 0416	1 0912	2 0452	1 0183	1 0813
	1	0773	2 0165	1 0678	1 1932	2 0401	1 0907	2 0283	2 0639
15	2	0197	2 2330	2 0013	2 1808	2 0202	1 0883	1 1275	1 1454
	2	1102	2 0534	1 2125	1 0905	1 0176	1 0631	2 0670	2 0806
	2	1885	1 1152	1 0675	1 0484	1 0440	2 0391	2 0016	2 0088
	2	1146	1 0143	2 0219	1 0529	1 0274	2 0072	1 0315	2 0345
	2	0248	1 2052	2 1048	2 1811	1 0226	2 0073	1 1338	1 0204
20	1	0984	2 0253	2 0709	2 1102	1 1782	1 1379	2 0479	2 0034
	1	1068	1 1309	1 0325	1 0093	2 0987	1 1099	2 0069	1 0357
	1	0230	1 0455	2 0534	2 1652	1 0514	2 1321	2 1616	1 0312
	2	0731	2 1322	2 1118	1 1037	2 1759	1 0629	1 0239	1 1851
	2	0634	2 1323	1 1958	1 1678	2 0661	2 1570	2 0805	2 0191
25	2	0463	1 0387	2 0721	1 0237	2 0489	2 0542	1 0403	1 0739
	2	1298	1 0601	1 0268	2 1804	2 0121	2 1044	1 0394	1 0681
	1	2326	2 0288	1 1513	2 1623	1 0439	1 1920	2 0229	2 0882
	1	0411	2 0861	2 0903	1 0523	2 0624	2 0444	1 0141	2 0694
	2	0794	2 0275	1 0442	2 0625	1 0694	2 0817	1 1363	1 0887
30	1	0906	2 0374	2 0890	1 0299	1 0162	2 0446	2 0027	2 1342
	2	0802	1 1554	2 0758	2 0792	1 1138	2 1169	1 1630	2 0257
	1	0607	2 2226	1 0769	1 0324	2 1060	1 1069	1 0494	1 0030
	2	0510	1 0240	1 0569	2 0600	2 1259	2 1974	1 1117	2 0175
	2	0635	1 0752	1 0438	1 0252	1 0680	2 1108	1 0471	2 0218
35	1	0507	1 0877	1 0290	2 0837	1 1187	2 1104	2 0814	2 2432
	1	1574	1 1480	2 0092	1 0715	1 0190	1 0325	2 0899	2 0276
	2	0025	1 0229	2 0487	2 0080	1 1266	2 0781	1 0456	2 1077
	1	0450	2 0481	1 0913	2 0412	1 0179	2 0334	1 2073	2 0467
	2	0831	2 2152	1 1240	1 1356	1 1370	2 0728	1 0210	2 1242
40	1	0033	1 0842	2 0507	1 0096	2 0698	1 0179	1 0902	1 0498
	1	0304	1 0759	2 0240	2 0726	1 1505	2 0111	1 0194	2 2549
	1	0797	2 2165	2 2506	1 0954	2 0429	1 0901	2 1369	1 0459
	1	0981	1 0582	2 0819	2 0136	2 0669	2 0888	1 0041	2 0778
	2	0133	1 0157	1 0489	2 0984	1 1195	1 0067	1 0048	2 0431
45	2	0378	1 0376	1 0488	2 2024	1 1328	2 0055	1 1220	1 0157
	1	0946	2 1192	2 0475	1 1359	1 0288	2 0964	2 0603	2 0339
	1	0834	2 0123	1 0068	1 0889	1 1019	2 2200	2 1305	1 0748
	1	0532	2 0005	2 1100	2 1128	1 0832	1 0364	2 0809	2 0463
	2	0307	2 2484	1 0368	1 0075	1 0068	2 0177	2 0745	1 1244
50	1	1011	1 1320	2 1276	2 0565	1 1569	2 1279	2 0522	2 0953

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 5

row no.	col. no.	1	2	3	4	5	6	7	8
5	1	0894	2 0491	1 0282	2 2086	2 0403	2 1826	1 0434	2 0097
	1	0267	1 0211	1 0975	1 0402	2 0104	2 0086	1 1476	2 0017
	2	1551	2 1364	2 0635	2 0516	2 0148	2 0212	2 0155	2 0411
	2	0308	1 0434	2 0343	2 0507	2 0590	1 0795	2 0098	2 1137
	1	0205	1 0181	2 0618	1 0201	1 0859	1 0298	1 0216	1 0888
	2	0760	1 2099	1 0356	1 0264	1 1390	1 0390	1 0570	1 0523
	2	0617	2 0599	2 2122	1 1265	1 0375	2 0402	2 0396	2 0734
	2	2077	1 0566	1 0046	2 1269	1 1243	2 0010	1 1237	2 1229
	1	0748	1 0863	2 0242	2 0481	1 0962	2 0645	2 1542	1 1134
	2	0666	1 1582	2 1005	1 0252	1 2911	2 1435	1 0994	1 0078
10	2	2020	2 1875	1 0206	1 0040	2 0961	2 0314	1 0289	2 1199
	2	1294	1 0453	2 0688	1 1304	2 1672	2 1680	2 0468	2 1006
	2	0674	1 0606	2 1644	0000	2 0627	1 0426	1 0885	2 0194
	1	2113	1 0503	1 0634	2 1142	1 0955	1 1396	2 0757	1 0314
	1	0087	1 0331	1 1427	2 0979	1 0849	1 0781	2 0809	1 0273
	1	0161	1 0204	2 1009	2 0155	2 0841	1 0274	1 0380	1 0501
	1	1621	2 0159	1 1690	1 0469	1 1630	1 1014	1 1315	1 1421
	1	1580	1 0279	2 0900	1 0795	2 0072	2 1172	1 2235	1 0537
	2	1344	1 0594	1 0094	1 0401	1 1284	1 1932	2 0006	1 2428
	1	1077	1 0185	1 0087	1 0143	2 0228	2 1644	1 0536	1 0433
20	1	1852	2 2245	1 0457	1 0387	2 0630	2 0474	2 0810	2 0205
	1	0988	2 1213	1 0056	2 0711	2 1312	2 1166	1 0757	1 1583
	2	1776	2 0447	2 0566	2 0409	1 0383	1 0645	1 0737	2 1899
	1	0268	2 1366	2 0145	1 0260	2 1083	2 0194	1 1290	2 1036
	1	0009	1 0942	2 0312	1 0102	1 1358	2 0489	2 0504	1 1630
	2	0609	2 0910	2 1696	2 1744	2 1457	2 1193	1 0379	2 0616
	1	1030	1 0166	2 0430	2 0296	1 0508	2 1084	2 0139	1 1364
	2	0821	1 0404	1 0086	1 1079	2 0195	2 0337	1 1832	2 0363
	2	0584	1 0831	2 2056	1 0902	1 0907	1 0056	2 0287	2 0078
	2	0200	2 0557	2 0043	2 0767	2 1140	2 1624	1 0686	2 0250
30	2	1385	1 0454	1 0049	2 0732	1 1604	2 1165	1 0464	2 0406
	1	0152	1 1751	2 0474	2 0951	2 0275	1 1396	1 2022	2 1570
	2	0483	1 1026	1 0450	1 2092	1 0937	2 0431	2 0746	1 0447
	2	0487	1 0154	1 0087	2 0707	2 0352	2 1630	2 1031	1 0864
	2	0148	1 0299	2 0052	2 2848	2 0018	2 0856	2 0404	2 0469
	1	1005	1 0483	1 2127	1 0451	2 1193	1 0006	2 1131	2 0443
	1	0716	2 1738	2 0351	2 0542	1 0362	2 0853	1 0044	2 0597
	2	0776	2 1270	1 0109	2 1668	2 0623	1 1254	2 1063	2 0445
	1	0375	2 0131	1 0203	1 1634	2 0951	2 0666	2 0010	1 1217
	2	0544	1 1499	1 0019	1 2727	2 1306	2 1380	1 0412	2 1266
40	2	2173	2 0449	1 0544	2 0196	2 1274	2 2092	2 0411	2 0035
	1	0923	1 1251	2 1639	2 0131	2 0166	1 1074	2 0056	1 0270
	2	0220	1 0279	1 0881	1 0613	1 0584	2 0180	2 1108	1 1903
	2	0331	1 0038	2 0852	1 0385	2 0460	1 1888	1 1004	2 0868
	2	0892	1 1449	2 2748	1 0811	1 1194	1 0012	2 0677	2 0407
	2	1239	1 0577	1 0678	1 1261	1 0821	1 0564	1 0063	1 0870
	1	1227	2 0110	2 0893	2 1121	1 0078	1 0603	1 0871	1 0274
	1	0196	2 0491	1 0655	2 0307	2 1581	1 1345	2 0562	1 0065
	1	0547	2 0577	1 0840	1 1370	1 0800	2 1306	2 0069	2 1718
	1	0126	2 0078	1 0137	2 0120	1 0682	2 1920	2 0298	2 0127

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2", for the '-' sign. The normal deviates listed on above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

		PLATE No. II							
row no.	col. no.	1	2	3	4	5	6	7	8
		2 1094	2 0169	2 0284	1 1146	2 1166	2 0224	1 0738	1 1048
		2 0613	1 0946	1 2346	2 0739	1 0058	1 0875	2 0292	2 1330
		1 0599	1 1729	2 1406	2 1048	1 0065	1 0616	2 0230	1 1311
		2 0769	2 1361	2 0328	2 0342	2 0841	2 0359	2 0138	2 0710
5		2 0785	1 1312	1 1088	1 1124	1 1135	1 0003	2 0489	2 0762
		2 0066	1 0142	1 0024	1 1849	2 0400	1 0070	2 0403	2 0809
		1 1836	2 1123	2 0488	1 0527	2 0968	1 0881	2 0355	2 0653
		2 0102	1 1509	1 1161	2 0620	1 0927	1 0603	2 0659	2 0234
		1 0801	1 0567	2 0463	1 0200	1 0051	1 1491	1 0594	2 0413
10		1 0050	1 0022	1 0320	1 1311	2 2200	2 0889	2 0946	1 0671
		1 0457	2 0524	1 1184	2 0325	2 0180	2 2727	1 0693	2 0311
		2 1869	1 1269	2 1155	2 1026	1 0058	1 1484	2 1104	2 0377
		2 0123	2 1679	1 1616	2 0420	1 1916	2 0228	1 0633	1 0145
		1 0319	2 0076	2 1710	2 0488	2 0529	1 1052	2 0994	2 0549
15		1 0243	2 0423	1 0086	1 0261	2 1002	1 0456	2 0026	2 1113
		1 0602	1 0445	2 0689	1 0477	2 0881	2 1084	1 0633	2 0200
		2 0093	2 1007	2 0554	1 0084	2 1764	1 0984	2 0740	2 1621
		2 0805	2 1331	2 0482	2 1635	1 2203	2 1074	1 0183	2 1212
		1 1029	1 0086	1 1415	2 1416	2 1750	1 0417	2 0056	1 0277
20		1 0696	2 0230	2 0255	2 0098	1 1615	2 0277	2 0473	2 0500
		2 0182	2 0530	1 0624	1 1413	1 0905	1 0022	1 1375	2 0041
		1 0346	2 1291	1 0428	1 1414	1 1002	1 1139	1 0982	2 1231
		1 0108	1 0528	1 1078	1 0832	1 0755	1 0200	2 0572	1 0080
		2 0177	1 0016	2 0011	2 0291	1 1061	1 1040	1 1122	1 0330
25		1 0058	2 0057	2 0627	2 0913	1 0704	1 1653	2 0679	1 1104
		1 1088	1 2203	2 0136	1 0445	2 2024	1 0819	1 1294	1 0260
		2 0408	2 1272	2 0159	2 0073	1 0414	1 1875	2 0879	2 1953
		2 0712	2 0668	2 0489	2 1321	1 0190	1 1177	1 1730	1 0176
		1 0370	2 1442	2 0857	2 0598	2 0743	2 0204	2 0055	1 0673
30		2 0583	1 0063	2 0678	1 0484	1 0543	1 0617	2 0659	1 0630
		1 0621	2 0018	1 0581	1 0106	1 1098	1 0070	2 0437	1 0836
		1 0495	1 0920	1 0542	1 0177	2 0596	1 0585	1 1166	2 0063
		2 0018	2 0520	1 1436	1 1845	2 1621	2 1228	1 0060	1 1039
		1 0912	1 1100	2 0631	1 0725	1 1797	1 1812	2 0369	1 1329
35		1 0528	1 1327	1 0108	1 0679	2 0293	1 1389	2 1063	2 2852
		1 0726	2 0371	2 0056	2 0007	1 0252	2 1080	1 2226	1 0426
		2 0467	2 0239	2 1579	2 0687	1 0120	1 0260	1 2122	2 1372
		2 0582	2 0441	2 0461	2 0062	2 0790	2 0119	2 0617	2 1010
		1 1137	2 0390	2 2044	1 0368	1 0442	1 0324	2 0435	1 0435
40		2 0978	1 0221	1 0723	2 0318	2 0754	2 0205	1 0158	1 0056
		2 2280	2 0504	2 1833	2 0522	2 0534	1 0202	1 0411	2 2770
		2 1679	2 0023	1 0872	1 0082	1 0747	1 0694	2 0671	1 1186
		1 0351	2 0724	1 1403	1 0102	1 1183	2 0115	2 1218	1 1126
		2 1571	1 0899	2 1652	1 1400	1 1680	2 0010	2 1093	2 1051
45		2 0885	1 0659	1 0097	1 0098	1 1125	1 0141	1 0202	1 0689
		2 0761	2 0098	2 0771	2 0306	1 0765	1 0982	2 0475	1 1314
		1 0062	2 0491	1 0507	1 0737	2 0783	1 1296	1 1799	1 0019
		1 0234	2 1527	1 0519	2 0690	1 0393	1 1327	2 0535	1 0968
		1 1128	2 1687	2 2418	2 1321	1 0181	2 0175	2 0101	9 0805
50		1 1079	1 0292	2 0642	2 0169	2 1169	1 0627	2 1386	2 0216

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2", for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES
 , DEVIATES BASED ON TIPPETT'S RANDOM SAM

PLATE No. 7*

row no.	col. no. 1	2	3	4	5	6	7	8
	1 0886	1 0687	2 0157	1 0871	1 0599	2 0431	1 0110	2 1201
	2 0290	2 1117	1 0420	2 0705	1 1487	2 1225	2 1041	2 0816
	1 0650	1 0123	1 0090	2 0063	2 2077	1 0072	2 0723	1 0707
	1 1374	1 1125	2 0181	1 0949	2 0460	2 1170	1 1023	2 0531
5	2 0987	2 0458	2 3105	2 0658	1 0833	1 0762	1 0719	2 0068
	1 0882	2 1024	2 0177	1 0454	2 0208	2 1134	1 2220	1 0062
	1 0902	2 0034	1 0008	1 0200	1 0382	1 0143	1 0585	2 0837
	1 1043	1 1084	2 0751	2 1524	2 0964	1 0561	1 0520	1 0620
	2 0343	1 1335	2 0700	2 0870	2 0982	2 0645	1 0304	2 0514
10	1 1050	2 1521	2 0531	1 0020	2 0025	2 0616	2 0106	1 0010
	1 0457	1 0537	1 0174	2 1854	1 0418	1 0514	2 0604	1 0817
	2 1029	1 1779	1 1653	2 0205	2 1022	2 0860	1 2111	2 1106
	2 0979	1 0221	2 0533	2 0010	2 1113	1 1329	1 1527	2 0138
	2 0963	2 0130	2 0411	2 0076	1 1213	1 0026	2 0263	1 0833
15	2 0852	1 2220	2 0850	1 1118	1 1743	1 1000	2 1040	2 0280
	2 1255	1 0168	2 0344	1 0137	2 1099	1 0079	1 0431	2 0960
	1 0145	2 1365	1 0130	2 1005	1 0763	1 0386	2 0182	1 1517
	1 2088	1 1053	1 0453	2 1995	2 0061	1 0443	1 0236	2 0307
	2 0746	1 0543	1 0777	1 1940	1 0998	2 1250	2 0198	1 1104
20	2 1370	2 0256	2 0293	1 0650	2 1092	2 0336	1 0055	2 0024
	2 0631	2 0027	2 0255	2 1575	2 1127	1 0412	1 0649	1 1202
	2 0819	2 1159	2 1011	2 0100	1 0702	1 0270	1 0854	1 0091
	2 0508	2 1451	2 1307	2 0619	2 0224	1 3353	1 0584	1 1438
	1 0903	1 1771	2 2034	1 1265	1 0723	2 0311	2 1802	2 1651
25	1 0456	1 0338	2 0500	2 0190	1 2028	2 1191	1 0195	1 1186
	2 0872	1 0013	2 0004	1 1448	2 0221	1 0436	1 0272	1 1935
	1 0290	2 0204	1 1218	2 0515	1 0603	2 1802	1 0223	2 0323
	1 0018	2 0308	1 0444	2 0107	2 1330	1 0271	2 0304	2 1589
	2 0944	2 0363	1 0860	2 0554	2 1213	1 0583	1 1224	1 0728
30	2 0029	2 0007	1 1513	1 0433	1 0920	2 0419	1 1935	1 1021
	2 1170	2 0339	1 0880	1 0814	2 2048	2 1237	2 0400	1 1178
	1 0187	1 0117	1 1225	1 0497	2 1120	2 0104	1 0664	2 0872
	2 0156	2 0310	1 1845	2 0267	2 0428	2 0220	1 0083	1 0808
	2 1439	2 1011	1 0132	1 0859	2 1145	1 0408	2 0136	1 1790
35	1 0577	1 1478	2 1799	2 1974	1 0085	2 0384	1 0400	2 2500
	2 0092	1 1000	2 2028	1 1718	2 0636	2 0976	1 0504	1 1449
	2 0356	2 1882	1 0398	1 0046	1 0030	1 1046	1 1587	1 0412
	1 0888	1 0174	1 0855	1 1704	2 0215	1 0875	2 1104	1 0608
	2 0417	1 0410	1 0477	2 0921	1 0744	1 0080	1 1103	2 0003
40	2 1570	2 0077	2 1586	2 0277	2 0816	1 0071	1 0047	1 0050
	2 0245	2 0112	1 1794	1 1018	1 0279	1 0948	1 1527	1 1672
	2 0723	2 0288	1 0080	1 0092	1 0107	2 2536	1 0794	1 1420
	1 0709	1 0038	1 0905	1 1328	2 1795	2 0612	1 0205	2 0005
	1 1840	1 0542	2 1536	1 0370	2 0210	2 2301	2 0824	2 1487
45	2 0701	1 1413	2 1653	2 0947	1 1255	1 0066	1 0237	2 0067
	1 0590	2 0874	2 0340	1 0338	2 0381	2 1776	1 0163	1 0088
	2 0923	2 0700	1 1036	1 2834	1 1840	1 0603	1 2428	1 0719
	2 1679	1 0381	2 0302	2 0000	1 0210	2 0350	2 0050	1 1154
	1 0981	1 0142	1 0503	1 0088	1 0200	2 0225	2 0976	2 0840
50	2 0046	2 0030	2 0701	2 0878	2 0214	1 1611	1 0955	2 0654

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2", for the "-" sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point line to be placed after the first digit.

* For warning as to use see paragraph 2.10 of Introduction.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 5*

row no.	col. no.	1	2	3	4	5	6	7	8
		2 0707	1 0703	1 0488	1 0750	1 0158	2 0517	1 0993	2 1200
		2 0690	1 0343	1 0227	1 0242	1 0710	1 1082	2 1190	2 1466
		1 0358	1 0014	1 0335	1 0442	1 0810	1 0054	1 1030	1 0219
		1 0452	2 0119	2 1530	2 1082	2 0069	1 0108	2 0419	1 0820
	5	2 0715	1 0317	2 1524	1 0974	1 0422	2 1553	2 0114	2 1806
		2 1283	2 0562	1 0305	1 0673	1 1133	1 0833	2 0601	1 1177
		1 0771	1 0643	2 1730	2 0184	1 0832	1 0437	1 0608	2 1106
		1 0890	1 0299	2 1212	1 1255	2 0547	2 0775	2 1030	1 0992
		1 1309	1 0990	2 1855	2 1063	2 0577	1 0586	1 2468	2 0368
	10	1 0228	2 1299	1 1107	1 0005	1 0648	2 1030	1 0568	1 1170
		1 0175	1 0261	1 0849	2 0376	2 1413	1 0801	1 0568	1 0182
		1 0514	1 1053	1 0319	1 0914	2 2748	2 0175	2 0357	2 0259
		2 0576	1 0120	2 1252	1 0740	1 1182	2 0938	1 1751	1 0845
		2 0235	2 0212	2 0880	1 0575	1 0504	2 1231	1 1404	1 0624
	15	1 1218	2 0267	1 1888	2 0917	1 1179	2 0298	2 0770	2 0623
		2 1649	1 0958	2 0723	2 2727	2 0723	2 1310	1 0968	2 1900
		2 1049	2 0219	1 0510	1 1476	1 0586	1 0344	1 2206	2 0083
		1 1556	2 0086	1 0214	1 2592	2 2001	2 0287	1 0550	2 0940
		1 0152	2 0371	2 0329	2 0020	1 0740	1 2340	1 0388	1 0341
	20	2 1024	1 0575	2 0861	2 0762	1 0105	2 0064	1 0743	2 2200
		1 0243	2 0425	1 0249	1 1131	1 0008	1 0421	2 0584	2 1187
		1 0436	1 0180	1 1138	2 1507	1 0444	2 0102	1 0018	1 1288
		2 0401	2 0118	1 0365	2 0973	2 1115	1 1181	2 1116	1 0124
		1 1054	2 0708	1 0069	1 0425	2 0789	1 1477	1 0283	2 0513
	25	1 1410	2 1255	2 0812	1 0127	2 0509	2 0198	1 0537	2 0467
		2 0149	1 0910	2 1090	2 1436	2 0970	2 0612	2 0157	1 1547
		2 1887	1 1040	2 2118	2 0651	2 0690	1 1883	2 2183	2 1801
		1 0185	2 0380	2 1917	1 0404	1 0377	2 1887	2 1311	1 0788
		1 1062	1 0722	2 0604	1 0383	2 0470	1 0213	1 0730	2 1085
	30	1 1495	2 0656	1 0361	2 0074	1 0527	1 0170	1 0435	2 1227
		2 0720	1 0252	2 0597	1 1189	2 2297	2 1111	1 1043	1 0907
		1 1002	1 1739	1 0984	2 0108	2 0403	1 1185	1 0083	2 0152
		1 0830	2 1189	2 1669	2 0478	1 0949	2 1155	1 0395	2 1094
		1 0626	1 1062	2 2370	1 0407	2 0680	2 0364	2 1478	2 0293
	35	2 0402	1 0605	2 0810	2 0773	2 1276	2 1084	1 0296	2 0474
		1 0465	2 0516	1 0501	1 0277	1 0115	1 0574	1 1331	1 2028
		1 0226	2 0735	1 0502	1 0070	2 0783	1 0237	2 0731	2 0182
		1 0366	2 0208	2 0530	2 0725	2 0559	2 2644	2 1255	1 0004
		2 0347	1 0780	2 0164	2 0600	2 0542	1 0839	1 2357	2 2878
	40	2 0011	2 1385	1 1117	1 0634	2 0240	1 0146	2 0531	2 0945
		1 1369	2 0726	1 1442	2 0170	2 0649	2 0589	2 0643	2 1617
		2 0697	2 0444	2 0434	2 1420	1 0944	2 0649	2 1211	1 1077
		1 0382	1 0177	2 0178	1 1336	2 0623	2 1041	1 0767	2 0536
		2 0006	1 1571	2 0714	1 1847	1 0082	1 2340	1 1406	2 0378
	45	2 1650	2 0325	1 1690	2 1138	2 0687	1 1616	2 0656	1 0500
		1 0390	2 1723	2 0420	1 0402	2 0627	2 0409	1 1654	1 0588
		2 0679	1 1358	1 0280	2 0286	2 0109	1 0013	2 0720	2 0005
		2 0657	2 0621	2 0136	1 2697	1 1138	1 0795	1 0085	2 0319
		2 0647	2 0102	2 0216	2 0951	1 1662	1 0693	1 0768	1 0402
	50	2 1403	1 1683	1 1967	1 0824	2 0361	2 1417	1 0545	2 1800

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

* For warning as to use see paragraph 2.10 of Introduction.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 0

row no.	col. no.	1	2	3	4	5	6	7	8
		2 2130	1 0308	2 0293	1 1088	1 0244	2 0643	2 0354	2 1354
		2 0359	2 1113	1 0289	1 1055	2 1038	1 0359	1 0562	2 0098
		2 0326	1 0667	1 1430	2 1069	1 1215	1 1866	1 1282	1 0996
		2 0157	1 2687	2 0089	1 1270	2 0002	1 1705	1 0255	1 0388
	5	2 0315	1 0648	2 0506	1 0432	2 0300	2 0583	1 0344	2 0593
		1 1031	2 0211	2 1764	1 0197	2 0411	1 0563	2 0005	1 1577
		1 1739	1 1198	2 0603	2 0161	1 0056	1 0078	1 1006	1 0385
		2 0841	1 0060	1 0944	1 0241	1 0716	1 1062	1 1001	1 0308
		2 1678	1 1304	2 0661	1 0505	2 0384	2 0612	1 2270	2 1346
	10	1 1266	2 1223	2 0533	1 0838	2 0337	1 2620	2 1587	1 0488
		2 0165	2 2073	2 0042	2 0710	1 0355	2 1030	2 0596	2 2142
		1 0449	1 1735	1 2442	1 0111	1 0288	1 0119	1 0356	2 0418
		1 1402	1 1875	1 0231	2 0419	1 0514	2 0999	1 0918	2 1999
		1 0231	2 0428	2 0558	1 0763	1 1004	2 1592	2 1061	2 1006
	15	2 1815	1 0986	2 1020	2 0290	1 1171	2 0810	2 0317	1 0221
		2 1414	1 1567	1 0534	1 1171	2 0826	1 0071	2 0564	1 0543
		1 0973	2 1376	1 1407	2 2122	2 0344	2 1903	1 1470	2 1270
		1 0286	2 0383	1 0346	2 0154	1 0590	1 0844	1 0964	2 1279
		1 1309	1 0077	1 0374	2 1919	1 1355	2 0203	2 1540	2 0969
	20	1 1080	2 0834	2 0663	1 0432	1 0022	2 0806	2 0680	2 0636
		1 0160	1 1060	1 0723	2 1188	2 0329	2 0797	1 0281	1 0264
		1 1169	2 0978	2 0869	2 0113	1 0348	2 0037	2 0543	1 0776
		2 1757	1 0188	1 1745	2 0530	1 0221	1 0894	2 1025	1 0781
		1 2409	1 0462	1 0293	2 0928	1 0820	1 1171	1 1239	2 0183
	25	1 0843	1 2929	2 1664	2 0364	1 0318	1 0368	1 0645	2 0573
		1 0464	2 1276	2 1341	2 0160	1 0366	1 1068	1 2342	2 0749
		1 0360	1 1606	2 0499	1 0497	1 0795	1 0623	2 1000	1 0087
		2 0680	1 0907	1 1945	2 0139	2 2140	1 0637	2 2489	1 0656
		1 0124	2 0612	2 0748	1 0491	2 0621	1 0497	2 0242	2 0506
	30	1 0450	1 0692	1 0750	1 0806	1 1155	2 2030	1 1251	2 0688
		1 1363	1 0230	2 2183	2 0033	2 0653	2 0456	2 0130	2 0817
		2 0543	2 2273	2 0207	1 0474	2 0707	2 1190	1 1237	2 1101
		2 0306	2 0341	2 0640	2 3432	2 0389	2 1196	2 1222	1 0501
		2 0525	1 0202	1 1058	1 0105	2 0657	2 0961	1 1301	1 0894
	35	2 0752	2 0011	1 0415	1 1014	1 0822	1 0557	1 1006	1 0053
		2 0987	2 1064	2 1186	2 0280	1 1766	1 1127	2 1192	1 1096
		1 1025	1 0525	2 0187	2 0738	1 0378	2 0133	1 1341	2 1323
		2 0137	2 1818	2 2597	1 0502	2 0202	2 1800	2 1119	1 1849
		1 0954	2 0237	1 1447	2 0943	1 0489	1 0603	2 1847	1 0066
	40	1 0281	2 0782	2 1983	2 0654	2 0083	2 0895	2 1671	1 1187
		1 1060	2 1104	1 1152	1 0393	1 0587	2 1102	1 2034	1 1478
		2 0980	2 1099	1 1366	2 0440	1 0308	1 0217	1 0383	1 1208
		1 0986	2 1490	2 0739	1 0345	2 0493	1 0103	2 1169	1 0952
		1 0996	1 0907	1 0973	2 1651	2 0766	1 0728	2 0330	2 1041
	45	2 1691	2 0162	1 2040	1 1120	1 0037	1 0918	1 0858	2 0297
		1 0710	1 0072	2 0643	1 0435	1 0510	1 1052	1 0117	2 1206
		1 0005	1 0329	1 0326	2 0523	1 1299	2 0445	1 0256	1 1227
		2 1530	1 0114	2 1928	1 0618	2 1610	2 2113	2 1651	1 0267
		1 0166	1 0583	2 2948	1 0508	2 1134	2 0345	1 0733	2 0402
	50	2 0417	2 0986	2 0546	1 0174	2 1023	2 0714	2 1464	1 1390

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2", for the "-" sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 10

row no.	col. no. 1	2	3	4	5	6	7	8
	2 1232	1 1135	1 1687	2 0752	2 1770	2 0734	2 0094	1 1465
	1 1542	1 0807	1 2334	2 0944	1 0070	2 1324	1 0332	2 0001
	1 0520	1 1108	2 0281	1 0460	1 0178	2 0120	1 0772	2 2319
	2 2562	2 1278	2 0062	2 0659	1 1462	1 0010	1 0602	2 0346
5	1 0186	1 1439	1 0470	1 0051	2 0252	2 0331	2 1238	2 0805
	2 1036	1 0250	1 0650	2 0543	1 0848	2 1147	2 0965	2 0915
	1 0093	1 0309	2 0649	2 0496	1 0162	1 0504	2 0165	2 0813
	2 0081	2 0445	2 1455	1 0882	1 0304	1 0608	2 0314	1 0253
	1 0791	2 0655	1 1018	1 1267	2 0136	2 0924	1 0678	2 0575
10	2 0010	2 0613	2 0634	2 0180	1 0150	1 1101	2 0567	2 1165
	1 0617	2 1601	1 1279	2 1551	2 1653	2 0010	2 0256	1 0313
	1 0025	1 1018	1 0275	1 0431	1 0072	1 0253	1 0801	2 1240
	2 1446	1 0008	2 1377	2 0171	2 0677	2 0873	2 0603	1 0568
	1 0630	1 0949	2 0449	2 0001	2 0005	1 2652	1 0082	1 0650
15	2 1122	2 0433	2 0308	2 2238	1 0018	1 0898	2 0716	2 1363
	1 1139	2 0626	2 1025	2 1252	1 0049	2 0879	1 0518	1 1032
	2 1556	1 1611	2 0120	2 2312	1 0148	2 0941	2 3121	2 0309
	2 0401	2 0208	1 0400	2 0371	1 0630	2 0420	2 0341	1 0866
	2 1410	2 0551	2 0091	1 0273	2 1034	2 1112	1 0076	1 0273
20	1 0356	2 0506	2 1013	1 0670	1 0479	1 0856	1 0805	1 0566
	1 0806	1 0728	2 1068	1 0685	2 0502	2 0086	2 0071	1 0455
	2 0086	1 2248	2 3353	2 0275	1 1394	1 1480	1 0085	1 2737
	2 0026	1 1148	1 1551	1 1084	1 0540	2 1572	1 0612	2 0756
	1 0511	1 0458	1 1829	1 2178	1 0639	1 0800	2 0623	2 0360
25	1 0230	2 0464	2 0575	2 0206	1 1377	2 0198	1 1076	2 3710
	2 0448	2 1392	1 1460	2 1025	1 0991	2 1455	2 1902	2 1610
	1 0120	1 1271	1 1305	2 1266	1 0094	1 0879	1 0251	2 0005
	1 0031	1 0176	2 0054	2 0506	1 0791	1 0617	1 1337	2 0526
	1 0730	1 0725	2 0050	1 0638	1 1398	2 0400	1 0248	1 1779
30	1 0914	2 0336	1 0244	2 0392	2 0501	2 0550	2 0430	2 2197
	2 0779	2 0822	1 0815	2 1051	1 1057	1 1525	1 1305	2 1834
	2 0167	1 0799	2 1620	1 1496	1 0476	1 0124	1 0033	1 1082
	2 0526	2 0462	1 0502	2 1608	1 0290	2 0473	2 1416	1 1295
	1 0640	2 1080	1 1372	1 0810	2 1023	1 1161	1 1732	2 1187
35	2 0483	1 0346	2 0150	1 2052	1 0613	2 0191	1 0885	1 0423
	2 1204	1 0250	2 2480	1 0474	2 0408	1 0622	1 0534	1 0007
	1 0487	1 1597	2 1400	1 0875	2 1316	1 1613	2 0537	1 1096
	2 1725	2 1860	1 0220	1 0174	1 0720	1 1054	2 0625	2 1565
	2 1165	2 1410	2 1601	2 1914	1 1568	2 0666	1 0236	1 1520
40	2 1553	2 0020	1 0184	2 0835	1 1042	1 1394	1 0905	1 0237
	1 0973	2 1417	2 0288	2 1963	1 0187	2 1517	1 2020	2 0138
	2 1509	1 0243	2 1798	1 2687	1 0695	2 0137	1 0268	2 2024
	1 1362	1 0175	2 1030	1 0472	1 0346	2 0813	2 0013	1 0104
	2 0240	1 1307	1 0491	2 1016	1 0607	1 1623	1 1574	1 0204
45	2 0153	1 1957	2 0311	1 0702	1 0535	1 0547	2 0347	1 1997
	2 0181	1 1086	1 1040	2 0020	2 0732	2 0883	1 0814	2 0100
	1 0831	2 1262	2 0632	1 0053	1 1677	2 0412	1 0162	2 1341
	1 0452	1 0460	2 0588	1 0812	2 2155	1 0404	2 0571	2 0484
	2 0667	1 0216	2 1354	1 1710	2 1497	1 0345	1 1430	2 0508
50	2 0880	1 0846	1 2748	2 1930	2 1472	1 1765	1 0050	1 2007

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 11

row no.	col. no.	1	2	3	4	5	6	7	8
5	2	0242	2 0154	2 0509	1 0103	2 0402	2 0833	1 1182	2 0649
	1	0910	1 0506	2 0019	2 0955	1 0423	1 0483	2 1536	1 0567
	1	1281	1 0254	1 0962	1 0555	1 0421	1 0707	2 0460	1 0591
	1	0219	1 0646	2 1930	2 0684	2 0085	2 0521	1 1851	2 0928
	1	1165	2 0642	1 1559	2 0160	1 0830	1 1092	1 2302	2 0019
10	2	1972	2 1595	1 1900	2 0433	2 0858	1 0181	2 0737	2 1774
	1	0652	2 1453	2 0139	2 2878	1 0291	1 0490	1 1091	2 0851
	2	0699	1 1059	1 1708	2 0701	1 1169	2 0314	2 1151	1 0669
	1	1649	1 0695	2 0724	1 0294	1 1073	1 0482	2 0161	2 0197
	1	0142	1 0350	1 0125	2 0264	2 0404	1 0679	1 0344	1 1029
15	2	0532	2 0840	2 1328	1 0503	2 0014	2 0228	2 0349	2 1205
	1	0060	1 1813	2 0162	2 1351	1 1981	2 0911	1 1544	1 0113
	2	0696	1 0901	2 3549	1 1992	2 0753	1 2181	1 0935	1 0390
	2	0103	2 0261	2 0773	1 1352	1 1600	1 1611	2 0516	2 0170
	2	0366	2 1368	2 0029	1 0753	2 0221	2 0235	1 0034	1 1104
20	1	0067	1 0428	2 0428	2 0144	1 1034	2 0115	2 1301	2 1257
	1	0287	2 1193	2 0184	1 0992	2 0065	2 0803	2 1536	2 0144
	1	1997	2 0344	2 0771	1 0567	2 0946	2 1050	2 0660	1 1192
	2	0528	1 0643	1 0440	2 0165	1 0098	2 0570	2 0344	2 2197
	1	0674	1 0932	1 0089	1 0534	1 0363	1 0497	2 1201	2 1125
25	1	0325	2 0340	1 0882	2 0619	2 0227	1 0511	2 0625	1 0070
	2	0284	2 0635	1 1133	1 0284	2 0073	2 1300	1 1083	2 0464
	2	0212	1 2054	2 0532	2 1261	2 0276	2 0289	2 0562	1 0448
	2	0123	1 0382	1 1897	1 0717	2 1609	2 0549	1 1474	1 1203
	2	0346	1 0192	1 0797	1 2326	1 2346	2 0215	2 0783	1 0060
30	2	0471	1 0030	2 1509	2 1088	1 0199	2 0328	1 1612	1 1082
	1	1423	2 0263	1 0319	2 0157	2 0406	1 0209	1 0708	1 0317
	2	1160	1 0496	1 1095	1 1374	2 0118	1 0141	2 0904	1 0990
	1	0725	2 0339	1 0838	2 0581	2 0407	1 0080	1 0268	1 0792
	2	2590	1 0188	1 0283	2 0930	1 0044	2 1231	2 0297	1 1178
35	1	0260	1 0036	1 0301	1 0383	2 0119	1 1017	2 0009	2 0465
	1	0509	1 0679	1 2478	1 2052	1 0201	2 0706	1 0994	1 0506
	2	1140	1 0333	1 1158	2 1143	2 0241	1 1713	2 0603	2 1174
	1	0124	2 0210	1 1152	1 0255	2 2062	1 0968	1 0156	1 0190
	1	0828	1 0088	2 0538	2 0693	1 0926	2 1711	1 0906	1 0594
40	1	0096	1 2583	2 0437	1 0299	2 0299	2 0805	2 0861	2 1771
	2	0409	2 1899	1 0335	1 0114	2 2032	2 1146	1 0699	1 1377
	2	1597	1 0117	1 0147	1 1562	2 1560	1 1311	1 1089	1 0807
	1	0990	1 0656	2 1341	2 0548	2 0388	1 0881	2 0143	1 0821
	1	0298	1 0324	2 0686	2 0555	1 0333	2 1502	1 1863	2 1188
45	2	0522	2 0868	1 0452	1 0515	2 0176	2 0180	1 2315	2 1264
	2	0619	1 1086	1 0440	1 2194	1 0738	2 0750	1 1334	1 1297
	1	1876	2 0707	1 0321	2 1083	2 0975	1 1809	2 1360	2 0738
	2	1111	1 0608	1 1508	1 1021	1 1602	2 0873	1 1066	1 0036
	2	0473	1 1437	1 0146	1 0247	2 1671	1 1235	2 0449	1 0249
50	2	0808	1 1439	2 1218	2 0524	2 0301	2 2097	1 0664	2 0825
	1	0245	1 0034	2 0858	1 0124	2 1384	2 0528	2 1051	1 0680
	2	0822	2 1577	2 1210	1 1432	2 0733	2 0750	1 0095	1 1127
	1	1856	1 1278	1 1968	1 0159	1 0052	2 0587	1 1408	1 0707
	2	1354	2 0706	1 0256	2 2848	1 1003	1 0211	2 1022	2 0249

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2" for the "-" sign. The normal deviates listed are above have a standard deviation of 1000. To obtain deviates with unit s.d., a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 12

row no.	ool. no.	1	2	3	4	5	6	7	8
		2 0087	2 0300	1 1007	2 0780	2 0722	2 0683	2 2628	2 0389
		1 1299	1 0712	2 1105	2 0220	1 0567	2 0862	2 0028	2 0655
		2 0831	2 0730	1 0629	1 0255	1 1563	1 1301	2 0606	1 1013
		2 1621	2 1041	2 1386	2 1768	1 1031	2 1726	1 0588	2 0013
	5	1 1027	1 0260	1 0149	1 0338	1 1588	2 0001	2 1116	2 0021
		1 2305	2 0388	1 0134	2 0650	2 0164	2 1298	2 0650	2 0862
		1 0352	1 2323	1 1446	1 0629	2 1110	2 2181	2 1491	2 0240
		1 0909	2 1291	2 0458	2 0453	2 1916	1 0842	1 0288	2 0125
		2 1562	2 0022	2 0307	1 1162	1 0037	2 0669	2 0371	1 0466
	10	1 0385	1 1352	2 0329	1 1194	2 1483	2 1069	1 0781	1 1689
		2 1426	2 1222	1 0810	2 0119	1 1161	2 0887	2 0802	2 0055
		1 1116	2 0032	2 0820	2 0902	2 1308	1 0007	2 0534	1 0402
		2 2101	1 0770	1 0382	1 0632	2 0229	2 0975	2 0744	1 0756
		2 0415	2 1303	1 0349	1 0192	2 1849	2 0646	2 0398	1 1283
	15	2 1937	1 0256	2 1121	1 0221	1 0234	1 1079	1 1311	1 1279
		2 0230	1 0749	1 0901	2 0583	2 0847	2 1130	2 2644	2 0674
		1 1535	1 0633	1 0837	2 0864	2 0765	2 0400	1 0450	2 1790
		2 0513	2 0311	2 0794	1 0720	2 0246	2 0993	2 0660	1 1413
		1 1265	1 1104	2 0895	1 0071	1 0150	2 0628	1 0439	1 0119
	20	2 1783	2 0214	1 0050	1 0193	2 0818	1 0420	2 0496	1 0180
		1 1336	2 0057	2 3540	1 0524	1 0772	2 0741	2 0544	1 0286
		2 0686	2 1260	2 0478	2 0367	1 0570	2 0831	2 0663	1 0548
		2 0517	1 0309	2 0489	1 0216	1 1688	2 0342	2 1951	1 0137
		1 0190	1 1437	2 1193	2 0445	2 0891	1 0069	1 0118	2 1105
	25	2 0162	2 0328	1 0510	1 1037	2 1006	1 0192	1 0012	1 0564
		1 0576	1 0964	1 0986	1 0633	2 0106	2 0034	2 1531	1 0025
		1 0909	1 0238	2 0341	2 0786	1 0440	1 0697	2 0939	2 0606
		2 0435	2 2014	2 0356	1 2280	2 0098	1 1110	2 0777	1 0610
		1 1315	2 0940	1 0654	1 0474	1 0418	1 0949	1 1227	1 0134
	30	1 0802	1 0046	1 0705	2 1873	2 0024	2 0438	1 0873	2 0280
		2 0425	1 1017	1 0639	2 1111	1 0087	1 0403	2 0479	2 0256
		2 0408	1 0729	2 1375	1 0553	2 0919	1 1597	1 0328	2 0667
		2 0275	1 0220	1 0806	1 0286	2 0749	2 0879	2 1436	1 0262
		1 0280	1 1308	1 0510	1 1197	1 0394	2 1330	1 0432	1 0182
	35	2 0299	2 0953	2 0572	2 0081	2 0091	1 0022	2 0480	2 0442
		2 1104	2 1731	1 1484	1 2028	2 1134	2 1426	1 1004	2 1239
		2 0193	2 1963	1 0769	1 0386	2 0697	2 0242	2 1377	1 1329
		1 0490	2 0467	1 0537	2 0343	1 0066	2 1782	1 0694	1 0412
		2 1465	1 0002	1 0019	2 1209	1 0086	2 0991	1 0045	2 1301
	40	2 0399	1 0364	2 0430	2 1569	2 1146	2 1605	1 0600	2 1428
		1 0170	1 0626	1 0687	2 0336	1 1552	1 0084	2 0245	2 1043
		2 0647	2 0440	2 1596	2 0698	2 0350	2 0650	1 0529	1 1389
		1 1072	2 0188	1 0645	1 0066	1 0103	2 0404	2 0498	1 1068
		1 1026	1 0338	2 0267	1 1845	1 0394	2 1200	1 1163	2 0767
	45	2 1924	1 0157	1 1058	1 0139	1 0665	2 0583	2 0576	1 1774
		1 0638	1 0771	1 0820	2 0627	2 0137	1 0622	2 0539	1 1068
		1 0033	2 0810	1 0748	2 1314	2 0279	2 0140	1 0568	1 0910
		2 0819	2 0316	2 1317	1 0619	1 0238	2 0404	2 0831	2 0082
		1 1487	1 0910	1 0774	1 0330	1 0545	1 0383	2 0250	2 1272
	50	1 0472	1 1151	2 0396	1 0254	2 0439	2 0281	1 0634	2 0404

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 13

row no.	col. no.	1	2	3	4	5	6	7	8
	2	0143	2 1965	1 1055	2 1737	2 0281	2 0674	2 0532	2 0214
	1	1400	1 0617	2 1038	2 0075	1 0533	1 1752	2 1530	2 0325
	2	0190	2 1481	1 0264	2 1322	2 0538	2 0008	1 0930	1 0748
	1	0517	2 1253	1 1262	1 0039	2 0788	1 1704	1 0721	2 0512
5	1	0170	2 0994	1 1146	2 1632	1 1133	1 0281	1 0622	1 0738
	1	0634	1 0619	2 0227	1 0260	2 0200	1 0011	2 0125	1 0780
	1	0506	2 2132	2 0435	1 0311	2 0220	1 0392	2 0171	1 1574
	2	0998	1 0511	1 0705	1 0221	2 1402	2 1207	1 1570	2 2077
	2	0080	1 0597	2 0842	2 1307	1 0964	2 0253	2 0752	1 1107
10	2	0200	2 0441	2 0942	1 0462	1 0998	1 0512	1 0073	1 0010
	1	0224	2 0435	2 1182	2 1167	2 0276	2 1223	1 0589	2 2697
	2	0648	2 0106	1 1587	1 1815	2 1828	1 1899	1 1134	1 1736
	2	1138	1 0247	2 0183	2 0026	1 0180	2 0492	1 0021	1 0266
	1	0468	2 0651	2 2689	2 1160	1 0056	2 0683	1 1231	1 2748
15	1	0483	1 1463	2 1177	2 1816	2 0486	1 0228	2 0711	1 0817
	2	0465	2 0165	2 0139	2 1097	2 1785	1 0942	2 0139	2 0427
	2	0661	1 0187	2 0870	2 0674	2 0672	1 0177	2 0097	2 0225
	2	0709	2 0554	2 0411	2 0039	1 1153	1 0846	2 1967	2 0342
	2	0661	2 0276	2 1067	1 0353	2 0421	1 1305	1 0249	2 1710
20	1	0466	1 0250	1 0898	2 1420	2 0427	2 0250	1 0526	1 1202
	1	0885	2 0080	1 1836	2 0410	1 1215	2 0376	1 0138	1 0504
	2	0008	2 0608	1 2530	2 1208	1 1649	2 1627	1 0060	2 1287
	2	0127	2 1222	1 0930	1 1387	1 0317	1 0592	2 1287	2 1052
25	1	1294	1 0013	1 0096	1 1730	2 1114	2 0669	1 0148	2 0240
	2	0046	2 1278	2 1244	2 0563	1 0812	2 0621	1 0145	2 0964
	1	1225	2 0033	2 0462	2 0449	2 0367	2 0422	2 0338	2 0774
	2	0193	1 0672	1 0013	1 0018	1 0400	2 1406	2 0863	2 1159
	1	0505	1 0198	1 0433	1 0790	1 0964	1 1562	2 0453	1 0467
	2	1643	2 0350	1 0770	2 1024	2 0236	1 0115	1 1090	2 0455
30	1	0369	1 1598	1 1224	2 1062	1 0745	2 0038	2 0470	1 0242
	2	1151	2 1745	2 0107	1 0486	2 0322	1 1704	2 1207	1 1130
	2	0493	2 1191	1 0265	1 0211	1 0317	1 0452	2 0719	1 0742
	1	1186	2 0357	1 0787	2 0812	1 0814	1 0834	2 1516	1 1283
	1	1117	2 1174	2 0663	2 1860	1 1142	1 1914	2 0112	2 0079
35	1	0082	2 1150	1 1647	2 1825	1 2304	2 1708	2 0620	1 1405
	2	0306	2 1402	1 0855	1 0660	2 1630	1 1134	1 0994	1 0139
	2	0616	1 0707	2 0410	1 0392	2 0610	2 0114	1 1376	2 0885
	1	1650	1 0973	1 0818	2 1024	2 0379	1 0491	2 0168	1 0594
	1	1133	1 0161	1 0713	2 0482	2 0124	2 0480	2 0247	2 0111
40	1	0880	2 0071	1 0701	2 0106	1 0820	1 0683	1 1330	2 0698
	1	0286	1 1636	2 0496	2 0760	2 0411	1 0336	1 0499	1 0860
	2	2387	2 1468	1 1703	1 1006	2 0168	1 1850	1 0383	1 0650
	2	0300	2 0411	1 0162	1 0108	2 2395	1 0546	1 0504	1 0540
	2	0775	1 1394	2 0046	2 1584	2 1168	1 1029	2 0745	2 1331
45	1	0098	2 1085	1 0553	2 0106	1 0027	1 0822	2 0125	2 0593
	2	0602	1 0207	2 0590	2 0177	1 1089	2 1333	1 0501	1 0001
	2	1650	2 0328	1 0267	2 0045	2 2277	1 0937	2 0088	1 2330
	2	0441	2 0505	2 0513	2 1371	2 0542	2 0240	1 0504	1 0742
	2	1104	1 0144	1 0604	1 0470	1 0659	1 0236	1 0378	2 0319
50	2	0487	2 0642	1 0144	2 1024	1 0879	1 0131	1 0606	1 0820

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

row no.	col. no.	1	2	3	4	5	6	7	8
		1 0778	1 0405	2 1404	1 0330	2 1474	2 0159	1 1924	2 2058
		2 0407	1 1135	2 0010	1 0915	2 0352	2 0033	1 0507	1 0660
		2 0531	2 0409	2 0571	2 0191	2 0699	2 0817	1 1486	2 0732
		1 0855	1 2101	1 0224	2 0703	2 1196	2 0604	1 0370	2 0541
		1 0140	1 1048	1 0297	1 0927	2 0691	1 1917	2 0096	2 0140
		2 0633	1 0896	2 0421	1 1379	2 0683	2 0284	1 0758	2 0013
		2 0465	2 0020	1 0615	2 0021	1 0731	1 1142	1 2794	1 0449
		2 0598	1 0303	1 0572	2 0215	1 0549	2 0537	1 1045	2 0080
		1 0667	2 2287	2 0082	2 0705	2 0530	1 0838	1 1856	1 0031
10		1 0095	1 0546	2 0615	2 0510	2 0151	1 0130	1 0880	1 1037
		1 1449	2 0099	2 0837	2 0274	1 0761	2 0301	2 0452	2 0978
		1 0217	1 0761	2 0476	2 1645	2 0640	2 1603	1 0093	1 0777
		2 0557	1 0420	1 0456	1 0927	2 0999	2 2501	2 2597	2 0302
		1 0033	1 0910	2 0329	2 0120	1 0430	1 0082	1 0090	2 0012
15		1 1314	1 0582	2 0782	2 0449	2 1219	2 1088	2 0161	2 0120
		1 0806	1 0220	2 0641	1 1182	1 0128	2 0170	2 2748	2 0063
		2 0331	1 1413	2 1592	1 0634	1 0572	1 1715	2 1121	1 1587
		2 1774	2 0429	2 2203	2 0111	2 0201	1 0384	2 0394	2 1816
		2 1967	2 0133	1 1969	1 0661	2 1134	2 1803	2 0710	2 0710
20		1 0603	2 2404	1 0495	2 0508	2 0084	2 1538	2 0101	2 0412
		1 1485	2 0055	1 0180	1 1236	2 0113	2 0255	1 0144	1 1425
		1 0282	1 0279	2 1302	1 0629	1 0481	2 0515	1 2834	2 0313
		2 0736	2 0132	1 1371	2 1492	2 0624	2 0820	2 1624	1 1428
		1 2111	1 1204	1 1115	1 0421	1 0118	1 1185	2 0174	2 0805
25		1 0441	1 0934	1 0270	1 0514	2 2550	1 0911	1 0384	2 0123
		2 1221	1 1631	1 0394	2 0265	2 0862	2 1030	2 0061	2 0411
		1 1813	2 1055	1 0154	2 1803	2 0104	2 0429	1 1757	2 0367
		1 0974	1 0184	2 0167	2 1389	1 0800	2 1123	1 0205	1 1121
		1 0519	1 0032	1 0751	2 0417	1 0360	2 0401	1 1070	2 0746
30		1 0383	1 0721	1 0549	1 0979	1 0167	2 0217	1 2248	2 0319
		1 1067	2 0780	1 0893	2 0162	1 0081	2 0659	2 1911	1 0688
		1 1385	2 1741	2 0163	1 0285	1 1233	1 2457	2 0210	1 0262
		2 0707	2 2139	1 0299	2 0008	1 0910	1 1485	1 1149	1 1069
		1 0874	1 2232	2 0853	2 1938	2 1490	2 0624	1 0476	2 0494
35		2 0536	1 1288	2 1050	2 0165	1 0530	1 0896	2 1012	1 0994
		2 1552	2 0843	2 0483	1 0511	2 1109	1 0677	2 0415	1 1380
		2 1426	2 2489	2 0010	1 0392	2 0116	1 1554	1 0017	2 2022
		1 0594	2 1174	2 0522	2 0169	1 0076	1 1449	2 0558	2 0050
		2 0960	2 0549	1 0507	2 1480	1 2512	1 0693	2 0038	2 1702
40		2 0399	2 0373	1 0632	2 0067	1 0235	2 1176	1 0087	1 0962
		2 0719	1 2378	1 1171	1 0636	1 1595	2 2495	1 2038	2 0973
		2 0608	1 1504	2 0775	2 0895	1 0438	2 0230	1 0062	1 0479
		2 1208	1 0255	2 0320	2 1073	2 0121	1 0863	2 2157	2 0178
		1 0125	2 0629	1 0445	2 0025	2 1807	2 0335	2 2834	2 0105
45		2 1044	2 1202	1 0445	2 0015	1 1115	2 0161	1 0114	2 1080
		1 1142	2 0369	2 1729	1 0148	1 2697	1 1231	1 0387	2 0824
		1 1298	1 2418	1 1152	1 0773	2 2287	2 0160	1 0634	2 0322
		2 0189	2 0027	2 0916	1 1173	2 0210	2 1663	2 1549	2 0123
		2 0902	1 0023	1 0000	2 0043	1 0437	1 1455	2 0860	2 0371
50		2 0714	2 1571	2 0120	1 0708	2 1645	1 0163	2 0691	1 1363

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 16

row no.	col. no.	1	2	3	4	5	6	7	8
		1 0711	1 0364	1 1361	2 0217	1 0537	2 1101	1 2086	1 0001
		2 1705	2 0076	2 0427	1 1043	2 0190	2 0646	2 0530	1 1021
		2 0414	1 1093	2 0137	2 0168	1 0928	1 0197	2 0627	2 0525
		1 1258	2 0221	2 1449	2 0328	2 1221	1 0101	1 2612	1 1396
5		1 0742	2 1001	1 1070	1 2071	2 0296	1 0679	2 1287	2 1765
		1 0042	2 0138	1 0786	2 0115	1 0461	2 0048	2 0328	2 0923
		2 1561	1 0066	1 0707	1 0863	2 0383	2 0290	1 0348	2 1141
		1 0422	2 0501	1 1387	2 0586	2 0335	2 0203	2 1386	1 0570
		2 2001	1 1010	2 0013	2 1299	2 0214	2 0494	1 0902	2 1301
10		1 1851	2 0100	1 0334	1 0209	2 0771	1 0227	1 1232	2 0388
		2 0358	1 1937	2 0322	1 0160	1 1515	1 1217	2 1074	1 0972
		2 1626	2 0903	1 0193	1 0860	2 0301	1 1941	2 0103	2 1457
		2 0173	1 1595	2 0701	2 0443	1 2391	2 0554	1 1365	2 1600
		2 0027	1 0727	1 0154	1 1653	1 0204	1 0391	1 0465	2 0851
15		2 0957	1 1206	1 0044	2 0902	2 0618	1 0335	1 0031	2 0422
		1 0792	1 1740	2 0880	1 0494	2 0369	1 1270	2 0196	2 0071
		1 0365	1 0352	1 0805	2 0900	2 0361	1 0095	2 1228	2 0150
		1 1989	2 0223	1 0175	1 0294	2 1054	2 0174	1 0163	2 0033
		2 1086	2 0272	1 1783	1 0714	1 0758	1 1209	1 0214	1 0494
20		1 1031	2 1604	1 0980	1 0032	1 0088	1 1795	1 0297	2 0824
		2 0949	1 1640	1 0258	1 0025	2 0893	2 0454	2 0506	1 1790
		2 0062	2 0192	1 0518	2 1233	2 0625	2 1957	2 0561	1 2111
		2 0156	2 1255	2 1084	2 0902	1 0135	1 0166	2 0671	2 0580
		2 1282	1 1190	2 1174	1 0386	1 1016	2 1355	2 1856	1 1196
25		1 0256	2 0210	2 1007	2 1498	2 2005	2 1039	2 0378	1 1171
		1 1680	2 0293	1 0747	1 0213	1 0401	1 0156	2 0679	2 0127
		2 0917	1 0350	1 1059	1 0121	1 0090	1 1582	1 2400	1 2969
		2 0336	2 1581	2 1458	1 1036	1 1252	2 0821	1 0314	1 0062
		2 0033	2 1238	1 0590	2 0014	1 0566	2 1045	2 0406	1 0510
30		2 1584	1 0370	1 1523	1 1130	1 2040	1 1110	1 0100	2 0141
		2 0134	2 0667	1 1254	1 2127	1 1087	2 0505	2 1052	2 1186
		2 1400	2 2597	2 0330	1 0626	2 0684	2 0056	1 0088	2 0467
		2 2147	2 1451	1 0655	2 2257	1 0630	1 0053	1 1378	1 0860
		2 0230	2 1383	1 0265	2 0846	2 0178	2 2090	2 0547	1 0148
35		2 2214	1 0791	1 0285	2 0167	2 0143	2 1454	1 0659	2 0690
		1 1031	1 0427	2 0778	1 1361	2 0900	2 1354	2 0219	1 0631
		1 0090	2 0143	1 1109	2 0011	1 0402	2 1387	2 1251	2 0655
		1 0277	2 0052	2 0234	1 0106	1 1084	1 0231	2 0506	1 0514
		1 0353	2 0775	1 0709	1 1090	1 0616	2 1820	1 0151	1 0087
40		2 0127	2 1203	1 0131	1 0010	2 0555	2 2068	2 0822	2 0057
		2 0517	1 0003	2 0821	1 0025	1 0981	1 0553	1 0546	1 0554
		1 0482	1 0628	1 1181	2 1217	1 0624	1 2506	2 0908	2 0393
		1 0788	1 1699	2 0570	2 0360	2 1179	2 1183	2 0571	2 1055
		1 0312	1 0415	1 0466	2 0689	1 1927	2 0360	2 0546	1 0283
45		2 0634	2 0416	1 0125	1 0213	2 0871	2 0097	2 0528	1 1760
		2 0148	1 0292	2 0722	1 2530	2 0115	2 1301	1 0002	2 0763
		1 1072	1 1637	2 0371	2 0205	1 0458	2 1044	1 1167	2 0296
		1 0082	2 0609	1 2162	2 0638	1 0209	1 0942	1 1037	1 1164
		2 1492	2 0895	1 1227	2 0187	1 1784	1 0530	2 0684	1 0913
50		2 0087	1 0044	1 1336	2 0463	1 0403	2 0593	1 0561	1 0038

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2" for the "-" sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 16

row no.	col. no.	1	2	3	4	5	6	7	8
		1 0875	1 1719	1 2462	2 0209	1 1320	2 3432	2 0778	2 0253
		1 0114	1 0474	2 0828	1 0193	2 1734	1 0656	2 0370	1 0694
		2 0384	1 2200	2 0230	2 0704	1 0497	2 0002	2 0201	2 0278
		1 0166	0000	1 0592	1 1010	1 0023	2 0057	1 2290	1 0310
5		2 0902	1 1642	2 0156	2 0678	1 1664	1 1521	1 0974	2 0085
		1 0617	2 0041	1 0756	1 0975	2 0257	2 0439	2 0328	2 0964
		1 0222	2 0367	1 1164	1 0814	1 1953	2 0300	2 0197	1 0840
		1 1165	2 0974	1 0501	1 1269	2 0115	2 0728	2 1568	1 1232
		1 0942	2 0172	2 1562	2 0281	2 0898	1 1792	2 1363	1 0623
10		1 1872	2 0804	1 1601	1 0280	2 1401	2 0558	1 0595	2 0563
		1 0021	2 1390	1 0104	2 2245	2 0151	1 0944	1 0576	1 1042
		1 2391	1 0831	1 1301	1 0684	1 1184	1 0811	1 0233	1 2086
		2 1001	2 0954	2 0050	1 0888	2 1170	1 1252	1 1662	2 0647
		2 0266	1 0589	1 0818	2 0773	1 0426	2 0544	2 1863	2 1503
15		2 0975	1 0037	1 1090	1 0083	2 2342	1 0028	2 0716	2 1351
		1 1144	1 0750	2 1776	2 0816	2 0619	1 0938	1 0325	1 0568
		1 0484	2 0106	1 0236	1 1730	1 2028	1 1510	1 0284	1 0501
		2 0124	1 0890	1 0185	2 1606	1 0467	2 0586	2 0984	2 0170
		2 0804	2 1164	1 0439	2 0931	2 1587	1 0879	1 0014	2 0233
20		2 0869	2 0982	1 0217	2 1112	2 0619	1 1468	1 0988	1 0066
		2 0432	2 0527	2 1081	1 0659	1 0209	1 1138	2 0124	2 1460
		2 0368	2 0742	2 1719	2 0827	1 0410	1 1375	1 0509	1 1204
		1 1483	1 0163	2 1490	1 1243	1 0663	2 0264	2 0095	1 0114
		1 0603	1 0788	2 0149	1 1472	2 1594	1 1587	1 1569	1 0482
25		1 2506	1 0676	2 0428	2 1004	2 1616	1 0940	2 0253	2 0546
		1 1215	2 0465	2 1419	1 0429	2 1916	2 1283	2 1715	1 1249
		1 1251	1 2022	1 0438	2 0877	1 0260	1 0668	1 0537	2 1360
		1 0428	1 0081	2 0704	2 0010	2 1843	1 0132	2 0284	1 0031
		1 0180	1 0411	2 0404	2 0668	2 0770	2 0260	1 0703	2 0883
30		2 1181	1 0750	2 0445	1 1031	1 1336	1 1331	1 0614	2 1427
		2 0746	2 0055	1 0012	2 0007	2 0322	2 1273	2 0008	2 0638
		2 0504	2 1198	1 0333	1 0132	1 0273	1 0400	2 0096	1 1086
		2 1232	1 2301	2 0455	2 0092	1 2101	2 0809	2 0101	2 0570
		1 0323	2 0533	2 0768	2 0713	2 0174	2 0191	1 0775	1 0861
35		2 1014	1 0028	2 2620	1 2264	1 0383	1 0947	2 1305	2 0654
		2 0900	2 0209	2 0990	1 0032	2 0281	1 0293	1 0035	2 1255
		2 0014	1 0191	1 0081	1 0080	1 0433	1 2001	1 0862	1 1360
		2 1616	2 1295	1 0020	1 2569	1 0006	2 0217	1 0512	1 1549
		2 0893	2 0714	2 1400	2 0110	1 0059	2 0021	1 1081	2 0722
40		2 0909	2 0129	1 1256	1 0033	1 0207	1 0167	1 0982	2 2346
		1 0871	1 0743	1 0363	2 0165	1 0499	1 0755	2 1406	1 0324
		2 0610	2 0083	2 0095	2 0726	2 2323	1 0886	2 0277	2 0167
		2 0877	1 0820	2 0230	2 0402	2 1134	2 1639	1 0218	2 0408
		1 0178	2 1625	1 0543	2 0202	2 2367	2 1818	1 0846	1 0348
45		2 0291	2 1849	2 0798	2 0444	2 0121	2 0123	1 1427	2 1248
		1 0263	1 0666	1 0206	2 1053	1 0139	1 0287	2 0199	2 0206
		2 1049	1 1281	1 0925	1 2697	1 0588	2 0528	2 0432	1 0429
		1 1101	1 0129	2 0476	2 0073	2 2468	2 0463	2 1865	2 1295
		1 0502	2 0776	1 2644	2 1122	1 0085	1 1034	2 0509	2 1350
50		2 0500	1 0705	2 0908	2 0865	1 0189	1 0575	2 0814	1 1607

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2", for the "-" sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 17*

row no.	col. no.	1	2	3	4	5	6	7	8
5	2	0255	2 0410	1 0185	2 0928	2 1653	2 1702	1 1158	1 0753
	1	2948	1 2576	2 1123	2 0079	2 1128	1 1113	1 1717	1 0139
	1	0294	2 0350	1 0146	2 2014	2 1270	2 1460	1 0922	1 0191
	2	1393	2 0537	2 0326	2 0879	2 0568	1 0510	1 0431	2 0147
	2	0177	2 0953	2 0443	2 1553	2 0614	2 0478	1 0006	1 0654
10	2	0163	1 0406	1 1027	1 0875	1 0522	2 0701	2 1896	1 0194
	2	1125	2 0438	1 1188	1 0237	1 0501	1 0887	2 0299	1 0649
	2	0438	2 0851	2 1498	2 0261	2 1310	1 1093	2 0147	2 0639
	1	0776	2 1116	2 0640	2 0315	2 0300	2 0727	2 1586	1 2273
	1	1066	2 0478	2 0516	1 0551	1 0134	2 0553	2 1768	1 2414
15	1	1052	1 0205	2 1488	1 0336	1 1171	2 0339	2 1583	1 0818
	2	1748	2 0652	2 0262	2 1740	2 0392	1 0754	1 0362	2 0079
	2	0528	2 0116	2 1440	2 0161	2 0683	2 0404	2 0468	2 0202
	1	1317	1 0314	1 0781	2 1817	2 1483	2 0998	1 0412	2 1280
	2	0268	1 1266	2 0659	2 0410	2 1397	1 0528	1 1432	1 0659
20	2	0810	1 0823	2 2028	1 0261	2 0424	2 0890	1 0329	2 0915
	1	0020	1 0272	2 1796	2 0768	1 0453	2 0333	1 0901	1 0995
	2	2206	2 2178	2 0900	1 0442	2 1055	2 0395	2 1933	2 1972
	2	0415	2 0054	2 0603	2 0775	2 1074	2 0312	2 0694	1 1466
	2	0474	1 0088	2 0186	2 0542	2 1478	1 1563	2 0522	2 1471
25	1	1566	1 1114	2 0659	1 0759	2 1387	1 0020	1 0089	2 0388
	1	2543	1 0395	1 0341	2 0114	1 0970	1 1198	1 1223	2 0089
	1	2301	1 2848	2 0346	1 0212	1 0468	1 1741	2 2111	1 1176
	2	1605	2 0051	1 2147	1 0286	1 0294	2 1430	1 0613	1 1752
	2	1185	2 0313	1 0183	1 0506	1 0410	1 2028	1 1244	1 1322
30	2	0773	1 2075	2 0669	1 0706	1 1302	2 0181	2 1871	1 0680
	2	0726	2 1180	1 1011	1 0399	2 1171	2 0557	1 2086	2 0329
	1	0294	1 1771	2 0840	2 0678	2 1693	1 0427	1 1187	1 1050
	1	1233	2 1104	1 0952	1 1487	1 0225	1 0519	2 0217	2 0992
	2	1075	2 0469	1 1579	2 0440	2 3062	1 1202	2 0322	2 0765
35	2	0745	1 0495	2 0664	2 0443	2 0217	2 1702	2 0424	1 0335
	2	0807	2 0914	2 2495	1 0784	2 1134	2 0692	1 0351	1 0043
	2	0718	1 0505	1 0774	1 1106	2 1771	1 1215	1 2064	1 0327
	2	1171	2 1943	2 0420	2 0053	1 0998	1 1361	2 0947	1 0332
	2	0718	1 0172	2 0199	2 0191	2 0841	1 0349	2 1148	1 0947
40	2	0071	1 0194	2 0070	1 0700	2 1216	2 1004	1 1140	2 1003
	1	0051	2 0254	1 1369	2 0345	2 0124	1 1422	1 0650	1 1847
	2	0632	1 0150	1 1349	1 1006	1 0868	2 0040	2 0827	1 0866
	1	1859	1 0186	1 0161	1 1317	1 0415	1 1143	1 0346	2 0894
	2	0908	2 0432	1 0362	2 1146	2 0469	2 0582	2 0399	2 0317
45	2	0299	2 0093	1 1086	2 1499	1 0336	1 2183	2 0426	1 0470
	1	0639	2 1970	2 0821	1 0222	2 1462	1 1073	1 0261	2 1494
	2	0816	2 0778	1 1093	2 0093	1 0240	1 0601	1 2402	1 0289
	1	1402	1 0280	1 0280	2 1004	2 0319	1 1428	2 2052	2 0226
	1	0184	1 1036	1 0189	2 0789	1 0257	1 1466	2 0702	2 0325
50	1	0070	1 1105	1 0245	2 0259	1 1562	1 1574	2 1017	1 0939
	2	0432	1 2378	2 2095	2 0872	1 1836	2 0806	1 0466	2 0803
	1	1083	1 0758	2 0197	1 0586	1 0296	1 1423	1 0840	2 0595
	2	0898	2 0158	1 1610	1 1524	2 0602	1 2727	1 0587	2 1297
	1	1077	2 0902	1 0883	2 1040	2 0365	2 0187	2 0137	2 0165

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2" for the "-" sign. The normal deviates listed on above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

* For warning as to use see paragraph 2.10 of Introduction.

row no.	col. no.	1	2	3	4	5	6	7	8
		1 0503	1 0479	2 0245	2 0247	1 2127	2 1030	2 0537	2 0929
		2 0152	1 0511	1 1582	1 1245	2 0553	1 0161	2 0833	2 2848
		1 2315	2 0871	1 0622	2 0154	2 1189	1 1532	2 1828	2 0376
		1 0831	2 3291	1 1793	2 1905	2 0080	1 0211	2 0798	2 0747
5		2 1470	1 1136	1 0066	2 0373	1 0118	2 1920	1 1865	1 1687
		2 1413	1 0167	2 0673	2 0116	1 0747	2 0586	1 0565	1 0751
		2 0518	1 0920	2 1532	2 0301	2 0210	2 1847	2 1483	2 0431
		1 0289	2 0058	1 0673	2 0686	1 0168	2 0278	2 0219	2 0992
		1 0979	2 1562	1 1061	1 0385	1 0886	2 0460	2 0777	2 0210
10		2 2678	1 0539	2 0890	2 0010	1 0278	2 0485	1 0019	2 1793
		2 1069	1 1261	1 1518	1 0400	1 0827	1 0475	1 1320	1 0254
		1 1584	2 0785	1 0078	2 0296	1 0635	1 1542	1 0207	1 0102
		1 0496	1 0350	2 0209	1 0483	2 1416	1 0545	2 1231	2 0935
		1 0167	2 1128	1 1009	2 0367	2 0612	1 0645	2 0345	1 0041
15		2 0322	1 0319	1 0415	2 0880	1 0520	2 0886	1 0831	1 0172
		2 1516	1 0413	2 0295	1 0023	2 0856	1 0970	1 0510	1 0475
		2 1737	1 1840	1 0171	1 1557	1 0490	2 0073	2 0657	2 1285
		2 0287	2 1974	2 0358	1 0432	2 0432	1 0323	2 0689	2 1132
		1 0680	1 1460	1 0174	2 1296	1 1066	1 0185	1 0753	1 0027
20		2 0387	2 1444	2 0727	1 0942	2 0714	1 1495	2 0129	2 0592
		2 1011	1 0630	1 0278	2 0433	1 1543	2 1211	1 0210	1 1276
		2 0469	1 1136	1 0382	1 0321	1 0327	1 1112	2 1536	2 1725
		2 0285	1 0583	1 0968	2 0042	1 1776	1 0854	2 0275	2 0091
		2 0768	2 0071	2 0231	2 0085	1 0667	2 0694	1 0828	2 0880
25		2 0739	2 1225	1 1255	1 0313	2 0990	1 1674	1 0055	1 1174
		1 0342	2 0007	1 1386	2 2257	1 0630	1 0777	1 0113	2 0065
		2 0248	2 0492	1 2495	2 0647	1 1780	1 0931	1 0613	2 1407
		2 0601	2 1231	1 0271	1 1768	2 0379	2 0123	2 0809	2 0783
		1 0408	1 0468	1 1261	1 0137	2 2149	1 0187	2 0837	2 1219
30		1 0198	2 1767	2 1752	1 0668	2 1389	2 0129	2 1890	2 0746
		2 2301	1 0994	2 2084	1 0293	2 1903	2 0381	1 0629	1 0085
		2 0224	1 1589	2 0026	1 0573	1 0494	2 0736	1 0299	2 1455
		1 0815	1 0860	1 2669	1 1141	2 0956	2 0701	1 0302	2 0614
		2 0280	1 0023	2 0633	2 1845	1 0613	2 1021	1 1284	2 1373
35		2 0860	2 0062	1 0247	2 0647	1 1770	2 1110	1 0735	1 0767
		1 0027	2 0218	2 0552	1 0061	1 0837	2 0389	2 0186	2 0811
		2 0440	1 0119	2 1065	2 1193	1 0044	2 0690	2 0261	1 0747
		1 0346	2 1537	2 0383	2 1103	2 0682	1 0972	2 0837	1 1091
		2 0428	2 1655	2 0092	1 0531	1 0167	2 1102	2 0475	1 0800
40		2 1078	1 1164	1 0407	2 0264	1 1868	2 0016	2 0356	2 0434
		2 0719	2 1317	2 0861	1 0843	2 0256	1 0517	2 0552	1 1201
		1 0768	2 0977	1 0957	2 0209	2 0891	1 0838	2 0945	2 1318
		2 0689	1 0414	2 0328	2 0518	1 1110	2 2968	2 0558	2 0268
		1 1025	2 0105	2 1194	1 2782	1 1822	2 2026	2 0720	1 0391
45		2 0926	2 1236	2 0014	2 0792	1 0935	2 0600	2 0826	2 0889
		2 0383	2 0265	1 0026	2 0111	2 0416	1 0895	2 0607	1 1241
		2 0607	1 1619	2 0235	1 1913	1 0676	2 1413	1 0111	1 2040
		1 0878	2 1457	2 2911	2 1505	2 0925	2 0101	1 0915	2 0681
		2 0241	1 1116	1 0935	1 0547	1 0489	1 1788	2 0322	2 1459
50		2 0894	2 0476	2 0467	2 1063	1 0265	1 0795	1 3353	2 0569

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2", for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 19

row no.	col. no. 1	2	3	4	5	6	7	8
	1 1596	1 1231	2 0002	2 0295	2 0747	2 0346	2 0528	2 0776
	1 0512	1 1283	1 0061	2 0429	1 0886	1 2248	1 0292	1 0816
	1 1289	1 0402	1 0192	2 0757	1 0231	1 1692	2 0764	1 1110
	1 0648	2 0800	2 1074	1 0409	2 0436	2 0140	1 0086	1 1807
5	2 1546	1 0244	2 1199	2 0875	2 0424	2 0683	2 0869	2 0061
	2 1847	2 0061	1 0374	2 0195	1 1704	2 1016	1 0200	1 0857
	2 1415	1 0482	1 0013	1 2374	1 0904	2 0375	1 0682	1 0759
	1 0505	2 2068	1 1569	2 0664	1 1516	1 0575	1 1990	1 0409
	1 0320	1 0158	1 0944	1 0011	2 0766	1 0543	2 0955	2 0741
10	2 0424	1 0709	1 0892	1 0186	1 0091	1 1474	1 1500	2 1372
	2 1410	1 0771	2 0672	1 1402	2 0955	2 0393	1 1072	1 0286
	2 0188	2 0803	1 0051	2 0526	2 1560	1 1490	1 0584	1 0568
	1 0204	1 0479	2 1885	1 1016	2 0066	1 1958	2 0249	2 0118
	1 0162	1 0163	2 0389	2 0245	2 0686	2 0630	1 0621	2 0057
15	2 1068	1 2113	1 0651	1 0064	2 0282	1 1183	2 1069	1 1861
	2 0810	1 0195	2 1366	1 0099	2 0322	1 0784	2 0929	2 0251
	1 2462	2 0423	2 0896	2 0746	1 0005	1 0959	1 1117	2 0559
	2 0706	2 0789	2 0128	1 0474	2 1214	1 0182	1 0580	1 1603
	2 1211	1 1194	2 0631	1 1594	1 0661	1 0489	2 1680	2 1466
20	2 0651	1 0154	2 1058	1 0603	2 1638	2 0781	1 0864	2 0397
	1 0294	2 0682	2 0683	2 1390	1 0302	2 0439	2 1655	1 1631
	2 0556	2 1391	1 0253	2 0333	2 0031	1 1571	2 0463	1 1669
	2 0895	1 0092	2 0203	2 2294	1 1790	1 0740	2 0315	2 2319
	2 0112	1 1188	2 0019	2 0081	1 1057	1 0065	1 0605	2 0684
25	2 0111	1 0407	1 0928	1 0645	1 0757	2 1108	2 1547	2 0726
	1 0621	2 0296	2 1881	1 1579	2 0313	1 1744	1 0740	1 0338
	1 1502	2 1629	2 0183	2 0030	2 0462	1 0799	2 0206	1 2084
	1 0085	1 1180	2 1073	1 0027	2 0256	2 0864	1 1192	1 0773
	1 0522	1 0069	1 0964	2 2064	1 0627	2 2115	1 1337	2 0925
30	1 0385	2 0662	2 1468	1 0614	2 0834	2 1003	2 0643	1 0071
	2 0263	2 0431	1 0476	2 0025	1 1404	1 0208	2 0087	1 0489
	1 0845	1 0939	1 1151	1 0504	1 0622	2 0234	2 2079	1 0399
	2 0186	1 0601	2 0191	1 1022	2 1237	2 2706	2 1291	2 0451
	1 0856	2 0755	1 0398	1 0301	1 0252	1 1882	2 0528	2 0104
35	2 2214	1 1362	1 0698	0000	2 0708	1 0822	1 0603	1 0550
	1 1247	1 1501	1 0007	2 2387	2 1650	1 0617	1 0706	2 0166
	1 1591	2 0282	1 0577	1 0161	1 2549	1 0879	2 1365	1 1144
	2 1048	1 0375	2 1840	2 0655	1 0209	2 0285	2 0813	1 0335
	1 1078	1 0634	1 0652	2 0725	1 0766	2 0521	2 0494	1 0444
40	1 0094	2 1224	2 1743	1 1067	2 0231	2 0551	1 0395	1 0925
	1 0355	2 1271	1 2315	1 0575	2 0760	2 0260	2 1478	1 0879
	2 0353	2 0594	2 0308	1 1563	2 2277	1 0890	2 0489	2 0610
	2 0434	1 0824	1 0490	1 0385	1 2144	2 1131	1 0162	2 1125
	2 0067	2 1463	2 0319	1 0289	1 0928	2 0487	2 0132	1 0254
45	1 1351	2 1566	1 1312	2 1545	1 1444	2 1992	1 0087	1 1560
	2 0795	1 0489	2 1025	1 0564	1 0314	2 0681	1 0134	2 1306
	2 1442	2 0782	2 0025	1 0216	1 0938	1 0212	2 0376	2 0514
	1 0572	2 2245	2 1734	1 1070	1 0806	1 0275	2 0513	1 1118
	2 1267	2 0247	2 2495	2 0241	2 0080	2 0415	1 0066	2 0450
50	2 0239	2 1449	1 0217	2 0860	2 0133	1 0239	1 0290	2 0546

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 20

row no.	col. no.	1	2	3	4	5	6	7	8
5	1	1289	2 0106	1 0211	1 0613	1 1216	1 0218	2 0112	2 2576
	2	1076	1 0339	2 0402	2 0320	2 0203	1 1516	1 0724	2 2217
	1	0720	2 1972	2 1075	1 0522	1 0830	1 0858	2 0831	1 0297
	2	0075	2 0112	1 0396	2 0676	2 0252	1 0669	1 0046	2 0146
	1	1990	2 0432	2 0159	2 0752	1 1730	2 1878	2 2257	2 0410
10	1	0392	1 0358	2 0036	1 0781	2 0439	2 0408	1 1210	2 0826
	2	0744	2 2468	2 0804	2 0942	1 0760	2 0519	2 0830	2 0760
	2	0876	1 0890	1 0023	2 1807	1 1137	2 0677	1 0465	2 0082
	1	0090	2 0886	2 0412	1 0367	1 1075	1 1800	1 1125	1 1171
	2	1811	2 0588	2 0165	1 0815	2 0869	1 1536	1 0523	1 1241
15	2	1896	2 1206	2 0698	1 0571	2 0533	2 0688	2 0642	2 1016
	1	1967	1 1869	1 0262	2 0656	2 0175	1 0406	1 1940	2 1384
	1	0148	2 0596	2 0336	2 0308	2 2442	2 2155	1 1063	1 0158
	1	0806	1 0243	2 1834	2 0898	2 0566	1 0873	1 1430	1 0837
	2	0604	2 1817	1 0005	2 1847	2 1513	1 0606	1 1147	1 1205
20	2	0131	1 1578	2 0792	2 0516	1 0930	2 0522	2 0394	2 0889
	2	0360	1 0843	1 0345	2 1905	2 0743	2 0489	1 1308	1 0959
	1	0076	1 0824	1 0598	1 1413	2 0038	2 1458	1 0451	1 0292
	1	0104	1 0254	2 0077	2 0455	2 0565	1 0242	1 0091	2 0483
	1	0324	1 0177	2 0096	2 0071	1 0984	2 0354	1 1320	2 1726
25	2	0255	1 0132	1 1700	1 0702	2 0545	2 1673	1 0071	2 1323
	1	0390	1 0797	2 0121	2 2073	2 1452	1 0127	1 1235	2 0842
	2	0107	2 0004	1 0409	1 1369	1 0020	2 0848	2 0007	1 1658
	2	0548	1 1026	2 2073	1 0057	1 1264	1 0073	1 0117	2 0919
	1	1266	1 0284	1 0165	1 0373	1 0458	1 2192	2 0302	2 0084
30	2	0758	1 0651	2 0560	2 2099	2 1302	1 0270	2 0718	1 1241
	2	0316	2 0216	1 1003	1 0314	1 0855	2 1627	2 1367	2 0037
	1	0517	2 0838	2 0638	2 0013	1 1572	2 0230	2 0301	1 1282
	1	2130	1 1283	2 1433	2 0297	1 0727	2 0489	1 1560	2 1394
	2	0453	1 1098	2 1586	2 0270	2 0076	1 0270	1 0049	1 0268
35	1	0204	2 0226	2 0972	1 0645	2 0424	1 1927	1 0045	2 0172
	1	0050	1 0210	1 0567	1 1523	1 0509	1 0089	2 1099	1 0765
	2	2257	1 0966	2 1025	2 0075	2 1695	1 0841	2 0473	1 0171
	2	1161	1 0832	2 0909	1 0728	2 0613	1 0683	1 0438	2 1887
	1	0357	1 0996	1 0055	2 0093	1 0373	1 1192	1 0658	2 1872
40	1	0962	2 0031	2 0263	2 1061	2 1302	1 0194	2 0186	1 0125
	1	0684	1 0410	1 0821	1 1793	1 0122	2 0264	2 1064	1 0421
	1	1162	2 0891	2 1639	2 1283	1 0327	2 0349	1 0876	2 0212
	2	0121	2 0866	1 0905	1 0224	2 0362	2 0861	1 0025	1 0461
	1	0543	2 0658	2 0721	1 0884	1 0803	2 2016	2 0232	1 0791
45	1	2294	1 0505	2 1209	2 1528	1 0817	1 0707	2 1206	2 1516
	1	0875	1 0831	2 0804	1 1170	2 1014	1 1009	1 0188	2 0088
	1	1435	1 1435	2 0405	1 0612	2 0711	1 0306	1 0020	2 0686
	2	0725	2 1532	1 0729	2 1788	2 1097	1 0784	2 0608	2 0776
	2	0626	1 0459	1 1042	1 2054	2 0376	1 0373	1 0919	1 0026
50	1	0488	2 2346	1 0722	2 0384	2 0144	1 0365	1 0490	2 1221
	2	1666	2 0188	1 1468	1 0374	2 0158	2 1320	2 0990	2 0795
	1	0882	2 0948	1 0866	2 1239	2 1071	1 0328	2 0443	1 1132
	2	0890	2 1941	1 0677	1 0885	1 0824	2 0754	2 0104	1 1434
	2	2457	1 2073	2 0541	1 0525	2 0604	1 1394	1 1075	1 0730

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2", for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 21

row no.	col. no.	1	2	3	4	5	6	7	8
		1 0003	2 0501	2 0926	2 0553	1 0907	1 0623	1 0746	2 0851
		1 0684	2 1178	2 0090	1 1011	2 0589	1 1558	2 0633	2 0250
		2 0979	1 1071	1 0900	2 0780	2 1887	2 0240	1 0677	1 0677
		2 1073	1 0793	1 0498	1 0658	2 0430	2 0297	2 2007	2 0840
5		2 0009	2 0702	1 1504	2 1745	2 0889	2 1423	2 1890	2 0398
		2 0110	1 1332	2 0723	2 0085	2 0867	1 1532	2 0030	2 0920
		2 0150	2 1184	1 0681	1 0107	1 0508	1 1235	2 0048	1 0702
		2 0622	2 0977	1 0443	1 1001	2 0583	1 0408	2 1861	1 1010
		1 0078	1 0230	2 1301	1 0508	2 0085	2 0319	2 0257	1 0873
10		1 0439	2 0527	1 0558	2 0401	2 0274	2 0348	1 1958	1 0240
		2 0620	2 0707	1 1230	2 0389	1 0961	1 0717	2 0205	2 0687
		1 0833	1 0985	1 0699	2 1550	1 0623	1 0160	2 1689	2 0170
		1 0326	1 0676	1 1803	2 1304	2 0800	2 0192	2 1346	2 1706
		2 1486	2 1539	2 0425	2 0419	1 0894	1 0920	2 1714	1 0280
15		2 0669	2 1154	1 0334	2 1589	1 1332	1 0242	2 1002	1 0674
		2 2543	2 0254	1 0669	2 0972	1 1716	1 0707	1 2137	1 0800
		2 0496	1 0346	2 0523	1 0421	2 1003	2 0344	1 1320	2 0479
		2 0543	2 0510	1 0223	1 0584	2 0582	1 0181	2 1862	1 0510
		1 0399	1 0451	2 1071	2 0418	1 3291	2 0075	1 1176	2 0507
20		2 0602	1 0245	1 0567	1 0225	1 0227	2 0070	1 0920	2 0092
		2 1469	1 0372	2 0272	1 1736	1 0657	1 0136	2 1367	1 3432
		1 1900	1 1190	2 0444	1 0782	1 1120	1 0077	2 2137	1 0432
		2 0191	2 0048	1 0894	1 1238	2 0871	2 0381	1 1480	1 1042
		2 1120	1 0271	1 0138	2 0395	1 1421	1 0833	1 1056	1 0445
25		2 0155	1 1466	2 0352	1 0097	1 0856	1 0611	2 1307	1 0828
		1 0199	1 1315	2 1626	2 1677	1 0125	2 0421	1 1863	2 0454
		1 1945	2 0057	2 0516	1 0847	2 0490	2 0264	2 0583	2 0458
		1 1188	2 0347	1 1501	2 0848	2 0631	2 1360	1 0678	2 0161
		1 0763	1 0152	1 0143	1 2022	1 1033	2 0011	1 2556	1 0203
30		2 0615	1 0819	1 0099	1 0498	2 0532	1 1187	2 0563	2 1029
		1 2257	2 1078	2 0790	2 1016	2 1343	1 0607	2 0349	2 0293
		1 0367	2 0875	1 0282	2 0658	2 0410	2 0193	2 0574	1 0654
		1 0188	1 1041	1 1001	1 0300	2 1796	2 1194	1 0628	2 0960
		1 0298	1 0801	1 0931	2 0685	2 0668	1 0187	1 2032	1 2452
35		2 0010	1 0562	2 0456	2 0302	1 0740	2 0630	1 0011	2 0411
		1 0267	2 0091	1 0554	2 0313	1 0535	1 1979	1 1410	2 0445
		2 1914	2 0264	2 0987	1 0165	1 1293	2 0771	2 0230	2 1077
		2 0127	1 0044	1 0503	2 1315	1 0690	2 0895	2 0521	1 0314
		2 0164	1 0067	2 0821	1 0948	2 0890	1 0177	2 0110	1 0553
40		1 1250	1 0407	2 1409	2 0463	1 0892	2 0296	1 0015	2 0794
		1 0067	1 0214	2 0289	1 0392	1 0546	1 0344	2 0772	2 0254
		1 0502	2 0874	1 0484	1 1048	1 2001	2 1019	1 0524	1 0365
		2 0445	2 0246	2 0231	2 0676	1 0119	1 0102	2 0825	1 0199
		1 0001	2 0299	1 0090	2 1013	2 0277	1 0404	2 1261	1 2353
45		2 0801	1 0045	2 0224	2 0918	1 0947	2 1061	2 1408	2 0694
		2 2229	2 0915	1 0559	1 1460	1 0964	1 1231	2 2071	1 1191
		1 1562	1 0262	1 2908	2 1812	1 0856	2 0839	2 2175	1 2095
		1 0847	1 0516	1 1205	2 1059	2 0630	1 0539	1 0249	2 0843
		1 1379	2 0823	1 0322	1 1471	1 2091	2 0419	2 0072	1 0625
50		2 0611	2 0438	1 1016	2 2706	2 0056	2 0818	2 1070	2 2770

The figures "1" at the beginning of each group of five figures stands for the '+' sign and the figures "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 22

row no.	col. no.	1	2	3	4	5	6	7	8
		1 0800	1 1039	1 0424	2 0121	1 0923	2 1108	2 1336	1 1485
		1 0771	1 0336	1 1313	1 0822	2 0303	1 1057	1 0880	2 0107
		1 0379	1 1534	1 0773	1 0121	2 0376	1 0820	1 0686	2 0430
		1 1405	2 0027	1 0253	2 0302	2 1138	1 0500	2 1089	1 0035
5		1 0191	1 0210	2 1507	1 0404	2 1661	2 0902	2 1120	2 1067
		1 0391	1 0342	2 2084	2 1101	1 0208	1 0844	1 1486	2 0723
		2 0180	1 0903	1 0285	1 2077	2 1001	2 0457	2 0406	1 1414
		1 1785	1 2183	1 1770	2 0805	1 0443	2 1820	1 0045	1 1037
10		2 0238	2 0975	1 0650	2 0238	2 0246	2 0160	2 0193	2 0813
		1 0239	2 0277	1 2280	2 0347	2 0600	1 1443	1 0487	1 0363
		2 1077	2 1366	2 1334	2 0671	1 1955	1 1370	2 2056	2 1476
		2 0230	2 0131	1 1259	1 1180	2 0998	2 0964	1 2346	1 1418
		2 1267	2 0180	1 0353	2 0821	1 1136	2 0212	2 0518	1 1039
15		1 0589	2 0474	1 1211	1 0238	2 0892	2 0584	2 2044	1 0822
		1 0307	1 0069	1 0016	2 0902	1 0282	2 1383	1 0597	2 0271
		2 0440	1 1042	1 1476	1 1351	1 2395	2 0881	2 0630	1 2054
		1 0872	1 0403	2 1683	1 0109	1 0037	1 0559	2 0445	1 0496
		1 2071	2 0220	1 1416	2 1349	2 1180	2 2241	1 0684	2 0051
20		2 0635	2 0287	2 0732	1 1070	2 0326	2 0983	1 1679	2 1501
		1 0628	2 1890	2 0005	1 1011	2 0369	1 1295	2 1557	2 1688
		1 0610	2 0057	2 1000	2 0126	2 0082	2 0715	2 0733	2 1618
		1 2346	1 2111	2 0735	1 0242	2 0876	2 1189	1 0978	1 0658
		2 1917	2 0463	1 0194	1 0396	1 0591	2 1141	2 0541	1 1488
25		1 0492	1 0262	2 0334	1 0227	1 0083	2 1122	1 0422	1 0912
		2 0247	1 0398	2 0100	1 0058	2 0609	2 1505	1 1333	1 0604
		1 0219	2 1023	1 1002	1 0103	1 1436	2 1368	2 0508	1 0437
		1 0392	1 0989	1 0433	1 0548	2 0127	2 0853	2 0655	1 0624
		1 0774	1 1311	2 0511	2 1672	2 0960	1 0012	1 0274	1 0665
30		2 0606	1 0333	1 0110	2 1285	2 0307	1 1013	2 1257	2 0093
		1 0247	2 0429	2 0307	1 0269	2 0597	1 0036	2 0054	2 0846
		2 0591	1 0610	1 0487	1 1324	2 1818	2 0083	1 0458	1 0807
		1 0255	2 2567	1 0036	2 0060	2 0648	1 0412	1 0411	2 0927
		2 0370	1 0476	1 0269	1 0057	2 1266	1 0010	2 0144	1 1226
35		2 0170	1 0564	2 0122	1 0213	1 0488	1 1058	1 0470	1 0029
		2 0139	2 0489	2 1263	2 0828	1 1731	1 1170	1 0651	2 0275
		2 0724	2 0188	1 1986	1 1812	1 1004	1 0407	1 0054	2 1206
		1 1596	1 1198	1 1308	1 1482	1 1654	2 0667	2 2387	2 1050
		1 2414	2 0625	1 0532	2 0933	1 0637	1 0550	2 0275	2 0857
40		1 0128	2 0898	2 0239	1 0917	2 0385	1 1779	2 0717	2 0028
		1 0958	1 0561	1 0980	1 0703	1 0052	1 0049	1 0364	1 0562
		1 1544	1 0671	1 0951	1 0179	2 0222	1 0133	1 1208	2 1634
		1 0149	2 0981	2 0053	2 1281	2 0636	1 0114	1 0835	1 1529
		1 0218	2 0013	2 0316	1 0505	2 0750	1 0580	2 1114	1 0390
45		2 0222	1 0087	2 0851	2 1906	2 0434	2 0907	1 0825	2 0614
		2 1752	1 2940	1 0283	2 0810	1 0016	1 1020	1 1141	1 0215
		2 0881	2 0365	2 1158	2 0860	2 0451	1 0253	2 2404	2 1431
		2 0263	2 1171	2 0062	2 0777	2 1891	1 1138	2 0975	2 1158
		1 0822	1 0128	1 1158	2 0348	2 1928	1 1104	2 0520	1 0184
50		1 0325	2 0030	1 0652	1 1270	1 1281	2 0586	1 0024	2 0716
		2 1371	1 2144	1 0140	2 0005	2 0177	1 1821	2 0516	2 0706

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2" for the "-" sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 23

row no.	col. no.	1	2	3	4	5	6	7	8
		1 0633	2 0280	2 0289	2 1340	1 1030	2 1366	1 0990	1 0436
		2 0534	1 2284	2 0129	2 0110	1 0213	1 0204	1 0013	2 0621
		2 0119	1 1421	1 0945	2 0821	1 0035	1 1076	1 1150	2 0408
		1 1410	1 0112	1 0326	1 0444	2 0846	1 0638	1 0333	2 0082
5		1 0054	2 1782	2 0774	1 0429	1 1161	1 1314	2 0204	2 0772
		1 0310	1 0508	2 0871	2 1353	1 1114	2 0038	2 1460	2 0429
		2 2989	1 0220	2 1587	2 0257	2 0490	1 0150	1 0043	2 1211
		1 0300	1 1423	2 0738	2 1398	1 1383	2 1379	1 0630	2 0140
		2 0418	2 0839	2 0454	1 1789	2 0384	1 0878	1 1189	2 1154
10		2 0218	1 2214	1 0247	1 2081	2 1288	2 1255	2 0819	1 0734
		2 0472	1 2189	1 0075	1 0791	1 0480	1 1577	2 1238	1 0402
		2 0114	1 0584	2 1073	2 0632	2 0669	1 0601	1 0916	1 1363
		1 1460	2 0881	2 0442	2 0529	2 0441	2 0334	1 0178	2 0175
		2 0673	1 0005	2 0452	2 0454	1 0607	2 1894	1 0393	1 0051
15		2 0197	1 1434	2 0789	2 0506	1 0240	2 0510	2 1782	2 1605
		1 0122	1 0347	2 0658	1 1407	2 0142	1 0847	1 0079	1 0543
		2 0803	2 2878	1 2183	2 1385	1 1335	2 0732	2 0422	2 0139
		2 0320	2 0207	2 0604	1 0077	2 0152	2 2217	1 0908	2 0908
		2 1584	2 1821	2 0746	1 2178	2 1990	2 0973	1 1428	1 0144
20		1 0037	1 1411	1 0823	1 1214	2 0929	1 1137	1 0319	1 1027
		1 0347	2 0188	2 0243	2 0255	2 1870	2 0087	2 0556	1 1465
		2 0475	1 1970	2 0563	1 0652	1 0864	2 1878	1 0084	1 1101
		2 0145	1 0783	2 0156	2 0397	1 0304	2 0030	2 1409	2 0712
		2 0342	1 0207	1 0429	1 0229	2 1004	2 1031	2 1006	1 0302
25		1 0296	2 1040	1 0431	2 1962	1 0248	2 1266	1 1894	2 0493
		2 0863	2 0614	1 0061	2 0084	2 0298	2 1849	1 0103	1 0516
		2 0636	2 1614	2 1504	2 0256	2 0566	2 0371	1 1614	2 0516
		1 0308	2 1202	1 0756	2 0807	1 0064	1 0492	2 0005	1 1281
		1 0756	1 1941	1 1352	2 0850	2 1725	1 1203	2 1861	1 0508
30		2 1096	2 0258	2 2209	2 0665	1 1824	2 0254	1 1719	2 0084
		2 0282	2 0476	2 1376	2 0803	2 0177	1 0383	1 0747	2 0510
		1 0784	1 0534	2 0359	2 2457	2 1073	2 0036	2 1706	1 0396
		1 1034	1 0244	1 0340	2 1262	2 0127	1 0206	2 2506	2 1875
		2 0455	1 1204	1 1815	2 0448	1 0419	1 0200	1 0189	1 2075
35		1 0684	2 1126	1 0252	2 0611	1 0795	2 1501	2 0600	1 0961
		2 0494	2 1143	1 0154	1 1213	2 0098	2 0238	1 0360	2 1594
		2 0278	2 0865	1 0048	1 0281	2 0047	1 0447	1 0394	1 0257
		1 0367	2 1566	2 0206	2 0434	2 2400	1 0006	1 0716	1 0609
		2 2106	2 1195	2 1291	1 0055	1 0965	2 0340	1 0002	1 1454
40		1 1276	2 0475	1 1631	2 0880	1 0273	1 0531	1 0496	1 0910
		1 0737	1 1079	2 0135	1 0494	2 0276	2 0882	2 0953	1 0448
		1 0389	2 0638	1 0998	1 0410	2 0304	2 1178	1 2162	1 1059
		1 0462	2 0513	1 1852	2 0143	1 0008	2 0622	2 1105	1 0628
		2 1024	2 0297	2 0305	2 0800	1 0055	1 2208	1 1544	1 1784
45		2 0697	1 0868	1 0752	2 1423	2 2223	1 0665	2 1378	2 0713
		2 1032	2 0070	2 0429	1 0524	1 0385	1 0185	1 1346	1 1305
		2 0233	2 1477	2 0885	2 2226	1 0838	1 0640	2 0670	2 0582
		2 0010	1 1119	1 0202	1 1530	2 0384	1 1283	2 0938	2 0307
		2 0100	1 0525	1 0445	2 0644	2 0328	2 0142	2 0407	1 0635
50		2 0276	2 2660	1 0053	2 0022	2 0215	1 0646	1 0864	2 0220

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 24

row no.	col. no.	1	2	3	4	5	6	7	8
		2 1967	1 0382	2 0808	1 0149	2 0409	2 0244	1 2197	1 0113
		1 0125	2 0344	2 0818	2 0584	2 1486	1 2037	2 0571	1 0982
		1 0043	2 0864	1 1735	1 0823	2 0500	1 0316	1 0476	1 1349
		2 1840	2 0240	1 0883	1 1306	2 0874	1 0009	1 0487	2 0306
5		2 0805	2 0388	2 0532	1 0070	1 1347	2 1643	2 2084	2 0752
		1 0361	2 0773	2 1772	1 0901	1 0835	2 0954	1 0624	2 1853
		2 0058	2 0781	1 1897	2 1745	2 1181	2 0476	2 0158	1 0711
		2 0474	1 1167	1 1169	1 0587	1 0602	2 1237	1 0653	1 1044
		2 0206	2 1417	2 2576	1 0018	2 1071	2 1770	2 1880	1 1282
10		2 0590	2 1022	2 0651	1 0557	2 0316	2 0637	2 0827	2 1256
		1 0081	1 1902	1 0743	1 1023	2 0535	2 1475	2 0875	1 0476
		2 0085	2 0104	1 0112	2 0304	1 0084	1 0293	1 0104	2 0585
		1 0443	2 0554	1 0756	1 0456	2 0196	1 1413	1 1895	1 0114
		1 0239	1 0750	2 0998	1 1738	1 1040	1 0607	1 0807	2 0575
15		2 1026	1 0831	1 0726	1 0185	2 0021	1 0234	2 0912	1 1480
		1 2251	2 0730	1 0444	1 0031	1 0497	2 0757	2 0600	2 0330
		2 0201	2 0850	1 0985	1 0699	2 0800	2 0919	2 0798	2 2512
		1 0320	1 0545	1 0836	1 0595	1 0005	1 1344	2 0070	2 0539
		2 0281	1 1356	1 1335	1 0715	1 0425	2 0274	1 0149	1 1027
20		2 0952	1 0101	2 0191	1 1977	1 1203	1 0184	1 0969	2 0795
		1 1848	2 0088	2 0184	1 0802	2 0516	1 0030	1 0408	1 0437
		1 0607	1 0562	2 1184	2 0207	1 0938	2 0337	1 0307	2 1010
		1 1031	2 2034	2 1340	2 0402	2 0203	1 1632	2 1731	2 1928
		2 0924	1 0795	1 0478	2 1362	2 0039	2 1045	2 0008	1 1125
25		2 1175	2 1787	1 0380	1 1760	1 1209	1 1618	2 0066	2 0640
		2 1061	2 0070	2 0160	1 0175	2 1259	1 0130	1 2048	2 0017
		2 1789	1 0286	1 3121	1 0086	1 0933	1 0588	1 0584	2 0156
		1 1592	1 0039	2 1986	1 1745	2 0087	1 0792	2 0183	1 0269
		2 0555	2 1137	1 1211	2 1913	1 0036	2 0947	2 2209	2 1193
30		1 0007	2 1684	1 0108	1 0750	1 2084	2 0145	1 1131	2 0730
		2 0322	1 0003	2 0428	2 0191	1 0827	2 0080	1 0500	1 0991
		1 1181	2 1412	2 0918	1 2290	2 1134	1 0300	2 0233	2 1120
		2 0543	1 0124	1 0403	1 0198	2 1680	2 1100	2 0248	1 0174
		2 0684	2 0004	2 1055	2 0542	1 0062	1 1008	2 0712	1 1656
35		2 0257	2 1571	2 0191	0000	2 0641	2 1967	1 1741	1 0801
		2 1317	1 0544	2 1098	2 0647	2 0456	1 1074	1 0693	2 0202
		2 0356	2 0254	2 0902	2 1696	1 0453	1 0833	2 0870	2 0134
		1 0902	2 0578	2 0578	1 0011	1 0730	1 1102	1 0487	1 0733
		1 0480	1 0630	2 0228	2 1204	1 1220	2 1525	2 0125	1 1508
40		2 0594	2 0939	2 0184	2 1019	2 0054	1 0937	1 2052	1 0249
		2 0148	2 0604	2 0555	1 0927	1 0782	2 0080	2 0435	2 1314
		1 1490	1 1330	2 1070	2 1890	2 0584	1 0486	1 2620	1 1480
		1 0745	2 0780	2 1372	1 0641	2 0778	2 0735	1 1385	1 0831
		1 0528	1 1584	2 0777	1 0017	2 0198	2 0685	1 0489	1 2030
45		2 0262	2 0527	1 0148	1 1896	2 0602	2 2661	2 0820	2 0468
		1 0371	1 1009	2 0390	1 1300	1 0609	1 1085	2 1141	2 1322
		2 0073	2 0403	2 0014	1 0152	1 0203	1 0828	2 0393	2 1403
		2 0627	2 1497	2 1427	1 1354	2 1211	2 0717	2 0148	2 0382
		1 0248	2 0609	2 0401	2 0104	1 0248	1 0538	1 0649	2 0542
50		1 1486	2 1676	2 0225	2 1627	1 1156	2 0348	1 1030	2 1492

The figure "1" at the beginning of each group of five-figure stands for the "+" sign and the figure "2", for the "-" sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

TABLES OF RANDOM NORMAL DEVIATES

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 25

row no.	col. no.	1	2	3	4	5	6	7	8
	2	0065	2 0340	1 1566	2 0999	1 0065	2 0763	1 0600	1 0694
	1	1123	1 0134	1 0182	1 1353	2 0292	1 0113	2 0756	2 1183
	1	0414	1 0532	1 0139	2 0525	2 0619	2 0732	2 1826	2 0103
	2	0466	1 1167	1 0877	2 1784	1 0786	2 1066	2 0122	1 1384
5	2	1017	2 0476	1 0606	1 0199	2 0409	2 1404	1 1869	1 0138
	1	0674	2 1376	2 0133	2 1042	1 0173	1 0904	2 0438	1 1369
	1	1176	2 1900	2 0210	1 0733	2 1144	2 0071	2 1722	1 1721
	1	0465	1 0365	1 0035	2 1655	2 0301	1 0953	1 0254	2 1369
	1	1676	2 0752	1 1147	1 0456	1 0823	2 0925	2 0149	1 1356
10	2	1668	1 0129	1 1063	2 1288	1 2447	1 0529	2 1039	1 1132
	2	0223	1 0402	1 0305	2 1121	1 1254	2 0107	2 1881	2 0487
	1	0305	1 1690	2 0861	1 1554	2 0374	1 0653	1 1245	2 0159
	2	0655	2 0878	1 0085	2 0336	2 1201	2 0394	1 1122	1 0910
	2	1133	2 1224	1 0325	2 0174	2 1721	1 0608	1 0824	1 1106
15	2	0114	2 0308	1 0734	1 0121	2 0496	2 0047	2 0480	2 0517
	1	1478	1 0214	1 1186	1 0137	2 0380	2 1430	2 0187	2 1185
	2	0927	2 0274	2 0439	1 1338	1 0448	1 1063	1 0768	1 0431
	2	0506	1 0174	1 0370	2 0550	2 0154	2 0479	2 0057	1 0668
	2	0486	2 1894	2 0620	1 1198	1 1231	2 0499	1 0951	1 1792
20	1	0618	2 2267	1 1048	1 0202	2 0074	1 0297	2 1002	2 0661
	1	0080	1 0436	2 2549	1 0148	1 0203	2 1184	2 0714	1 0587
	2	0355	2 1059	2 1326	2 0444	1 0225	2 0220	2 0208	1 0356
	2	0549	1 1218	1 0275	1 0729	1 0174	1 0354	2 0405	2 0014
	2	0591	2 0668	1 0496	1 1249	1 3011	1 0671	2 0285	1 0338
25	1	0352	1 0211	1 0170	2 1753	1 0274	2 0360	1 0874	2 1055
	2	0135	2 0612	2 0798	1 3719	2 0780	2 0985	2 0632	2 1546
	2	0266	2 0803	1 1626	2 0188	2 0174	2 0375	1 1519	1 0748
	1	1155	1 0025	1 0203	1 1089	1 1076	1 0352	1 0264	1 0525
	2	0693	1 1184	2 0408	2 0471	1 0669	2 2036	1 1469	1 0654
30	2	1911	1 0268	2 1110	2 0148	2 2095	1 1917	1 0240	2 1083
	1	0223	2 0585	2 0800	2 0050	1 1236	1 0026	2 0093	1 0667
	1	0937	2 1031	2 0252	1 0047	2 0027	2 0143	2 1718	2 1289
	1	0990	2 3353	2 0700	1 1498	1 1815	2 0369	1 0208	1 1960
	1	1240	2 0537	2 1134	2 0031	2 0010	1 0091	1 0018	1 2040
35	1	0506	1 1649	1 0864	1 0847	2 1890	1 0279	2 0168	2 0966
	1	0199	2 2644	1 0250	1 0814	1 1070	1 0418	2 0076	1 0700
	2	0084	1 0646	2 0674	2 0064	1 1149	1 0283	1 0291	1 0996
	2	1246	2 0317	2 1167	2 1606	1 0648	2 0802	1 0534	2 0585
	2	1754	2 2104	1 0926	1 0496	2 0741	1 0460	2 0228	1 0487
40	2	0780	2 0938	2 0663	2 0623	1 0877	1 0390	1 1008	2 2326
	2	1435	2 0313	1 1571	1 1852	2 1161	2 2597	2 0648	1 1272
	1	1183	1 0872	2 1957	1 0086	2 0042	1 0387	2 0985	2 0073
	1	0031	1 2257	2 0010	2 0330	2 0307	1 0675	1 1020	2 1809
	2	2077	2 0804	1 1246	2 1138	2 0256	2 0751	1 0139	1 0533
45	1	0219	1 0024	1 0332	1 1027	1 1031	2 0873	1 0454	2 0109
	1	0803	1 1726	1 1052	2 0241	1 0093	1 0327	1 2462	1 0060
	2	0616	2 0462	2 0352	2 1460	2 0517	1 1309	2 0176	1 0327
	2	1041	1 0764	1 0634	1 0230	2 0573	2 0682	1 0957	2 1627
	2	1599	2 0625	1 1092	1 0281	2 0017	1 0748	1 0572	1 1760
50	2	0376	1 0464	1 0013	1 0386	2 0599	1 0991	1 1936	2 1019

The figure "1" at the beginning of each group of five figures stands for the "+" sign and the figure "2", for the "-" sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.

RANDOM NORMAL DEVIATES BASED ON TIPPETT'S RANDOM SAMPLING NUMBERS

PLATE No. 26

row no.	col. no. 1	2	3	4	5	6	7	8
5	2 2162	1 0539	2 0748	2 1099	2 0432	2 2989	1 0460	2 1137
	1 0327	2 0913	1 0009	1 0448	2 0298	1 0518	1 0549	2 0265
	1 0688	2 0685	2 1865	2 0530	2 2346	2 0629	1 0954	1 0041
	1 0768	1 0108	2 0034	1 0386	2 0218	1 0894	2 1890	2 0562
	2 0214	2 0285	2 0507	1 0708	1 0892	2 0107	2 0757	1 0334
10	2 1430	1 1520	2 0833	1 1083	2 0819	2 1449	2 0511	2 1545
	2 0078	2 0344	1 1845	2 1902	1 0475	1 0780	1 0196	2 0610
	2 0239	2 1431	1 0377	2 0602	1 0021	2 0292	1 0661	1 0184
	1 0122	2 1426	1 0589	2 0022	2 2501	2 1547	1 1469	2 0239
	2 2241	1 1741	2 0324	1 0792	1 1038	1 0583	2 1123	1 1797
15	1 0148	2 0613	2 0598	2 1687	2 2251	2 0070	2 0283	2 0549
	1 0828	2 0864	1 0254	2 0128	1 0124	2 0578	1 0473	1 0559
	1 1223	2 1602	1 0460	1 0995	2 1099	1 2484	1 1078	1 0679
	1 1335	2 0532	2 1321	2 0277	1 0273	1 0635	2 1286	1 1254
	1 0837	2 2220	1 1118	1 1066	2 0715	2 0198	2 0365	2 2028
20	2 0620	1 0285	2 0163	2 0489	1 1039	2 0644	1 0392	2 0772
	2 0944	1 0091	1 0080	1 1762	2 0112	2 1433	1 0932	1 0645
	2 0073	1 0804	2 0452	2 0673	2 1703	1 0857	2 0949	2 1585
	1 0724	1 0207	2 1088	2 0971	1 0569	1 0622	2 0194	1 0772
	2 1037	2 0561	1 0304	1 0958	2 0076	1 0144	1 0703	1 1629
25	2 3036	1 1045	1 1680	2 0300	2 2512	2 0137	2 1475	1 0449
	2 0223	1 0467	2 0144	1 0501	1 0532	2 0630	2 0362	1 1876
	2 0236	2 1999	1 0309	2 0496	2 0016	2 0907	1 0492	1 1486
	2 1571	1 0209	2 0768	2 0823	2 0576	2 1430	2 1455	2 1338
	2 1013	1 2366	2 0232	2 2678	1 1868	2 1986	2 0379	1 0054
30	1 0638	1 0310	2 0402	1 1337	1 0190	1 1671	1 0606	2 0902
	2 0054	2 0229	1 0163	1 1223	1 0004	1 1152	2 1356	2 0118
	1 0797	1 0057	2 0456	1 1014	2 0434	2 0097	2 0120	2 1567
	2 0740	2 0500	1 1264	1 0873	2 1066	2 0510	1 1081	2 0225
	2 1367	1 1373	1 1099	1 1849	2 1899	2 1112	2 1134	2 0017
35	1 3353	2 0548	1 0276	2 1419	1 0977	2 0669	1 0238	1 0805
	2 0075	2 0663	1 0096	2 1100	1 0510	2 1042	2 1288	2 1788
	1 0616	2 0225	1 0004	2 0350	1 0142	1 1039	2 0260	2 1668
	2 2948	1 0353	2 0340	1 0191	2 0033	1 2807	1 1128	2 1050
	2 0301	2 0099	2 0254	1 1052	2 0385	2 1536	2 0679	2 0645
40	2 1442	1 0114	1 1447	2 1073	2 0782	2 1621	1 0257	1 1580
	2 0575	1 0489	2 0653	2 0241	2 0816	2 1165	2 1561	2 0078
	2 0535	2 0463	1 0836	1 1107	2 0593	2 0301	1 0248	1 1380
	2 1011	2 0523	2 1351	2 0726	2 1097	2 0197	2 2077	2 0138
	2 1401	2 0852	2 0220	1 0841	2 0940	1 0061	2 0199	2 1537
45	2 0594	1 1829	2 0315	2 0749	2 1251	1 0703	1 1539	2 0754
	1 0216	2 1162	1 1034	1 0589	2 0580	1 1730	2 0200	2 1107
	2 2442	1 1009	1 0955	2 0277	2 0610	2 1790	1 1383	1 0125
	2 1858	1 0009	1 0446	1 1696	2 0305	2 0830	2 0029	2 0718
	2 0994	2 1818	1 1034	1 0481	2 0117	1 0137	1 1690	1 1011
50	2 0372	2 0342	2 1677	2 0289	1 0001	1 0833	2 0239	2 0780
	2 0714	1 0047	2 0815	2 1496	1 0380	1 1435	2 1736	1 1110
	1 0768	1 0379	2 1515	1 0902	1 0710	2 0722	1 0154	2 2088
	2 0048	1 0978	1 1149	1 0373	1 1794	1 0073	2 0886	2 1341
	2 0364	1 1471	1 0429	2 0120	2 2162	1 0997	2 1262	1 2319

The figure "1" at the beginning of each group of five figures stands for the '+' sign and the figure "2" for the '-' sign. The normal deviates listed as above have a standard deviation of 1000. To obtain deviates with unit s.d. a decimal point has to be placed after the first digit.