

APPENDIX I

MISCELLANEOUS REFERENCE TABLES

TABLE 25.—MINIMUM PER CENT OF POPULATION

Number of Points in Each Group, n	Confidence Level, per cent	Minimum Per Cent of Popu-													
		Lowest Ranking Points							Second Ranking Points						
		Number of Groups, m							Number of Groups, m						
		1	3	5	7	9	15	25	1	3	5	7	9	15	25
1...	50	50.00	50.00	50.00	50.00	50.00	50.00	50.00	...	...	...	...	...	...	...
	75	25.00	32.64	35.94	37.88	39.20	41.50	43.35	...	...	...	...	...	...	...
	90	10.00	19.58	24.66	27.86	30.10	34.15	37.51	...	...	...	...	...	...	...
	95	5.00	13.53	18.94	22.53	25.14	30.00	34.14	...	...	...	...	...	...	...
	98	2.00	8.40	13.52	17.27	20.10	25.61	30.48	...	...	...	...	...	...	...
	99	1.00	5.89	10.56	14.23	17.10	23.14	28.14	...	...	...	...	...	...	...
	99.9	0.10	1.84	4.76	7.67	10.25	16.12	22.06	...	...	...	...	...	...	...
3...	50	79.37	79.37	79.37	79.37	79.37	79.37	79.37	50.00	50.00	50.00	50.00	50.00	50.00	50.00
	75	63.00	68.84	71.10	72.35	73.18	74.58	75.68	32.64	38.20	40.51	41.84	42.74	44.30	45.55
	90	46.42	58.06	62.71	65.31	67.01	69.89	72.12	19.58	28.37	32.38	34.76	36.39	39.26	41.59
	95	36.84	51.34	57.41	60.85	63.11	66.94	69.89	13.53	23.09	27.82	30.73	32.73	36.32	39.26
	98	27.14	43.80	51.33	55.68	58.57	63.50	67.29	8.40	17.83	23.08	26.43	28.79	33.09	36.67
	99	21.54	38.90	47.27	52.20	55.50	61.15	65.53	5.89	14.75	20.16	23.73	26.28	31.00	34.97
	99.9	10.00	26.38	36.22	42.47	46.80	54.41	60.42	1.84	8.04	13.18	16.97	19.84	25.43	30.36
4...	50	84.09	84.09	84.09	84.09	84.09	84.09	84.09	61.42	61.42	61.42	61.42	61.42	61.42	61.42
	75	70.71	75.58	77.42	78.45	79.12	80.26	81.14	45.63	50.91	53.04	54.25	55.06	56.45	57.55
	90	56.23	66.52	70.47	72.65	74.06	76.44	78.26	32.05	41.40	45.38	47.68	49.22	51.90	54.02
	95	47.29	60.65	65.95	68.89	70.80	74.00	76.43	24.86	35.91	40.85	43.77	45.73	49.16	51.88
	98	37.61	53.84	60.64	64.46	66.95	71.13	74.30	17.94	30.04	35.90	39.43	41.83	46.07	49.48
	99	31.62	49.26	57.01	61.41	64.30	69.15	72.83	14.09	26.38	32.71	36.59	39.27	44.03	47.87
	99.9	17.78	36.81	46.69	52.61	56.58	63.36	68.53	6.40	17.41	24.41	29.04	32.34	38.38	43.40
5...	50	87.05	87.05	87.05	87.05	87.05	87.05	87.05	68.61	68.61	68.61	68.61	68.61	68.61	68.61
	75	75.79	79.93	81.49	82.35	82.91	83.87	84.60	54.58	59.38	61.28	62.35	63.07	64.29	65.26
	90	63.10	72.17	75.58	77.44	78.65	80.66	82.19	41.61	50.65	54.35	56.46	57.85	60.26	62.15
	95	54.93	67.03	71.68	74.22	75.86	78.59	80.65	34.26	45.40	50.13	52.85	54.67	57.96	60.25
	98	45.74	60.93	67.02	70.38	72.55	76.15	78.85	26.71	39.60	45.40	48.78	51.05	54.98	58.09
	99	39.81	56.75	63.79	67.70	70.23	74.44	77.60	22.21	35.84	42.26	46.07	48.64	53.10	56.63
	99.9	25.12	44.95	54.37	59.82	63.41	69.41	73.91	12.20	26.10	33.78	38.58	41.90	47.79	52.52
6...	50	89.09	89.09	89.09	89.09	89.09	89.09	89.09	73.55	73.55	73.55	73.55	73.55	73.55	73.55
	75	79.37	82.97	84.32	85.06	85.54	86.36	86.99	61.05	65.38	67.08	68.03	68.67	69.76	70.61
	90	68.13	76.20	79.79	80.81	81.86	83.60	84.92	48.97	57.45	60.84	62.75	64.01	66.17	67.86
	95	60.70	71.65	75.17	78.00	79.44	81.81	83.60	41.82	52.56	56.97	59.48	61.13	63.96	66.16
	98	52.10	66.18	71.64	74.62	76.53	79.68	82.03	34.17	47.04	52.56	55.72	57.82	61.42	64.23
	99	46.42	62.37	68.75	72.25	74.49	78.20	80.95	29.43	43.38	49.59	53.19	55.58	59.70	62.91
	99.9	31.62	51.36	60.19	65.17	68.41	73.76	77.73	18.14	33.54	41.35	46.06	49.25	54.80	59.17
10...	50	93.30	93.30	93.30	93.30	93.30	93.30	93.30	83.77	83.77	83.77	83.77	83.77	83.77	83.77
	75	87.06	89.40	90.27	90.74	91.05	91.58	91.98	75.26	78.28	79.45	80.09	80.52	81.25	81.82
	90	79.43	84.95	86.93	88.00	88.67	89.81	90.66	66.31	72.68	75.11	76.46	77.34	78.82	79.97
	95	74.11	81.87	84.66	86.18	87.10	88.65	89.81	60.59	69.07	72.33	74.14	75.32	77.30	78.82
	98	67.62	78.06	81.86	83.89	85.17	87.26	88.79	53.98	64.81	69.06	71.42	72.95	75.52	77.48
	99	63.10	75.33	79.86	82.28	83.80	86.28	88.09	49.64	61.87	66.79	69.54	71.31	74.30	76.57
	99.9	50.12	67.05	73.74	77.34	79.63	83.31	85.97	37.63	53.40	60.19	64.02	66.53	70.73	73.92
20...	50	96.59	96.59	96.59	96.59	96.59	96.59	96.59	91.75	91.75	91.75	91.75	91.75	91.75	91.75
	75	93.30	94.55	95.01	95.26	95.43	95.69	95.90	87.10	88.77	89.41	89.77	90.00	90.40	90.70
	90	89.12	92.17	93.24	93.81	94.17	94.76	95.21	81.90	85.63	87.01	87.76	88.25	89.07	89.70
	95	86.09	90.48	92.01	92.81	93.32	94.15	94.76	78.39	83.53	85.43	86.46	87.13	88.23	89.07
	98	82.23	88.35	90.48	91.59	92.29	93.41	94.23	74.12	80.99	83.54	84.90	85.78	87.24	88.33
	99	79.43	86.79	89.36	90.71	91.54	92.88	93.85	71.12	79.19	82.19	83.81	84.84	86.55	87.83
	99.9	70.79	81.88	85.87	87.94	89.23	91.27	92.72	62.24	73.74	78.14	80.52	82.03	84.51	86.33

^a From Schuette (27).

NOTE—In evaluating fatigue curves faired through test data, subtract three from the number of groups before entering table.

EXCEEDING MEDIAN OF LOW RANKING POINTS.*

lation Exceeding Median of:

Third Ranking Points							Fourth Ranking Points						
Number of Groups, <i>m</i>							Number of Groups, <i>m</i>						
1	3	5	7	9	15	25	1	3	5	7	9	15	25
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...
20.63	20.63	20.63	20.63	20.63	20.63	20.63	...	...	...	...	...	...	...
9.14	12.33	13.79	14.67	15.28	16.36	17.25	...	...	...	...	...	...	...
3.45	7.00	9.00	10.31	11.25	13.00	14.50	...	...	...	...	...	...	...
1.70	4.73	6.75	8.15	9.20	11.20	12.99	...	...	...	...	...	...	...
0.67	2.88	4.72	6.12	7.20	9.39	11.41	...	...	...	...	...	...	...
0.33	2.00	3.65	4.98	6.05	8.29	10.42	...	...	...	...	...	...	...
0.03	0.61	1.60	2.62	3.54	5.69	7.97	...	...	...	...	...	...	...
38.57	38.57	38.57	38.57	38.57	38.57	38.57	15.91	15.91	15.91	15.91	15.91	15.91	15.91
24.30	28.75	30.63	31.72	32.46	33.76	34.80	6.94	9.40	10.53	11.22	11.69	12.54	13.24
14.22	20.96	24.09	25.99	27.29	29.61	31.51	2.60	5.30	6.83	7.83	8.56	9.92	11.09
9.76	16.90	20.54	22.80	24.38	27.23	29.60	1.30	3.56	5.11	6.18	6.97	8.52	9.91
6.01	12.94	16.90	19.46	21.29	24.66	27.51	0.51	2.16	3.56	4.62	5.45	7.12	8.68
4.18	10.65	14.70	17.39	19.35	23.01	26.15	0.25	1.50	2.74	3.76	4.58	6.28	7.93
1.31	5.75	9.50	12.30	14.45	18.69	22.51	0.03	0.46	1.21	1.97	2.67	4.29	6.03
50.00	50.00	50.00	50.00	50.00	50.00	50.00	31.38	31.38	31.38	31.38	31.38	31.38	31.38
35.94	40.51	42.38	43.46	44.18	45.44	46.44	19.38	23.06	24.63	25.55	26.17	27.26	28.15
24.66	32.36	35.73	37.70	39.04	41.37	43.25	11.21	16.64	19.21	20.77	21.84	23.78	25.37
18.93	27.81	31.91	34.35	36.03	38.98	41.37	7.64	13.35	16.30	18.14	19.44	21.80	23.77
13.53	23.04	27.80	30.71	32.73	36.32	39.26	4.69	10.17	13.35	15.42	16.90	19.67	22.03
10.56	20.12	25.19	28.37	30.58	34.58	37.87	3.27	8.35	11.58	13.75	15.33	18.31	20.90
4.76	13.11	18.57	22.25	24.90	29.85	34.05	1.02	4.48	7.43	9.66	11.38	14.80	17.91
57.85	57.85	57.85	57.85	57.85	57.85	57.85	42.14	42.14	42.14	42.14	42.14	42.14	42.14
44.68	49.06	50.82	51.84	52.51	53.67	54.60	29.71	33.67	35.32	36.27	36.91	38.03	38.93
33.32	41.17	44.47	46.38	47.65	49.88	51.65	20.09	26.61	29.50	31.22	32.38	34.43	36.09
27.13	36.58	40.71	43.13	44.76	47.60	49.87	15.32	22.73	26.22	28.32	29.76	32.33	34.42
20.93	31.61	36.57	39.52	41.53	45.04	47.87	10.88	18.74	22.73	25.20	26.92	30.02	32.57
17.31	28.45	33.88	37.15	39.39	43.35	46.54	8.47	16.31	20.54	23.21	25.09	28.51	31.36
9.40	20.44	26.74	30.75	33.57	38.65	42.83	3.79	10.54	15.02	18.07	20.29	24.47	28.06
74.14	74.14	74.14	74.14	74.14	74.14	74.14	64.49	64.49	64.49	64.49	64.49	64.49	64.49
64.46	67.80	69.11	69.85	70.33	71.18	71.84	54.23	57.69	59.07	59.86	60.38	61.28	61.99
55.04	61.67	64.29	65.76	66.74	68.41	69.71	44.83	51.40	54.06	55.58	56.59	58.34	59.71
49.31	57.87	61.30	63.24	64.52	66.70	68.40	39.33	47.60	51.02	52.98	54.29	56.55	58.33
42.95	53.51	57.86	60.33	61.95	64.74	66.90	33.43	43.34	47.59	50.05	51.68	54.52	56.76
38.82	50.58	55.53	58.35	60.21	63.41	65.89	29.71	40.54	45.30	48.08	49.94	53.16	55.71
28.15	42.41	48.92	52.73	55.26	59.61	63.00	20.46	32.94	38.98	42.59	45.04	49.33	52.74
86.84	86.84	86.84	86.84	86.84	86.84	86.84	81.94	81.94	81.94	81.94	81.94	81.94	81.94
81.33	83.27	84.03	84.45	84.73	85.20	85.58	75.79	77.93	78.76	79.23	79.55	80.08	80.50
75.52	79.66	81.22	82.10	82.66	83.62	84.37	69.58	73.98	75.68	76.63	77.26	78.32	79.14
71.74	77.31	79.43	80.60	81.36	82.64	83.62	65.63	71.48	73.74	75.00	75.83	77.23	78.31
67.26	74.53	77.31	78.84	79.83	81.49	82.76	61.04	68.54	71.47	73.10	74.17	75.97	77.36
64.17	72.59	75.83	77.62	78.77	80.70	82.17	57.93	66.52	69.91	71.80	73.03	75.11	76.71
55.26	66.86	71.48	74.02	75.66	78.40	80.45	49.13	60.64	65.36	68.00	69.73	72.63	74.85

TABLE 26.—UNPAIRED
Critical lower and upper rank totals for the 5 per cent and 1 per cent levels of significance. Values

$N_1 \backslash N_2$		4	5	6	7	8	9	10	11	12	13
4	0.05	11 25	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...
5	0.05	12 28	18 37	...	...	...	...	...	...	...	...
	0.01	...	15 40	...	...	...	...	...	...	...	...
6	0.05	13 31	19 41	26 52	...	...	...	...	...	...	...
	0.01	10 34	16 44	23 55	...	...	...	...	...	...	...
7	0.05	13 35	20 45	28 56	37 68	...	...	...	...	...	...
	0.01	11 37	17 48	24 60	33 72	...	...	...	...	...	...
8	0.05	14 38	21 49	29 61	39 73	49 87	...	...	...	...	...
	0.01	11 41	18 52	25 65	34 78	44 92	...	...	...	...	...
9	0.05	15 41	22 53	31 65	41 78	51 93	63 108	...	...	...	...
	0.01	12 44	19 56	27 69	36 83	46 98	57 114	...	...	...	...
10	0.05	16 44	24 56	33 69	43 83	54 98	66 114	79 131	...	...	...
	0.01	12 48	19 61	28 74	37 89	47 105	59 121	71 189	...	...	...
11	0.05	16 48	25 60	34 74	44 89	56 104	68 121	82 138	96 157	...	...
	0.01	13 51	20 65	29 79	38 95	49 111	61 128	74 146	88 165	...	...
12	0.05	17 51	26 64	36 78	46 94	58 110	71 127	85 145	100 164	116 184	...
	0.01	13 55	21 69	30 84	40 100	51 117	63 135	76 154	90 174	106 194	...
13	0.05	18 54	27 68	37 83	48 99	61 115	74 133	88 152	104 171	120 192	137 214
	0.01	14 58	22 73	31 89	41 106	53 123	65 142	79 161	93 182	109 203	126 226
14	0.05	19 57	28 72	39 87	50 104	63 121	77 139	91 159	107 179	124 200	142 222
	0.01	14 62	23 77	32 94	43 111	55 129	67 149	81 169	96 190	112 212	129 235
15	0.05	...	30 75	41 91	52 109	65 127	79 146	95 165	111 186	128 208	146 231
	0.01	...	23 82	33 99	44 117	56 136	70 155	84 176	99 198	116 220	133 244
16	0.05	...	...	42 96	54 114	68 132	82 152	98 172	114 194	132 216	150 240
	0.01	...	...	35 103	46 122	58 142	72 162	87 183	102 206	119 229	137 253
17	0.05	...	...	...	56 119	70 138	85 158	101 179	118 201	136 224	155 248
	0.01	...	...	...	47 128	60 148	74 169	89 191	105 214	122 238	141 262
18	0.05	...	...	...	...	73 143	88 164	104 186	121 209	140 232	159 257
	0.01	...	...	...	...	62 154	76 179	92 198	108 222	126 246	144 272
19	0.05	...	...	...	...	...	91 170	107 193	125 216	144 240	163 266
	0.01	...	...	...	...	...	79 182	94 206	111 230	129 255	147 282
20	0.05	...	...	...	...	...	...	111 199	129 223	148 248	168 274
	0.01	...	...	...	...	...	...	97 213	114 238	133 263	151 291
21	0.05	...	...	...	...	...	...	...	132 231	152 256	172 283
	0.01	...	...	...	...	...	...	...	117 246	136 272	155 300
22	0.05	...	...	...	...	...	...	...	...	156 264	177 291
	0.01	...	...	...	...	...	...	...	...	139 281	158 310
23	0.05	...	...	...	...	...	...	...	...	...	181 300
	0.01	...	...	...	...	...	...	...	...	...	162 319
24	0.05	...	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...
25	0.05	...	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...
26	0.05	...	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...
27	0.05	...	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...
28	0.05	...	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...
29	0.05	...	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...
30	0.05	...	...	...	...	...	...	...	...	...	...
	0.01	...	...	...	...	...	...	...	...	...	...

*Adapted from work of Dr. Frank Wilcoxon (28).

TABLE 27.—PERCENTILES OF THE χ^2 DISTRIBUTION.^a

Degrees of freedom ^b	Percentiles									
	0.5	1	2.5	5	10	90	95	97.5	99	99.5
1	0.000039	0.00016	0.00098	0.0039	0.0158	2.71	3.84	5.02	6.63	7.88
2	0.0100	0.0201	0.0506	0.1026	0.2107	4.61	5.99	7.38	9.21	10.60
3	0.0717	0.115	0.216	0.352	0.584	6.25	7.81	9.35	11.34	12.84
4	0.207	0.297	0.484	0.711	1.064	7.78	9.49	11.14	13.28	14.86
5	0.412	0.554	0.831	1.15	1.61	9.24	11.07	12.83	15.09	16.75
6	0.676	0.872	1.24	1.64	2.20	10.64	12.59	14.45	16.81	18.55
7	0.989	1.24	1.69	2.17	2.83	12.02	14.07	16.01	18.48	20.28
8	1.34	1.65	2.18	2.73	3.49	13.36	15.51	17.53	20.09	21.96
9	1.73	2.09	2.70	3.33	4.17	14.68	16.92	19.02	21.67	23.59
10	2.16	2.56	3.25	3.94	4.87	15.99	18.31	20.48	23.21	25.19
11	2.60	3.05	3.82	4.57	5.58	17.28	19.68	21.92	24.73	26.76
12	3.07	3.57	4.40	5.23	6.30	18.55	21.03	23.34	26.22	28.30
13	3.57	4.11	5.01	5.89	7.04	19.81	22.36	24.74	27.69	29.82
14	4.07	4.66	5.63	6.57	7.79	21.06	23.68	26.12	29.14	31.32
15	4.60	5.23	6.26	7.26	8.55	22.31	25.00	27.49	30.58	32.80
16	5.14	5.81	6.91	7.96	9.31	23.54	26.30	28.85	32.00	34.27
18	6.26	7.01	8.23	9.39	10.86	25.99	28.87	31.53	34.81	37.16
20	7.43	8.26	9.59	10.85	12.44	28.41	31.41	34.17	37.57	40.00
24	9.89	10.86	12.40	13.85	15.66	33.20	36.42	39.36	42.98	45.56
30	13.79	14.95	16.79	18.49	20.60	40.26	43.77	46.98	50.89	53.67
40	20.71	22.16	24.43	26.51	29.05	51.81	55.76	59.34	63.69	66.77
60	35.53	37.48	40.48	43.19	46.46	74.40	79.08	83.30	88.38	91.95
120	83.85	86.92	91.58	95.70	100.62	140.23	146.57	152.21	158.95	163.64

^a From Dixon and Massey (9) by permission of the publishers.^b For large values of degrees of freedom the approximate formula may be used:

$$\chi^2_{\alpha} = \frac{1}{2}[Z_{\alpha} + (2n - 1)^{1/2}]^2$$

where Z_{α} is the normal deviate and n is the number of degrees of freedom. For example, $\chi^2_{0.99} = \frac{1}{2}(2.326 + 10.909)^2 = 87.6$ for the 99th percentile, for 60 d.f.

TABLE 28.—AREAS OF THE "NORMAL" CURVE.^a

z	X	Area	z	X	Area
-3.0.....	$\mu - 3.0 \sigma$	0.0013	0.1.....	$\mu + 0.1 \sigma$	0.5398
-2.9.....	$\mu - 2.9 \sigma$	0.0019	0.2.....	$\mu + 0.2 \sigma$	0.5793
-2.8.....	$\mu - 2.8 \sigma$	0.0026	0.3.....	$\mu + 0.3 \sigma$	0.6179
-2.7.....	$\mu - 2.7 \sigma$	0.0035	0.4.....	$\mu + 0.4 \sigma$	0.6554
-2.6.....	$\mu - 2.6 \sigma$	0.0047	0.5.....	$\mu + 0.5 \sigma$	0.6915
-2.5.....	$\mu - 2.5 \sigma$	0.0062	0.6.....	$\mu + 0.6 \sigma$	0.7257
-2.4.....	$\mu - 2.4 \sigma$	0.0082	0.7.....	$\mu + 0.7 \sigma$	0.7580
-2.3.....	$\mu - 2.3 \sigma$	0.0107	0.8.....	$\mu + 0.8 \sigma$	0.7881
-2.2.....	$\mu - 2.2 \sigma$	0.0139	0.9.....	$\mu + 0.9 \sigma$	0.8159
-2.1.....	$\mu - 2.1 \sigma$	0.0179	1.0.....	$\mu + 1.0 \sigma$	0.8413
-2.0.....	$\mu - 2.0 \sigma$	0.0228	1.1.....	$\mu + 1.1 \sigma$	0.8643
-1.9.....	$\mu - 1.9 \sigma$	0.0287	1.2.....	$\mu + 1.2 \sigma$	0.8849
-1.8.....	$\mu - 1.8 \sigma$	0.0359	1.3.....	$\mu + 1.3 \sigma$	0.9032
-1.7.....	$\mu - 1.7 \sigma$	0.0446	1.4.....	$\mu + 1.4 \sigma$	0.9192
-1.6.....	$\mu - 1.6 \sigma$	0.0548	1.5.....	$\mu + 1.5 \sigma$	0.9332
-1.5.....	$\mu - 1.5 \sigma$	0.0668	1.6.....	$\mu + 1.6 \sigma$	0.9452
-1.4.....	$\mu - 1.4 \sigma$	0.0808	1.7.....	$\mu + 1.7 \sigma$	0.9554
-1.3.....	$\mu - 1.3 \sigma$	0.0968	1.8.....	$\mu + 1.8 \sigma$	0.9641
-1.2.....	$\mu - 1.2 \sigma$	0.1151	1.9.....	$\mu + 1.9 \sigma$	0.9713
-1.1.....	$\mu - 1.1 \sigma$	0.1357	2.0.....	$\mu + 2.0 \sigma$	0.9772
-1.0.....	$\mu - 1.0 \sigma$	0.1587	2.1.....	$\mu + 2.1 \sigma$	0.9821
-0.9.....	$\mu - 0.9 \sigma$	0.1841	2.2.....	$\mu + 2.2 \sigma$	0.9861
-0.8.....	$\mu - 0.8 \sigma$	0.2119	2.3.....	$\mu + 2.3 \sigma$	0.9893
-0.7.....	$\mu - 0.7 \sigma$	0.2420	2.4.....	$\mu + 2.4 \sigma$	0.9918
-0.6.....	$\mu - 0.6 \sigma$	0.2743	2.5.....	$\mu + 2.5 \sigma$	0.9938
-0.5.....	$\mu - 0.5 \sigma$	0.3085	2.6.....	$\mu + 2.6 \sigma$	0.9953
-0.4.....	$\mu - 0.4 \sigma$	0.3446	2.7.....	$\mu + 2.7 \sigma$	0.9965
-0.3.....	$\mu - 0.3 \sigma$	0.3821	2.8.....	$\mu + 2.8 \sigma$	0.9974
-0.2.....	$\mu - 0.2 \sigma$	0.4207	2.9.....	$\mu + 2.9 \sigma$	0.9981
-0.1.....	$\mu - 0.1 \sigma$	0.4602	3.0.....	$\mu + 3.0 \sigma$	0.9987
0.....	μ	0.5000			
-3.090....	$\mu - 3.090 \sigma$	0.001	+3.090....	$\mu + 3.090 \sigma$	0.999
-2.576....	$\mu - 2.576 \sigma$	0.005	+2.576....	$\mu + 2.576 \sigma$	0.995
-2.326....	$\mu - 2.326 \sigma$	0.010	+2.326....	$\mu + 2.326 \sigma$	0.990
-1.960....	$\mu - 1.960 \sigma$	0.025	+1.960....	$\mu + 1.960 \sigma$	0.975
-1.645....	$\mu - 1.645 \sigma$	0.050	+1.645....	$\mu + 1.645 \sigma$	0.950
-1.282....	$\mu - 1.282 \sigma$	0.100	+1.282....	$\mu + 1.282 \sigma$	0.900
-1.036....	$\mu - 1.036 \sigma$	0.150	+1.036....	$\mu + 1.036 \sigma$	0.850
-0.842....	$\mu - 0.842 \sigma$	0.200	+0.842....	$\mu + 0.842 \sigma$	0.800
-0.674....	$\mu - 0.674 \sigma$	0.250	+0.674....	$\mu + 0.674 \sigma$	0.750
-0.524....	$\mu - 0.524 \sigma$	0.300	+0.524....	$\mu + 0.524 \sigma$	0.700
-0.385....	$\mu - 0.385 \sigma$	0.350	+0.385....	$\mu + 0.385 \sigma$	0.650
-0.253....	$\mu - 0.253 \sigma$	0.400	+0.253....	$\mu + 0.253 \sigma$	0.600
-0.126....	$\mu - 0.126 \sigma$	0.450	+0.126....	$\mu + 0.126 \sigma$	0.550
0.....	μ	0.500			

^a From Dixon and Massey (9) by permission of the publishers.

TABLE 29.—VALUES^{a, b} OF t .

Degrees of Freedom	$t_{0.95}$	$t_{0.975}$	$t_{0.9875}$	$t_{0.995}$	$t_{0.9975}$
1.....	6.31	12.7	25.5	63.7	127
2.....	2.92	4.30	6.21	9.92	14.1
3.....	2.35	3.18	4.18	5.84	7.45
4.....	2.13	2.78	3.50	4.60	5.60
5.....	2.01	2.57	3.16	4.03	4.77
6.....	1.94	2.45	2.97	3.71	4.32
7.....	1.89	2.36	2.84	3.50	4.03
8.....	1.86	2.31	2.75	3.36	3.83
9.....	1.83	2.26	2.69	3.25	3.69
10.....	1.81	2.23	2.63	3.17	3.58
11.....	1.80	2.20	2.59	3.11	3.50
12.....	1.78	2.18	2.56	3.05	3.43
13.....	1.77	2.16	2.53	3.01	3.37
14.....	1.76	2.14	2.51	2.98	3.33
15.....	1.75	2.13	2.49	2.95	3.29
16.....	1.75	2.12	2.47	2.92	3.25
17.....	1.74	2.11	2.46	2.90	3.22
18.....	1.73	2.10	2.45	2.88	3.20
19.....	1.73	2.09	2.43	2.86	3.17
20.....	1.72	2.09	2.42	2.85	3.15
21.....	1.72	2.08	2.41	2.83	3.14
22.....	1.72	2.07	2.41	2.82	3.12
23.....	1.71	2.07	2.40	2.81	3.10
24.....	1.71	2.06	2.39	2.80	3.09
25.....	1.71	2.06	2.38	2.79	3.08
26.....	1.71	2.06	2.38	2.78	3.07
27.....	1.70	2.05	2.37	2.77	3.06
28.....	1.70	2.05	2.37	2.76	3.05
29.....	1.70	2.05	2.36	2.76	3.04
30.....	1.70	2.04	2.36	2.75	3.03
40.....	1.68	2.02	2.33	2.70	2.97
60.....	1.67	2.00	2.30	2.66	2.91
120.....	1.66	1.98	2.27	2.62	2.86
∞	1.64	1.96	2.24	2.58	2.81
Degrees of Freedom	$t_{0.05}$	$t_{0.025}$	$t_{0.0125}$	$t_{0.005}$	$t_{0.0025}$

When the table is read from the foot, the tabled values are to be prefixed with a negative sign. Interpolation should be performed using the reciprocals of the degrees of freedom.

^a From Dixon and Massey (9) by permission of the publisher.

^b The values in this table were computed from percentiles of the F distribution. See Pearson and Hartley (2).

TABLE 30.—PERCENTILES OF THE χ^2 /d.f. DISTRIBUTION.^{a, b}

Degrees of Freedom	Percentiles									
	0.5	1	2.5	5	10	90	95	97.5	99	99.5
1	0.000039	0.00016	0.00098	0.0039	0.0158	2.71	3.84	5.02	6.63	7.88
2	0.00501	0.0101	0.0253	0.0513	0.1054	2.30	3.00	3.69	4.61	5.30
3	0.0239	0.0383	0.0719	0.117	0.195	2.08	2.60	3.12	3.78	4.28
4	0.0517	0.0743	0.121	0.178	0.266	1.94	2.37	2.79	3.32	3.72
5	0.0823	0.111	0.166	0.229	0.322	1.85	2.21	2.57	3.02	3.35
6	0.113	0.145	0.206	0.273	0.367	1.77	2.10	2.41	2.80	3.09
7	0.141	0.177	0.241	0.310	0.405	1.72	2.01	2.29	2.64	2.90
8	0.168	0.206	0.272	0.342	0.436	1.67	1.94	2.19	2.51	2.74
9	0.193	0.232	0.300	0.369	0.463	1.63	1.88	2.11	2.41	2.62
10	0.216	0.256	0.325	0.394	0.487	1.60	1.83	2.05	2.32	2.52
11	0.237	0.278	0.347	0.416	0.507	1.57	1.79	1.99	2.25	2.43
12	0.256	0.298	0.367	0.436	0.525	1.55	1.75	1.94	2.18	2.36
13	0.274	0.316	0.385	0.453	0.542	1.52	1.72	1.90	2.13	2.29
14	0.291	0.333	0.402	0.469	0.556	1.50	1.69	1.87	2.08	2.24
15	0.307	0.349	0.417	0.484	0.570	1.49	1.67	1.83	2.04	2.19
16	0.321	0.363	0.432	0.498	0.582	1.47	1.64	1.80	2.00	2.14
18	0.348	0.390	0.457	0.522	0.604	1.44	1.60	1.75	1.93	2.06
20	0.372	0.413	0.480	0.543	0.622	1.42	1.57	1.71	1.88	2.00
24	0.412	0.452	0.517	0.577	0.652	1.38	1.52	1.64	1.79	1.90
30	0.460	0.498	0.560	0.616	0.687	1.34	1.46	1.57	1.70	1.79
40	0.518	0.554	0.611	0.663	0.726	1.30	1.39	1.48	1.59	1.67
60	0.592	0.625	0.675	0.720	0.774	1.24	1.32	1.39	1.47	1.53
120	0.699	0.724	0.763	0.798	0.839	1.17	1.22	1.27	1.32	1.36
∞	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Interpolation should be performed using reciprocals of the degrees of freedom.

^a From Dixon and Massey (9) by permission of the publisher.

^b The values in the table were computed from percentiles of the F distribution. See Pearson and Hartley (2).

TABLE 31^a — $u_{0.025}$ AND $u_{0.975}$ FOR RUNS AMONG ELEMENTS IN SAMPLES OF SIZES N_1 AND N_2 .

		u_{0.025}																				u_{0.975}																			
N_1 \backslash N_2	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20			
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..				
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..				
4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	7	8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..				
5	..	..	2	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	7	8	9	..	..	..	..	..	..	..	..	..	..	..	..	..	..				
6	..	2	2	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	7	8	9	10	..	..	..	..	..	..	..	..	..	..	..	..	..				
7	..	2	2	3	3	3	..	..	..	..	..	..	..	..	..	..	..	..	..	5	7	9	10	11	12	..	..	..	..	..	..	..	..	..	..	..	..				
8	..	2	3	3	3	4	4	..	..	..	..	..	..	..	..	..	..	..	..	5	7	9	10	11	12	13	..	..	..	..	..	..	..	..	..	..	..				
9	..	2	3	3	4	4	5	5	..	..	..	..	..	..	..	..	..	..	..	5	7	9	11	12	13	14	14	..	..	..	..	..	..	..	..	..	..				
10	..	2	3	3	4	5	5	5	6	..	..	..	..	..	..	..	..	..	..	5	7	9	11	12	13	14	15	15	..	..	..	..	..	..	..	..	..				
11	..	2	3	4	4	5	5	6	6	7	..	..	..	..	..	..	..	..	..	5	7	9	11	12	13	14	15	16	16	..	..	..	..	..	..	..	..				
12	2	2	3	4	4	5	6	6	7	7	7	..	..	..	..	..	..	..	..	5	7	9	11	12	13	15	15	16	17	18	..	..	..	..	..	..	..				
13	2	2	3	4	5	5	6	6	7	7	8	8	..	..	..	..	..	..	..	5	7	9	11	13	14	15	16	17	18	19	19	..	..	..	..	..	..				
14	2	2	3	4	5	5	6	7	7	8	8	9	9	..	..	..	..	..	..	5	7	9	11	13	14	15	16	17	18	19	20	20	..	..	..	..	..				
15	2	3	3	4	5	6	6	7	7	8	8	9	9	10	..	..	..	..	..	5	7	9	11	13	14	15	17	17	18	19	20	21	21	..	..	..	..				
16	2	3	4	4	5	6	6	7	8	8	9	9	10	10	11	..	..	..	..	5	7	9	11	13	15	16	17	18	19	20	20	21	22	22	23	..	..				
17	2	3	4	4	5	6	7	7	8	9	9	10	10	11	11	11	..	..	..	5	7	9	11	13	15	16	17	18	19	20	21	22	22	23	24	..	..				
18	2	3	4	5	5	6	7	8	8	9	9	10	10	11	11	12	12	..	..	5	7	9	11	13	15	16	17	18	19	20	21	22	23	24	25	..	..				
19	2	3	4	5	6	6	7	8	8	9	10	10	11	11	12	12	13	13	..	5	7	9	11	13	15	16	17	19	20	21	22	22	23	24	25	26	..				
20	2	3	4	5	6	6	7	8	9	9	10	10	11	12	12	13	13	14	..	5	7	9	11	13	15	16	17	19	20	21	22	23	24	24	25	26	27				

 $N_1 = N_2$

$N_1 = N_2$	$u_{0.025}$	$u_{0.975}$	$N_1 = N_2$	$u_{0.025}$	$u_{0.975}$
20	14	27	40	31	50
21	15	28	42	32	52
22	16	29	44	35	54
23	16	31	46	37	56
24	17	32	48	38	59
25	18	33	50	40	61
26	19	34	55	45	66
27	20	35	60	49	72
28	21	36	65	54	77
29	22	37	70	58	83
30	22	39	75	63	88
32	24	41	80	68	93
34	26	43	85	72	99
36	28	45	90	77	104
38	30	47	95	82	109
			100	86	115

^a With permission from Eisenhart and Swed (29).

The values listed are such that a number less than or equal to the $u_{0.025}$ value will occur not more than 2.5 per cent of the time and a number greater than $u_{0.975}$ will occur not more than 2.5 per cent of the time.

For values of N_1 and N_2 larger than 20, a Normal approximation may be used. The mean is

$$\frac{2 N_1 N_2}{N_1 + N_2} + 1$$

and the variance is

$$\frac{2 N_1 N_2 [2 N_1 N_2 - (N_1 + N_2)]}{(N_1 + N_2)^2 (N_1 + N_2 - 1)}$$

For example, for $N_1 = N_2 = 20$, the mean is 21 and the variance is 9.74. The 2.5 and 97.5 percentiles are $21 + 1.96 (9.74)^{1/2} = 27.1$ and $21 - 1.96 (9.74)^{1/2} = 14.9$.

TABLE 32.—F DISTRIBUTION.^a

		Degrees of Freedom for Numerator																		
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
Upper 5 per cent Points ($F_{0.05}$).																				
Degrees of Freedom for Denominator	1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞	
	161	200	216	225	230	234	237	239	241	242	244	246	248	249	250	251	252	253	254	
	18.5	19.0	19.2	19.2	19.3	19.3	19.4	19.4	19.4	19.4	19.4	19.4	19.4	19.5	19.5	19.5	19.5	19.5	19.5	
	2.....	10.1	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79	8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
	3.....	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96	5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
	4.....	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74	4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36
	5.....	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06	4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
	6.....	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64	3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
	7.....	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35	3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
	8.....	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14	3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
	9.....	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98	2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
	10.....	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85	2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
	11.....	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75	2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
	12.....	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67	2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
	13.....	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60	2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
	14.....	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54	2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
	15.....	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49	2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
	16.....	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45	2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
	17.....	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41	2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
	18.....	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38	2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
	19.....	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35	2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
	20.....	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32	2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
	21.....	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30	2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
	22.....	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27	2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
	23.....	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25	2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
	24.....	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24	2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
	25.....	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16	2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
	30.....	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08	2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
	40.....	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99	1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
	60.....	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96	1.91	1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
	120.....	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83	1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00
	∞.....																			

NOTE.—Interpolation should be performed using reciprocals of the degrees of freedom.

^a This table is taken, with permission of the Biometrika Trustees, from Table 18 of Pearson & Hartley (2).

(Continued next page)

TABLE 32.—*F* DISTRIBUTION.—Continued

		Degrees of Freedom for Numerator																		
		1	2	3	4	5	6	7	8	9	10	12	15	20	24	30	40	60	120	∞
		Upper 2.5 per cent Points ($F_{0.975}$)																		
Degrees of Freedom for Denominator	1	648	800	864	900	922	937	948	957	963	969	977	985	993	997	1001	1006	1010	1014	1018
	2	38.5	39.0	39.2	39.2	39.3	39.3	39.4	39.4	39.4	39.4	39.4	39.4	39.4	39.5	39.5	39.5	39.5	39.5	39.5
	3	17.4	16.0	15.4	15.1	14.9	14.7	14.6	14.5	14.5	14.4	14.3	14.3	14.2	14.1	14.1	14.0	14.0	13.9	13.9
	4	12.2	10.6	9.98	9.60	9.36	9.20	9.07	8.98	8.90	8.84	8.75	8.66	8.56	8.51	8.46	8.41	8.36	8.31	8.26
	5	10.0	8.43	7.76	7.39	7.15	6.98	6.85	6.76	6.68	6.62	6.52	6.43	6.33	6.28	6.23	6.18	6.12	6.07	6.02
	6	8.81	7.26	6.60	6.23	5.99	5.82	5.70	5.60	5.52	5.46	5.37	5.27	5.17	5.12	5.07	5.01	4.96	4.90	4.85
	7	8.07	6.54	5.89	5.52	5.29	5.12	4.99	4.90	4.82	4.76	4.67	4.57	4.47	4.42	4.36	4.31	4.25	4.20	4.14
	8	7.57	6.06	5.42	5.05	4.82	4.65	4.53	4.43	4.36	4.30	4.20	4.10	4.00	3.95	3.89	3.84	3.78	3.73	3.67
	9	7.21	5.71	5.08	4.72	4.48	4.32	4.20	4.10	4.03	3.96	3.87	3.77	3.67	3.61	3.56	3.51	3.45	3.39	3.33
	10	6.94	5.46	4.83	4.47	4.24	4.07	3.95	3.85	3.78	3.72	3.62	3.52	3.42	3.37	3.31	3.26	3.20	3.14	3.08
	11	6.72	5.26	4.63	4.28	4.04	3.88	3.76	3.66	3.59	3.53	3.43	3.33	3.23	3.17	3.12	3.06	3.00	2.94	2.88
	12	6.55	5.10	4.47	4.12	3.89	3.73	3.61	3.51	3.44	3.37	3.28	3.18	3.07	3.02	2.96	2.91	2.85	2.79	2.72
	13	6.41	4.97	4.35	4.00	3.77	3.60	3.48	3.39	3.31	3.25	3.15	3.05	2.95	2.89	2.84	2.78	2.72	2.66	2.60
	14	6.30	4.86	4.24	3.89	3.66	3.50	3.38	3.29	3.21	3.15	3.05	2.95	2.84	2.79	2.73	2.67	2.61	2.55	2.49
	15	6.20	4.77	4.15	3.80	3.58	3.41	3.29	3.20	3.12	3.06	2.96	2.86	2.76	2.70	2.64	2.59	2.52	2.46	2.40
	16	6.12	4.69	4.08	3.73	3.50	3.34	3.22	3.12	3.05	2.99	2.89	2.79	2.68	2.63	2.57	2.51	2.45	2.38	2.32
	17	6.04	4.62	4.01	3.66	3.44	3.28	3.16	3.06	2.98	2.92	2.82	2.72	2.62	2.56	2.50	2.44	2.38	2.32	2.25
	18	5.98	4.56	3.95	3.61	3.38	3.22	3.10	3.01	2.93	2.87	2.77	2.67	2.56	2.50	2.44	2.38	2.32	2.26	2.19
	19	5.92	4.51	3.90	3.56	3.33	3.17	3.05	2.96	2.88	2.82	2.72	2.62	2.51	2.45	2.39	2.33	2.27	2.20	2.13
	20	5.87	4.46	3.86	3.51	3.29	3.13	3.01	2.91	2.84	2.77	2.68	2.57	2.46	2.41	2.35	2.29	2.22	2.16	2.09
	21	5.83	4.42	3.82	3.48	3.25	3.09	2.97	2.87	2.80	2.73	2.64	2.53	2.42	2.37	2.31	2.25	2.18	2.11	2.04
	22	5.79	4.38	3.78	3.44	3.22	3.05	2.93	2.84	2.76	2.70	2.60	2.50	2.39	2.33	2.27	2.21	2.14	2.08	2.00
	23	5.75	4.35	3.75	3.41	3.18	3.02	2.90	2.81	2.73	2.67	2.57	2.47	2.36	2.30	2.24	2.18	2.11	2.04	1.97
	24	5.72	4.32	3.72	3.38	3.15	2.99	2.87	2.78	2.70	2.64	2.54	2.44	2.33	2.27	2.21	2.15	2.08	2.01	1.94
	25	5.69	4.29	3.69	3.35	3.13	2.97	2.85	2.75	2.68	2.61	2.51	2.41	2.30	2.24	2.18	2.12	2.05	1.98	1.91
	30	5.57	4.18	3.59	3.25	3.03	2.87	2.75	2.65	2.57	2.51	2.41	2.31	2.20	2.14	2.07	2.01	1.94	1.87	1.79
	40	5.42	4.05	3.46	3.13	2.90	2.74	2.62	2.53	2.45	2.39	2.29	2.18	2.07	2.01	1.94	1.88	1.80	1.72	1.64
	60	5.29	3.93	3.34	3.01	2.79	2.63	2.51	2.41	2.33	2.27	2.17	2.06	1.94	1.88	1.82	1.74	1.67	1.58	1.48
	120	5.15	3.80	3.23	2.89	2.67	2.52	2.39	2.30	2.22	2.16	2.05	1.94	1.82	1.76	1.69	1.61	1.53	1.43	1.31
	∞	5.02	3.69	3.12	2.79	2.57	2.41	2.29	2.19	2.11	2.05	1.94	1.83	1.71	1.64	1.57	1.48	1.39	1.27	1.00

NOTE.— Interpolation should be performed using reciprocals of the degrees of freedom.

TABLE 33.—*k* FACTORS* FOR *S-N* CURVES (NORMAL DISTRIBUTION ASSUMED).

$\frac{p}{n}$	$\gamma = 0.50$					$\gamma = 0.75$				
	75	90	95	99	99.9	75	90	95	99	99.9
3.....	0.773	1.498	1.939	2.765	3.688	1.464	2.501	3.152	4.396	5.805
4.....	0.739	1.419	1.830	2.601	3.464	1.256	2.134	2.680	3.726	4.910
5.....	0.722	1.382	1.780	2.526	3.362	1.152	1.961	2.463	3.421	4.507
6.....	0.712	1.360	1.750	2.483	3.304	1.087	1.860	2.336	3.243	4.273
7.....	0.705	1.346	1.732	2.455	3.265	1.043	1.791	2.250	3.126	4.118
8.....	0.701	1.337	1.719	2.436	3.239	1.010	1.740	2.190	3.042	4.008
9.....	0.698	1.329	1.709	2.421	3.220	0.984	1.702	2.141	2.977	3.924
10.....	0.694	1.324	1.702	2.411	3.205	0.964	1.671	2.103	2.927	3.858
11.....	0.693	1.320	1.696	2.402	3.193	0.947	1.646	2.073	2.885	3.804
12.....	0.691	1.316	1.691	2.395	3.183	0.933	1.624	2.048	2.851	3.760
13.....	0.690	1.313	1.687	2.388	3.175	0.919	1.606	2.026	2.822	3.722
14.....	0.689	1.311	1.684	2.384	3.168	0.909	1.591	2.007	2.796	3.690
15.....	0.688	1.308	1.680	2.379	3.163	0.899	1.577	1.991	2.776	3.661
16.....	0.686	1.307	1.678	2.376	3.157	0.891	1.566	1.977	2.756	3.637
17.....	0.686	1.305	1.676	2.373	3.153	0.883	1.554	1.964	2.739	3.615
18.....	0.685	1.303	1.674	2.370	3.150	0.876	1.544	1.951	2.723	3.595
19.....	0.684	1.302	1.672	2.367	3.146	0.870	1.536	1.942	2.710	3.577
20.....	0.684	1.301	1.671	2.366	3.143	0.865	1.528	1.933	2.697	3.561
21.....	0.683	1.300	1.670	2.364	3.140	0.859	1.520	1.923	2.686	3.545
22.....	0.683	1.299	1.668	2.361	3.138	0.854	1.514	1.916	2.675	3.532
23.....	0.683	1.299	1.668	2.360	3.136	0.849	1.508	1.907	2.665	3.520
24.....	0.682	1.298	1.667	2.358	3.134	0.845	1.502	1.901	2.656	3.509
25.....	0.682	1.297	1.666	2.357	3.132	0.842	1.496	1.895	2.647	3.497
$\gamma = 0.90$						$\gamma = 0.95$				
3.....	2.602	4.258	5.310	7.340	9.651	3.804	6.158	7.655	10.552	13.857
4.....	1.972	3.187	3.957	5.437	7.128	2.619	4.163	5.145	7.042	9.215
5.....	1.698	2.742	3.400	4.666	6.112	2.149	3.407	4.202	5.741	7.501
6.....	1.540	2.494	3.091	4.242	5.556	1.895	3.006	3.707	5.062	6.612
7.....	1.435	2.333	2.894	3.972	5.201	1.732	2.755	3.399	4.641	6.061
8.....	1.360	2.219	2.755	3.783	4.955	1.617	2.582	3.188	4.353	5.686
9.....	1.302	2.133	2.649	3.641	4.772	1.532	2.454	3.031	4.143	5.414
10.....	1.257	2.065	2.568	3.532	4.629	1.465	2.355	2.911	3.981	5.203
11.....	1.219	2.012	2.503	3.444	4.515	1.411	2.275	2.815	3.852	5.036
12.....	1.188	1.966	2.448	3.371	4.420	1.366	2.210	2.736	3.747	4.900
13.....	1.162	1.928	2.403	3.310	4.341	1.329	2.155	2.670	3.659	4.787
14.....	1.139	1.895	2.363	3.257	4.274	1.296	2.108	2.614	3.585	4.690
15.....	1.119	1.866	2.329	3.212	4.215	1.268	2.068	2.566	3.520	4.607
16.....	1.101	1.842	2.299	3.172	4.164	1.242	2.032	2.523	3.463	4.534
17.....	1.085	1.820	2.272	3.136	4.118	1.220	2.001	2.486	3.415	4.471
18.....	1.071	1.800	2.249	3.106	4.078	1.200	1.974	2.453	3.370	4.415
19.....	1.058	1.781	2.228	3.078	4.041	1.183	1.949	2.423	3.331	4.364
20.....	1.046	1.765	2.208	3.052	4.009	1.167	1.926	2.396	3.295	4.319
21.....	1.035	1.750	2.190	3.028	3.979	1.152	1.905	2.371	3.262	4.276
22.....	1.025	1.736	2.174	3.007	3.952	1.138	1.887	2.350	3.233	4.238
23.....	1.016	1.724	2.159	2.987	3.927	1.126	1.869	2.329	3.206	4.204
24.....	1.007	1.712	2.145	2.969	3.904	1.114	1.853	2.309	3.181	4.171
25.....	0.999	1.702	2.132	2.952	3.882	1.103	1.838	2.292	3.158	4.143

* In which:

 n = sample size, p = per cent survival, and γ = confidence level.

Table 33 was originally prepared by D. H. Shaffer of the Westinghouse Research Laboratories. After this table was prepared, *Technical Report No. 34* of Nov. 1 1957, on "Tables from One-Sided Statistical Tolerance Limits" by G. S. Lieberman was received from the Office of Naval Research. This report, prepared at the Applied Mathematics and Statistics Laboratory of Stanford University under Contract N6 ONR-25126 (NR-042-002), contains similar tabular values for sample sizes ranging from 3 to 50, with an explanation on the construction of the tables.