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TABLES OF POISSON'S EXPONENTIAL BINOMIAL LIMIT.

BY H. E. SOPER, M.A.

IN his treatise, *Recherches sur la Probabilité des Jugements*, Paris, 1837, Poisson* shows that the series of frequencies

$$p^n + np^{n-1}q + \frac{n(n-1)}{2!}p^{n-2}q^2 + \dots + \frac{n!}{r!(n-r)!}p^{n-r}q^r + \dots,$$

given by the expanded terms of the binomial

$$(p + q)^n,$$

becomes in the limit, when q is diminished, and n increased, indefinitely, but so that nq remains finite and equal to m , the exponential series

$$e^{-m} \left(1 + m + \frac{m^2}{2!} + \dots + \frac{m^r}{r!} + \dots \right);$$

and he points out that the terms of this series will give the proportional frequencies of the occurrences

$$0, 1, 2, \dots, r, \dots$$

times, in any sample, of an event, every occurrence of which is equally likely in the sample and independent of the other occurrences, and which is of such frequency that m events occur in the sample on an average.

The series is arrived at by "Student†," when considering the theoretical frequencies in sample drops of a liquid of minute corpuscles supposed distributed at random throughout the mass of the liquid.

The event may also occur in time, each occurrence being supposed to take place with equal probability in any finite period taken as the sample, and to act independently of the occurrences of all the other events. A physical example, which appears by the closeness of the observed to the theoretical frequencies to

* pp. 205 *et seq.*

† *Biometrika*, Vol. v. p. 351, "On the Error of counting with a Haemacytometer."

satisfy these conditions, is the number of α -particles discharged per $\frac{1}{8}$ -minute or $\frac{1}{4}$ -minute interval from a film of polonium*.

In vital statistics the sample may be an individual or house or community and the event an accident or disease and so on. But it must be borne in mind that for such series as the above to be applicable the occurrence of one event in the sample must not preclude or influence in any way the occurrence of a second.

The probability of x occurrences, m being the mean number, in a sample, is

$$e^{-m} m^x / x!$$

and in the tables which follow this is evaluated for $m = 0.1, 0.2 \dots$ to 15.0 and for $x = 0, 1, 2 \dots$ up to such an integer as gives a figure in the sixth place of decimals, the number of places tabulated.

The terms of the series were calculated, each by a fractional operation upon the preceding, beginning with the modal term and going both forward and back. Thus if $m = 7.6$ the term $e^{-7.6} \times (7.6)^7 / 7!$ was first calculated by tables of logarithms, and the succeeding terms were then obtained seriatim by the operations

$$\frac{7.6}{8}, \frac{7.6}{9}, \frac{7.6}{10}, \text{ etc.},$$

and the preceding ones by the operations

$$\frac{7}{7.6}, \frac{6}{7.6}, \frac{5}{7.6}, \text{ etc.},$$

done with a mechanical calculator, first a multiplication and then a division.

Seven places of decimals were thus calculated and the series is checked by the total, which differs from unity by the remainder (a figure in the eighth or later place of decimals in all the present cases) and the algebraical sum of the errors of seventh figure approximations.

Poisson's exponential series has been previously calculated to four places of decimals by L. von Bortkewitsch† for values of m from 0.1 to 10.0.

The present tables give the probability of each number of times of occurrence of the event. For the sums of these values, that is, the probability of occurrence of the event, a given number of times or greater, or a given number of times or less, reference must be made to a second paper in this issue of *Biometrika*‡, where such probabilities are calculated for integral values of m from 1 to 30.

* See Rutherford and Geiger: "The Probability Variations in the Distribution of α -Particles," *Philosophical Magazine*, Vol. xx. p. 700, 1910. See also E. C. Snow, "Note on the Probability Variations, &c.," Vol. xxii. p. 198, 1911, who finds the variance of experiment from theory to be such as would occur once in six experiments and once in three experiments respectively of the limited time taken, were theory exact. In a note to the first paper H. Bateman gives a proof of the exponential series of probabilities arrived at from considerations of this problem.

† *Das Gesetz der kleinen Zahlen*, 1898. A comparison of the table printed therein with the present table shows agreement except as to the fourth figure; the nearest fourth figure is not given, in rather many instances, in the tables of Bortkewitsch.

‡ Lucy Whitaker, B.Sc. "On the Poisson Law of Small Numbers," Vol. x. p. 37 *et seq.*

TABLE of $e^{-m}m^x/x!$: General Term of Poisson's Exponential Expansion ("Law of Small Numbers").

| x | m | | | | | | | | | | x |
|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|-----|
| | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | |
| 0 | .904837 | .818731 | .740818 | .670320 | .606531 | .548812 | .496585 | .449329 | .406570 | .367879 | 0 |
| 1 | .090484 | .163746 | .222445 | .268128 | .303265 | .329287 | .347610 | .359463 | .365913 | .367879 | 1 |
| 2 | .004524 | .016375 | .033337 | .053626 | .075816 | .098786 | .121663 | .143785 | .164661 | .183940 | 2 |
| 3 | .000151 | .001092 | .003334 | .007150 | .012636 | .019757 | .028388 | .038343 | .049398 | .061313 | 3 |
| 4 | .000004 | .000055 | .000250 | .000715 | .001580 | .002964 | .004968 | .007669 | .011115 | .015328 | 4 |
| 5 | — | .000002 | .000015 | .000057 | .000158 | .000356 | .000696 | .001227 | .002001 | .003066 | 5 |
| 6 | — | — | .000001 | .000004 | .000013 | .000036 | .000081 | .000164 | .000300 | .000511 | 6 |
| 7 | — | — | — | — | .000001 | .000003 | .000008 | .000019 | .000039 | .000073 | 7 |
| 8 | — | — | — | — | — | — | .000001 | .000002 | .000004 | .000009 | 8 |
| 9 | — | — | — | — | — | — | — | — | — | .000001 | 9 |
| x | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 1.7 | 1.8 | 1.9 | 2.0 | x |
| 0 | .332871 | .301194 | .272532 | .246597 | .223130 | .201897 | .182684 | .165299 | .149569 | .135335 | 0 |
| 1 | .366158 | .361433 | .354291 | .345236 | .334695 | .323034 | .310562 | .297538 | .284180 | .270671 | 1 |
| 2 | .201387 | .216860 | .230289 | .241665 | .251021 | .258428 | .263978 | .267784 | .269971 | .270671 | 2 |
| 3 | .073842 | .086744 | .099792 | .112777 | .125510 | .137828 | .149587 | .160671 | .170982 | .180447 | 3 |
| 4 | .020307 | .026023 | .032432 | .039472 | .047067 | .055131 | .063575 | .072302 | .081216 | .090224 | 4 |
| 5 | .004467 | .006246 | .008432 | .011052 | .014120 | .017642 | .021615 | .026029 | .030862 | .036089 | 5 |
| 6 | .000819 | .001249 | .001827 | .002579 | .003530 | .004705 | .006124 | .007809 | .009773 | .012030 | 6 |
| 7 | .000129 | .000214 | .000339 | .000516 | .000756 | .001075 | .001487 | .002008 | .002653 | .003437 | 7 |
| 8 | .000018 | .000032 | .000055 | .000090 | .000142 | .000215 | .000316 | .000452 | .000630 | .000859 | 8 |
| 9 | .000002 | .000004 | .000008 | .000014 | .000024 | .000038 | .000060 | .000090 | .000133 | .000191 | 9 |
| 10 | — | .000001 | .000001 | .000002 | .000004 | .000006 | .000010 | .000016 | .000025 | .000038 | 10 |
| 11 | — | — | — | — | — | .000001 | .000002 | .000003 | .000005 | .000007 | 11 |
| 12 | — | — | — | — | — | — | — | — | .000001 | .000001 | 12 |
| x | 2.1 | 2.2 | 2.3 | 2.4 | 2.5 | 2.6 | 2.7 | 2.8 | 2.9 | 3.0 | x |
| 0 | .122456 | .110803 | .100259 | .090718 | .082085 | .074274 | .067206 | .060810 | .055023 | .049787 | 0 |
| 1 | .257159 | .243767 | .230595 | .217723 | .205212 | .193111 | .181455 | .170268 | .159567 | .149361 | 1 |
| 2 | .270016 | .268144 | .265185 | .261268 | .256516 | .251045 | .244964 | .238375 | .231373 | .224042 | 2 |
| 3 | .189012 | .196639 | .203308 | .209014 | .213763 | .217572 | .220468 | .222484 | .223660 | .224042 | 3 |
| 4 | .099231 | .108151 | .116902 | .125409 | .133602 | .141422 | .148816 | .155739 | .162154 | .168031 | 4 |
| 5 | .041677 | .047587 | .053775 | .060196 | .066801 | .073539 | .080360 | .087214 | .094049 | .100819 | 5 |
| 6 | .014587 | .017448 | .020614 | .024078 | .027834 | .031867 | .036162 | .040700 | .045457 | .050409 | 6 |
| 7 | .004376 | .005484 | .006773 | .008255 | .009941 | .011836 | .013948 | .016280 | .018832 | .021604 | 7 |
| 8 | .001149 | .001508 | .001947 | .002477 | .003106 | .003847 | .004708 | .005698 | .006827 | .008102 | 8 |
| 9 | .000268 | .000369 | .000498 | .000660 | .000863 | .001111 | .001412 | .001773 | .002200 | .002701 | 9 |
| 10 | .000056 | .000081 | .000114 | .000158 | .000216 | .000289 | .000381 | .000496 | .000638 | .000810 | 10 |
| 11 | .000011 | .000016 | .000024 | .000035 | .000049 | .000068 | .000094 | .000126 | .000168 | .000221 | 11 |
| 12 | .000002 | .000003 | .000005 | .000007 | .000010 | .000015 | .000021 | .000029 | .000041 | .000055 | 12 |
| 13 | — | .000001 | .000001 | .000001 | .000002 | .000003 | .000004 | .000006 | .000009 | .000013 | 13 |
| 14 | — | — | — | — | — | .000001 | .000001 | .000001 | .000002 | .000003 | 14 |
| 15 | — | — | — | — | — | — | — | — | — | .000001 | 15 |

TABLE—(continued).

| <i>x</i> | | <i>m</i> | | | | | | | | | | <i>x</i> |
|----------|---------|----------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----------|
| | | 3·1 | 3·2 | 3·3 | 3·4 | 3·5 | 3·6 | 3·7 | 3·8 | 3·9 | 4·0 | |
| 0 | ·045049 | ·040762 | ·036883 | ·033373 | ·030197 | ·027324 | ·024724 | ·022371 | ·020242 | ·018316 | 0 | |
| 1 | ·139653 | ·130439 | ·121714 | ·113469 | ·105691 | ·098365 | ·091477 | ·085009 | ·078943 | ·073263 | 1 | |
| 2 | ·216461 | ·208702 | ·200829 | ·192898 | ·184959 | ·177058 | ·169233 | ·161517 | ·153940 | ·146525 | 2 | |
| 3 | ·223677 | ·222616 | ·220912 | ·218617 | ·215785 | ·212469 | ·208720 | ·204588 | ·200122 | ·195367 | 3 | |
| 4 | ·173350 | ·178093 | ·182252 | ·185825 | ·188812 | ·191222 | ·193066 | ·194359 | ·195119 | ·195367 | 4 | |
| 5 | ·107477 | ·113979 | ·120286 | ·126361 | ·132169 | ·137680 | ·142869 | ·147713 | ·152193 | ·156293 | 5 | |
| 6 | ·055530 | ·060789 | ·066158 | ·071604 | ·077098 | ·082608 | ·088102 | ·093551 | ·098925 | ·104196 | 6 | |
| 7 | ·024592 | ·027789 | ·031189 | ·034779 | ·038549 | ·042484 | ·046568 | ·050785 | ·055115 | ·059540 | 7 | |
| 8 | ·009529 | ·011116 | ·012865 | ·014781 | ·016865 | ·019118 | ·021538 | ·024123 | ·026869 | ·029770 | 8 | |
| 9 | ·003282 | ·003952 | ·004717 | ·005584 | ·006559 | ·007647 | ·008854 | ·010185 | ·011643 | ·013231 | 9 | |
| 10 | ·001018 | ·001265 | ·001557 | ·001899 | ·002296 | ·002753 | ·003276 | ·003870 | ·004541 | ·005292 | 10 | |
| 11 | ·000287 | ·000368 | ·000467 | ·000587 | ·000730 | ·000901 | ·001102 | ·001337 | ·001610 | ·001925 | 11 | |
| 12 | ·000074 | ·000098 | ·000128 | ·000166 | ·000213 | ·000270 | ·000340 | ·000423 | ·000523 | ·000642 | 12 | |
| 13 | ·000018 | ·000024 | ·000033 | ·000043 | ·000057 | ·000075 | ·000097 | ·000124 | ·000157 | ·000197 | 13 | |
| 14 | ·000004 | ·000006 | ·000008 | ·000011 | ·000014 | ·000019 | ·000026 | ·000034 | ·000044 | ·000056 | 14 | |
| 15 | ·000001 | ·000001 | ·000002 | ·000002 | ·000003 | ·000005 | ·000006 | ·000009 | ·000011 | ·000015 | 15 | |
| 16 | — | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000003 | ·000004 | 16 | |
| 17 | — | — | — | — | — | — | — | — | ·000001 | ·000001 | 17 | |
| <i>x</i> | 4·1 | 4·2 | 4·3 | 4·4 | 4·5 | 4·6 | 4·7 | 4·8 | 4·9 | 5·0 | <i>x</i> | |
| 0 | ·016573 | ·014996 | ·013569 | ·012277 | ·011109 | ·010052 | ·009095 | ·008230 | ·007447 | ·006738 | 0 | |
| 1 | ·067948 | ·062981 | ·058345 | ·054020 | ·049990 | ·046238 | ·042748 | ·039503 | ·036488 | ·033690 | 1 | |
| 2 | ·139293 | ·132261 | ·125441 | ·118845 | ·112479 | ·106348 | ·100457 | ·094807 | ·089396 | ·084224 | 2 | |
| 3 | ·190368 | ·185165 | ·179799 | ·174305 | ·168718 | ·163068 | ·157383 | ·151691 | ·146014 | ·140374 | 3 | |
| 4 | ·195127 | ·194424 | ·193284 | ·191736 | ·189808 | ·187528 | ·184925 | ·182029 | ·178867 | ·175467 | 4 | |
| 5 | ·160004 | ·163316 | ·166224 | ·168728 | ·170827 | ·172525 | ·173830 | ·174748 | ·175290 | ·175467 | 5 | |
| 6 | ·109336 | ·114321 | ·119127 | ·123734 | ·128120 | ·132270 | ·136167 | ·139798 | ·143153 | ·146223 | 6 | |
| 7 | ·064040 | ·068593 | ·073178 | ·077775 | ·082363 | ·086920 | ·091426 | ·095862 | ·100207 | ·104445 | 7 | |
| 8 | ·032820 | ·036011 | ·039333 | ·042776 | ·046329 | ·049979 | ·053713 | ·057517 | ·061377 | ·065278 | 8 | |
| 9 | ·014951 | ·016805 | ·018793 | ·020913 | ·023165 | ·025545 | ·028050 | ·030676 | ·033416 | ·036266 | 9 | |
| 10 | ·006130 | ·007058 | ·008081 | ·009202 | ·010424 | ·011751 | ·013184 | ·014724 | ·016374 | ·018133 | 10 | |
| 11 | ·002285 | ·002695 | ·003159 | ·003681 | ·004264 | ·004914 | ·005633 | ·006425 | ·007294 | ·008242 | 11 | |
| 12 | ·000781 | ·000943 | ·001132 | ·001350 | ·001599 | ·001884 | ·002206 | ·002570 | ·002978 | ·003434 | 12 | |
| 13 | ·000246 | ·000305 | ·000374 | ·000457 | ·000554 | ·000667 | ·000798 | ·000949 | ·001123 | ·001321 | 13 | |
| 14 | ·000072 | ·000091 | ·000115 | ·000144 | ·000178 | ·000219 | ·000268 | ·000325 | ·000393 | ·000472 | 14 | |
| 15 | ·000020 | ·000026 | ·000033 | ·000042 | ·000053 | ·000067 | ·000084 | ·000104 | ·000128 | ·000157 | 15 | |
| 16 | ·000005 | ·000007 | ·000009 | ·000012 | ·000015 | ·000019 | ·000025 | ·000031 | ·000039 | ·000049 | 16 | |
| 17 | ·000001 | ·000002 | ·000002 | ·000003 | ·000004 | ·000005 | ·000007 | ·000009 | ·000011 | ·000014 | 17 | |
| 18 | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000003 | ·000004 | 18 | |
| 19 | — | — | — | — | — | — | — | ·000001 | ·000001 | ·000001 | 19 | |
| <i>x</i> | 5·1 | 5·2 | 5·3 | 5·4 | 5·5 | 5·6 | 5·7 | 5·8 | 5·9 | 6·0 | <i>x</i> | |
| 0 | ·006097 | ·005517 | ·004992 | ·004517 | ·004087 | ·003698 | ·003346 | ·003028 | ·002739 | ·002479 | 0 | |
| 1 | ·031093 | ·028686 | ·026455 | ·024390 | ·022477 | ·020708 | ·019072 | ·017560 | ·016163 | ·014873 | 1 | |
| 2 | ·079288 | ·074584 | ·070107 | ·065852 | ·061812 | ·057982 | ·054355 | ·050923 | ·047680 | ·044618 | 2 | |
| 3 | ·134790 | ·129279 | ·123856 | ·118533 | ·113323 | ·108234 | ·103275 | ·098452 | ·093771 | ·089235 | 3 | |

TABLE—(continued).

| <i>x</i> | <i>m</i> | | | | | | | | | | <i>x</i> |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| | 5·1 | 5·2 | 5·3 | 5·4 | 5·5 | 5·6 | 5·7 | 5·8 | 5·9 | 6·0 | |
| 4 | ·171857 | ·168063 | ·164109 | ·160020 | ·155819 | ·151528 | ·147167 | ·142755 | ·138312 | ·133853 | 4 |
| 5 | ·175294 | ·174785 | ·173955 | ·172821 | ·171401 | ·169711 | ·167770 | ·165596 | ·163208 | ·160623 | 5 |
| 6 | ·149000 | ·151480 | ·153660 | ·155539 | ·157117 | ·158397 | ·159382 | ·160076 | ·160488 | ·160623 | 6 |
| 7 | ·108557 | ·112528 | ·116343 | ·119987 | ·123449 | ·126717 | ·129782 | ·132635 | ·135268 | ·137677 | 7 |
| 8 | ·069205 | ·073143 | ·077077 | ·080991 | ·084871 | ·088702 | ·092470 | ·096160 | ·099760 | ·103258 | 8 |
| 9 | ·039216 | ·042261 | ·045390 | ·048595 | ·051866 | ·055192 | ·058564 | ·061970 | ·065398 | ·068838 | 9 |
| 10 | ·020000 | ·021976 | ·024057 | ·026241 | ·028526 | ·030908 | ·033382 | ·035943 | ·038585 | ·041303 | 10 |
| 11 | ·009273 | ·010388 | ·011591 | ·012882 | ·014263 | ·015735 | ·017298 | ·018952 | ·020696 | ·022529 | 11 |
| 12 | ·003941 | ·004502 | ·005119 | ·005797 | ·006537 | ·007343 | ·008216 | ·009160 | ·010175 | ·011264 | 12 |
| 13 | ·001546 | ·001801 | ·002087 | ·002408 | ·002766 | ·003163 | ·003603 | ·004087 | ·004618 | ·005199 | 13 |
| 14 | ·000563 | ·000669 | ·000790 | ·000929 | ·001087 | ·001265 | ·001467 | ·001693 | ·001946 | ·002228 | 14 |
| 15 | ·000191 | ·000232 | ·000279 | ·000334 | ·000398 | ·000472 | ·000557 | ·000655 | ·000766 | ·000891 | 15 |
| 16 | ·000061 | ·000075 | ·000092 | ·000113 | ·000137 | ·000165 | ·000199 | ·000237 | ·000282 | ·000334 | 16 |
| 17 | ·000018 | ·000023 | ·000029 | ·000036 | ·000044 | ·000054 | ·000067 | ·000081 | ·000098 | ·000118 | 17 |
| 18 | ·000005 | ·000007 | ·000008 | ·000011 | ·000014 | ·000017 | ·000021 | ·000026 | ·000032 | ·000039 | 18 |
| 19 | ·000001 | ·000002 | ·000002 | ·000003 | ·000004 | ·000005 | ·000006 | ·000008 | ·000010 | ·000012 | 19 |
| 20 | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000003 | ·000004 | 20 |
| 21 | — | — | — | — | — | — | — | ·000001 | ·000001 | ·000001 | 21 |
| <i>x</i> | 6·1 | 6·2 | 6·3 | 6·4 | 6·5 | 6·6 | 6·7 | 6·8 | 6·9 | 7·0 | <i>x</i> |
| 0 | ·002243 | ·002029 | ·001836 | ·001662 | ·001503 | ·001360 | ·001231 | ·001114 | ·001008 | ·000912 | 0 |
| 1 | ·013682 | ·012582 | ·011569 | ·010634 | ·009772 | ·008978 | ·008247 | ·007574 | ·006954 | ·006383 | 1 |
| 2 | ·041729 | ·039006 | ·036441 | ·034029 | ·031760 | ·029629 | ·027628 | ·025751 | ·023990 | ·022341 | 2 |
| 3 | ·084848 | ·080612 | ·076527 | ·072595 | ·068814 | ·065183 | ·061702 | ·058368 | ·055178 | ·052129 | 3 |
| 4 | ·129393 | ·124948 | ·120530 | ·116151 | ·111822 | ·107553 | ·103351 | ·999225 | ·995182 | ·991226 | 4 |
| 5 | ·157860 | ·154936 | ·151868 | ·148674 | ·145369 | ·141969 | ·138490 | ·134946 | ·131351 | ·127717 | 5 |
| 6 | ·160491 | ·160100 | ·159461 | ·158585 | ·157483 | ·156166 | ·154648 | ·152939 | ·151053 | ·149003 | 6 |
| 7 | ·139856 | ·141803 | ·143515 | ·144992 | ·146234 | ·147243 | ·148020 | ·148569 | ·148895 | ·149003 | 7 |
| 8 | ·106640 | ·109897 | ·113018 | ·115994 | ·118815 | ·121475 | ·123967 | ·126284 | ·128422 | ·130377 | 8 |
| 9 | ·072278 | ·075707 | ·079113 | ·082484 | ·085811 | ·089082 | ·092286 | ·095415 | ·098457 | ·101405 | 9 |
| 10 | ·044090 | ·046938 | ·049841 | ·052790 | ·055777 | ·058794 | ·061832 | ·064882 | ·067935 | ·070983 | 10 |
| 11 | ·024450 | ·026456 | ·028545 | ·030714 | ·032959 | ·035276 | ·037661 | ·040109 | ·042614 | ·045171 | 11 |
| 12 | ·012429 | ·013669 | ·014986 | ·016381 | ·017853 | ·019402 | ·021028 | ·022728 | ·024503 | ·026350 | 12 |
| 13 | ·005832 | ·006519 | ·007263 | ·008064 | ·008926 | ·009850 | ·010837 | ·011889 | ·013005 | ·014188 | 13 |
| 14 | ·002541 | ·002887 | ·003268 | ·003687 | ·004144 | ·004644 | ·005186 | ·005774 | ·006410 | ·007094 | 14 |
| 15 | ·001033 | ·001193 | ·001373 | ·001573 | ·001796 | ·002043 | ·002317 | ·002618 | ·002949 | ·003311 | 15 |
| 16 | ·000394 | ·000462 | ·000540 | ·000629 | ·000730 | ·000843 | ·000970 | ·001113 | ·001272 | ·001448 | 16 |
| 17 | ·000141 | ·000169 | ·000200 | ·000237 | ·000279 | ·000327 | ·000382 | ·000445 | ·000516 | ·000596 | 17 |
| 18 | ·000048 | ·000058 | ·000070 | ·000084 | ·000101 | ·000120 | ·000142 | ·000168 | ·000198 | ·000232 | 18 |
| 19 | ·000015 | ·000019 | ·000023 | ·000028 | ·000034 | ·000042 | ·000050 | ·000060 | ·000072 | ·000085 | 19 |
| 20 | ·000005 | ·000006 | ·000007 | ·000009 | ·000011 | ·000014 | ·000017 | ·000020 | ·000025 | ·000030 | 20 |
| 21 | ·000001 | ·000002 | ·000002 | ·000003 | ·000003 | ·000004 | ·000005 | ·000007 | ·000008 | ·000010 | 21 |
| 22 | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000003 | ·000003 | 22 |
| 23 | — | — | — | — | — | — | — | ·000001 | ·000001 | ·000001 | 23 |

TABLE—(continued).

| <i>x</i> | <i>m</i> | | | | | | | | | | <i>x</i> |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| | 7·1 | 7·2 | 7·3 | 7·4 | 7·5 | 7·6 | 7·7 | 7·8 | 7·9 | 8·0 | |
| 0 | ·000825 | ·000747 | ·000676 | ·000611 | ·000553 | ·000500 | ·000453 | ·000410 | ·000371 | ·000335 | 0 |
| 1 | ·005858 | ·005375 | ·004931 | ·004523 | ·004148 | ·003803 | ·003487 | ·003196 | ·002929 | ·002684 | 1 |
| 2 | ·020797 | ·019352 | ·018000 | ·016736 | ·015555 | ·014453 | ·013424 | ·012464 | ·011569 | ·010735 | 2 |
| 3 | ·049219 | ·046444 | ·043799 | ·041282 | ·038889 | ·036614 | ·034455 | ·032407 | ·030465 | ·028626 | 3 |
| 4 | ·087364 | ·083598 | ·079934 | ·076372 | ·072916 | ·069567 | ·066326 | ·063193 | ·060169 | ·057252 | 4 |
| 5 | ·124057 | ·120382 | ·116703 | ·113031 | ·109375 | ·105742 | ·102142 | ·098581 | ·095067 | ·091604 | 5 |
| 6 | ·146800 | ·144458 | ·141989 | ·139405 | ·136718 | ·133940 | ·131082 | ·128156 | ·125171 | ·122138 | 6 |
| 7 | ·148897 | ·148586 | ·148074 | ·147371 | ·146484 | ·145421 | ·144191 | ·142802 | ·141264 | ·139587 | 7 |
| 8 | ·132146 | ·133727 | ·135118 | ·136318 | ·137329 | ·138150 | ·138783 | ·139232 | ·139499 | ·139587 | 8 |
| 9 | ·104249 | ·106982 | ·109596 | ·112084 | ·114440 | ·116660 | ·118737 | ·120668 | ·122449 | ·124077 | 9 |
| 10 | ·074017 | ·077027 | ·080005 | ·082942 | ·085830 | ·088661 | ·091427 | ·094121 | ·096735 | ·099262 | 10 |
| 11 | ·047774 | ·050418 | ·053094 | ·055797 | ·058521 | ·061257 | ·063999 | ·066740 | ·069473 | ·072190 | 11 |
| 12 | ·028267 | ·030251 | ·032299 | ·034408 | ·036575 | ·038796 | ·041066 | ·043381 | ·045736 | ·048127 | 12 |
| 13 | ·015438 | ·016754 | ·018137 | ·019586 | ·021101 | ·022681 | ·024324 | ·026029 | ·027794 | ·029616 | 13 |
| 14 | ·007829 | ·008616 | ·009457 | ·010353 | ·011304 | ·012312 | ·013378 | ·014502 | ·015684 | ·016924 | 14 |
| 15 | ·003706 | ·004136 | ·004603 | ·005107 | ·005652 | ·006238 | ·006867 | ·007541 | ·008260 | ·009026 | 15 |
| 16 | ·001644 | ·001861 | ·002100 | ·002362 | ·002649 | ·002963 | ·003305 | ·003676 | ·004078 | ·004513 | 16 |
| 17 | ·000687 | ·000788 | ·000902 | ·001028 | ·001169 | ·001325 | ·001497 | ·001687 | ·001895 | ·002124 | 17 |
| 18 | ·000271 | ·000315 | ·000366 | ·000423 | ·000487 | ·000559 | ·000640 | ·000731 | ·000832 | ·000944 | 18 |
| 19 | ·000101 | ·000119 | ·000141 | ·000165 | ·000192 | ·000224 | ·000259 | ·000300 | ·000346 | ·000397 | 19 |
| 20 | ·000036 | ·000043 | ·000051 | ·000061 | ·000072 | ·000085 | ·000100 | ·000117 | ·000137 | ·000159 | 20 |
| 21 | ·000012 | ·000015 | ·000018 | ·000021 | ·000026 | ·000031 | ·000037 | ·000043 | ·000051 | ·000061 | 21 |
| 22 | ·000004 | ·000005 | ·000006 | ·000007 | ·000009 | ·000011 | ·000013 | ·000015 | ·000018 | ·000022 | 22 |
| 23 | ·000001 | ·000002 | ·000002 | ·000002 | ·000003 | ·000004 | ·000004 | ·000005 | ·000006 | ·000008 | 23 |
| 24 | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000003 | 24 |
| 25 | — | — | — | — | — | — | — | ·000001 | ·000001 | ·000001 | 25 |
| <i>x</i> | 8·1 | 8·2 | 8·3 | 8·4 | 8·5 | 8·6 | 8·7 | 8·8 | 8·9 | 9·0 | <i>x</i> |
| 0 | ·000304 | ·000275 | ·000249 | ·000225 | ·000203 | ·000184 | ·000167 | ·000151 | ·000136 | ·000123 | 0 |
| 1 | ·002459 | ·002252 | ·002063 | ·001889 | ·001729 | ·001583 | ·001449 | ·001326 | ·001214 | ·001111 | 1 |
| 2 | ·009958 | ·009234 | ·008560 | ·007933 | ·007350 | ·006803 | ·006304 | ·005836 | ·005402 | ·004998 | 2 |
| 3 | ·026885 | ·025239 | ·023683 | ·022213 | ·020826 | ·019517 | ·018283 | ·017120 | ·016025 | ·014994 | 3 |
| 4 | ·054443 | ·051740 | ·049142 | ·046648 | ·044255 | ·041961 | ·039765 | ·037664 | ·035656 | ·033737 | 4 |
| 5 | ·088198 | ·084854 | ·081576 | ·078368 | ·075233 | ·072174 | ·069192 | ·066289 | ·063467 | ·060727 | 5 |
| 6 | ·119067 | ·115967 | ·112847 | ·109716 | ·106581 | ·103449 | ·100328 | ·097224 | ·094143 | ·091090 | 6 |
| 7 | ·137778 | ·135848 | ·133805 | ·131659 | ·129419 | ·127094 | ·124693 | ·122224 | ·119696 | ·117116 | 7 |
| 8 | ·139500 | ·139244 | ·138823 | ·138242 | ·137508 | ·136626 | ·135604 | ·134446 | ·133161 | ·131756 | 8 |
| 9 | ·125550 | ·126866 | ·128025 | ·129026 | ·129869 | ·130554 | ·131084 | ·131459 | ·131682 | ·131756 | 9 |
| 10 | ·101696 | ·104031 | ·106261 | ·108382 | ·110388 | ·112277 | ·114043 | ·115684 | ·117197 | ·118580 | 10 |
| 11 | ·074885 | ·077550 | ·080179 | ·082764 | ·085300 | ·087780 | ·090197 | ·092547 | ·094823 | ·097020 | 11 |
| 12 | ·050547 | ·052993 | ·055457 | ·057935 | ·060421 | ·062909 | ·065393 | ·067868 | ·070327 | ·072765 | 12 |
| 13 | ·031495 | ·033426 | ·035407 | ·037435 | ·039506 | ·041617 | ·043763 | ·045941 | ·048147 | ·050376 | 13 |
| 14 | ·018222 | ·019578 | ·020991 | ·022461 | ·023986 | ·025565 | ·027196 | ·028877 | ·030608 | ·032384 | 14 |
| 15 | ·009840 | ·010703 | ·011615 | ·012578 | ·013592 | ·014657 | ·015773 | ·016941 | ·018161 | ·019431 | 15 |
| 16 | ·004981 | ·005485 | ·006025 | ·006604 | ·007221 | ·007878 | ·008577 | ·009318 | ·010102 | ·010930 | 16 |
| 17 | ·002373 | ·002646 | ·002942 | ·003263 | ·003610 | ·003985 | ·004389 | ·004823 | ·005289 | ·005786 | 17 |
| 18 | ·001068 | ·001205 | ·001356 | ·001523 | ·001705 | ·001904 | ·002121 | ·002358 | ·002615 | ·002893 | 18 |
| 19 | ·000455 | ·000520 | ·000593 | ·000673 | ·000763 | ·000862 | ·000971 | ·001092 | ·001225 | ·001370 | 19 |
| 20 | ·000184 | ·000213 | ·000246 | ·000283 | ·000324 | ·000371 | ·000423 | ·000481 | ·000545 | ·000617 | 20 |

TABLE—(continued).

| <i>x</i> | <i>m</i> | | | | | | | | | | <i>x</i> |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| | 8·1 | 8·2 | 8·3 | 8·4 | 8·5 | 8·6 | 8·7 | 8·8 | 8·9 | 9·0 | |
| 21 | ·000071 | ·000083 | ·000097 | ·000113 | ·000131 | ·000152 | ·000175 | ·000201 | ·000231 | ·000264 | 21 |
| 22 | ·000026 | ·000031 | ·000037 | ·000043 | ·000051 | ·000059 | ·000069 | ·000081 | ·000093 | ·000108 | 22 |
| 23 | ·000009 | ·000011 | ·000013 | ·000016 | ·000019 | ·000022 | ·000026 | ·000031 | ·000036 | ·000042 | 23 |
| 24 | ·000003 | ·000004 | ·000005 | ·000006 | ·000007 | ·000008 | ·000009 | ·000011 | ·000013 | ·000016 | 24 |
| 25 | ·000001 | ·000001 | ·000002 | ·000002 | ·000002 | ·000003 | ·000003 | ·000004 | ·000005 | ·000006 | 25 |
| 26 | — | — | — | ·000001 | ·000001 | ·000001 | — | ·000001 | ·000002 | ·000002 | 26 |
| 27 | — | — | — | — | — | — | — | — | ·000001 | ·000001 | 27 |
| <i>x</i> | 9·1 | 9·2 | 9·3 | 9·4 | 9·5 | 9·6 | 9·7 | 9·8 | 9·9 | 10·0 | <i>x</i> |
| 0 | ·000112 | ·000101 | ·000091 | ·000083 | ·000075 | ·000068 | ·000061 | ·000055 | ·000050 | ·000045 | 0 |
| 1 | ·001016 | ·000930 | ·000850 | ·000778 | ·000711 | ·000650 | ·000594 | ·000543 | ·000497 | ·000454 | 1 |
| 2 | ·004624 | ·004276 | ·003954 | ·003655 | ·003378 | ·003121 | ·002883 | ·002663 | ·002459 | ·002270 | 2 |
| 3 | ·014025 | ·013113 | ·012256 | ·011452 | ·010696 | ·009987 | ·009322 | ·008698 | ·008114 | ·007567 | 3 |
| 4 | ·031906 | ·030160 | ·028496 | ·026911 | ·025403 | ·023969 | ·022606 | ·021311 | ·020082 | ·018917 | 4 |
| 5 | ·058069 | ·055494 | ·053002 | ·050593 | ·048266 | ·046020 | ·043855 | ·041770 | ·039763 | ·037833 | 5 |
| 6 | ·088072 | ·085091 | ·082154 | ·079262 | ·076421 | ·073632 | ·070899 | ·068224 | ·065609 | ·063055 | 6 |
| 7 | ·114493 | ·111834 | ·109147 | ·106438 | ·103714 | ·100981 | ·098246 | ·095514 | ·092790 | ·090079 | 7 |
| 8 | ·130236 | ·128609 | ·126883 | ·125065 | ·123160 | ·121178 | ·119123 | ·117004 | ·114827 | ·112599 | 8 |
| 9 | ·131683 | ·131467 | ·131113 | ·130623 | ·130003 | ·129256 | ·128388 | ·127405 | ·126310 | ·125110 | 9 |
| 10 | ·119832 | ·120950 | ·121935 | ·122786 | ·123502 | ·124086 | ·124537 | ·124857 | ·125047 | ·125110 | 10 |
| 11 | ·099133 | ·101158 | ·103090 | ·104926 | ·106661 | ·108293 | ·109819 | ·111236 | ·112542 | ·113736 | 11 |
| 12 | ·075176 | ·077555 | ·079895 | ·082192 | ·084440 | ·086634 | ·088770 | ·090843 | ·092847 | ·094780 | 12 |
| 13 | ·052623 | ·054885 | ·057156 | ·059431 | ·061706 | ·063976 | ·066236 | ·068481 | ·070707 | ·072908 | 13 |
| 14 | ·034205 | ·036067 | ·037968 | ·039904 | ·041872 | ·043869 | ·045892 | ·047937 | ·050000 | ·052077 | 14 |
| 15 | ·020751 | ·022121 | ·023540 | ·025006 | ·026519 | ·028076 | ·029677 | ·031319 | ·033000 | ·034718 | 15 |
| 16 | ·011802 | ·012720 | ·013683 | ·014691 | ·015746 | ·016846 | ·017992 | ·019183 | ·020419 | ·021699 | 16 |
| 17 | ·006318 | ·006884 | ·007485 | ·008123 | ·008799 | ·009513 | ·010266 | ·011058 | ·011891 | ·012764 | 17 |
| 18 | ·003194 | ·003518 | ·003867 | ·004242 | ·004644 | ·005074 | ·005532 | ·006021 | ·006540 | ·007091 | 18 |
| 19 | ·001530 | ·001704 | ·001893 | ·002099 | ·002322 | ·002563 | ·002824 | ·003105 | ·003408 | ·003732 | 19 |
| 20 | ·000696 | ·000784 | ·000880 | ·000986 | ·001103 | ·001230 | ·001370 | ·001522 | ·001687 | ·001866 | 20 |
| 21 | ·000302 | ·000343 | ·000390 | ·000442 | ·000499 | ·000563 | ·000633 | ·000710 | ·000795 | ·000889 | 21 |
| 22 | ·000125 | ·000144 | ·000165 | ·000189 | ·000215 | ·000245 | ·000279 | ·000316 | ·000358 | ·000404 | 22 |
| 23 | ·000049 | ·000057 | ·000067 | ·000077 | ·000089 | ·000102 | ·000118 | ·000135 | ·000154 | ·000176 | 23 |
| 24 | ·000019 | ·000022 | ·000026 | ·000030 | ·000035 | ·000041 | ·000048 | ·000055 | ·000064 | ·000073 | 24 |
| 25 | ·000007 | ·000008 | ·000010 | ·000011 | ·000013 | ·000016 | ·000018 | ·000022 | ·000025 | ·000029 | 25 |
| 26 | ·000002 | ·000003 | ·000003 | ·000004 | ·000005 | ·000006 | ·000007 | ·000008 | ·000010 | ·000011 | 26 |
| 27 | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000002 | ·000003 | ·000004 | ·000004 | 27 |
| 28 | — | — | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | 28 |
| 29 | — | — | — | — | — | — | — | — | — | ·000001 | 29 |
| <i>x</i> | 10·1 | 10·2 | 10·3 | 10·4 | 10·5 | 10·6 | 10·7 | 10·8 | 10·9 | 11·0 | <i>x</i> |
| 0 | ·000041 | ·000037 | ·000034 | ·000030 | ·000028 | ·000 25 | ·000023 | ·000020 | ·000018 | ·000017 | 0 |
| 1 | ·000415 | ·000379 | ·000346 | ·000317 | ·000289 | ·000264 | ·000241 | ·000220 | ·000201 | ·000184 | 1 |
| 2 | ·002095 | ·001934 | ·001784 | ·001646 | ·001518 | ·001400 | ·001291 | ·001190 | ·001097 | ·001010 | 2 |
| 3 | ·007054 | ·006574 | ·006125 | ·005705 | ·005313 | ·004946 | ·004603 | ·004283 | ·003984 | ·003705 | 3 |

TABLE—(continued).

| <i>x</i> | <i>m</i> | | | | | | | | | | <i>x</i> |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| | 10·1 | 10·2 | 10·3 | 10·4 | 10·5 | 10·6 | 10·7 | 10·8 | 10·9 | 11·0 | |
| 4 | ·017811 | ·016764 | ·015773 | ·014834 | ·013946 | ·013107 | ·012313 | ·011564 | ·010856 | ·010189 | 4 |
| 5 | ·035979 | ·034199 | ·032492 | ·030855 | ·029287 | ·027786 | ·026350 | ·024978 | ·023667 | ·022415 | 5 |
| 6 | ·060565 | ·058139 | ·055777 | ·053482 | ·051252 | ·049089 | ·046991 | ·044960 | ·042995 | ·041095 | 6 |
| 7 | ·087387 | ·084716 | ·082072 | ·079458 | ·076878 | ·074334 | ·071830 | ·069367 | ·066949 | ·064577 | 7 |
| 8 | ·110326 | ·108013 | ·105668 | ·103296 | ·100902 | ·098493 | ·096072 | ·093646 | ·091218 | ·088794 | 8 |
| 9 | ·123810 | ·122415 | ·120931 | ·119364 | ·117720 | ·116003 | ·114219 | ·112375 | ·110475 | ·108526 | 9 |
| 10 | ·125048 | ·124863 | ·124559 | ·124139 | ·123606 | ·122963 | ·122215 | ·121365 | ·120418 | ·119378 | 10 |
| 11 | ·114817 | ·115782 | ·116633 | ·117368 | ·117987 | ·118492 | ·118882 | ·119159 | ·119323 | ·119378 | 11 |
| 12 | ·096637 | ·098415 | ·100110 | ·101719 | ·103239 | ·104667 | ·106003 | ·107243 | ·108386 | ·109430 | 12 |
| 13 | ·075080 | ·077218 | ·079318 | ·081375 | ·083385 | ·085344 | ·087248 | ·089094 | ·090877 | ·092595 | 13 |
| 14 | ·054165 | ·056259 | ·058355 | ·060450 | ·062539 | ·064618 | ·066683 | ·068730 | ·070754 | ·072753 | 14 |
| 15 | ·036471 | ·038256 | ·040071 | ·041912 | ·043777 | ·045663 | ·047567 | ·049485 | ·051415 | ·053352 | 15 |
| 16 | ·023022 | ·024388 | ·025795 | ·027243 | ·028729 | ·030252 | ·031810 | ·033403 | ·035026 | ·036680 | 16 |
| 17 | ·013678 | ·014633 | ·015629 | ·016666 | ·017744 | ·018863 | ·020022 | ·021220 | ·022458 | ·023734 | 17 |
| 18 | ·007675 | ·008292 | ·008943 | ·009629 | ·010351 | ·011108 | ·011902 | ·012732 | ·013600 | ·014504 | 18 |
| 19 | ·004080 | ·004451 | ·004848 | ·005271 | ·005720 | ·006197 | ·006703 | ·007237 | ·007802 | ·008397 | 19 |
| 20 | ·002060 | ·002270 | ·002497 | ·002741 | ·003003 | ·003285 | ·003586 | ·003908 | ·004252 | ·004618 | 20 |
| 21 | ·000991 | ·001103 | ·001225 | ·001357 | ·001502 | ·001658 | ·001827 | ·002010 | ·002207 | ·002419 | 21 |
| 22 | ·000455 | ·000511 | ·000573 | ·000642 | ·000717 | ·000799 | ·000889 | ·000987 | ·001093 | ·001210 | 22 |
| 23 | ·000200 | ·000227 | ·000257 | ·000290 | ·000327 | ·000368 | ·000413 | ·000463 | ·000518 | ·000578 | 23 |
| 24 | ·000084 | ·000096 | ·000110 | ·000126 | ·000143 | ·000163 | ·000184 | ·000208 | ·000235 | ·000265 | 24 |
| 25 | ·000034 | ·000039 | ·000045 | ·000052 | ·000060 | ·000069 | ·000079 | ·000090 | ·000103 | ·000117 | 25 |
| 26 | ·000013 | ·000015 | ·000018 | ·000021 | ·000024 | ·000028 | ·000032 | ·000037 | ·000043 | ·000049 | 26 |
| 27 | ·000005 | ·000006 | ·000007 | ·000008 | ·000009 | ·000011 | ·000013 | ·000015 | ·000017 | ·000020 | 27 |
| 28 | ·000002 | ·000002 | ·000003 | ·000003 | ·000004 | ·000004 | ·000005 | ·000006 | ·000007 | ·000008 | 28 |
| 29 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000002 | ·000003 | ·000003 | 29 |
| 30 | — | — | — | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | 30 |
| <i>x</i> | 11·1 | 11·2 | 11·3 | 11·4 | 11·5 | 11·6 | 11·7 | 11·8 | 11·9 | 12·0 | <i>x</i> |
| 0 | ·000015 | ·000014 | ·000012 | ·000011 | ·000010 | ·000009 | ·000008 | ·000008 | ·000007 | ·000006 | 0 |
| 1 | ·000168 | ·000153 | ·000140 | ·000128 | ·000116 | ·000106 | ·000097 | ·000089 | ·000081 | ·000074 | 1 |
| 2 | ·000931 | ·000858 | ·000790 | ·000727 | ·000670 | ·000617 | ·000568 | ·000522 | ·000481 | ·000442 | 2 |
| 3 | ·003445 | ·003202 | ·002976 | ·002764 | ·002568 | ·002385 | ·002214 | ·002055 | ·001907 | ·001770 | 3 |
| 4 | ·009559 | ·008965 | ·008406 | ·007879 | ·007382 | ·006915 | ·006476 | ·006062 | ·005674 | ·005309 | 4 |
| 5 | ·021221 | ·020082 | ·018997 | ·017963 | ·016979 | ·016043 | ·015153 | ·014307 | ·013504 | ·012741 | 5 |
| 6 | ·039259 | ·037487 | ·035778 | ·034130 | ·032544 | ·031017 | ·029549 | ·028137 | ·026782 | ·025481 | 6 |
| 7 | ·062253 | ·059979 | ·057755 | ·055584 | ·053465 | ·051400 | ·049388 | ·047432 | ·045530 | ·043682 | 7 |
| 8 | ·086376 | ·083970 | ·081579 | ·079206 | ·076856 | ·074529 | ·072231 | ·069962 | ·067725 | ·065523 | 8 |
| 9 | ·106531 | ·104496 | ·102427 | ·100328 | ·989204 | ·979060 | ·969900 | ·961728 | ·953548 | ·945364 | 9 |
| 10 | ·118249 | ·117036 | ·115743 | ·114374 | ·112935 | ·111430 | ·109863 | ·108239 | ·106562 | ·104837 | 10 |
| 11 | ·119324 | ·119164 | ·118899 | ·118533 | ·118068 | ·117508 | ·116854 | ·116110 | ·115281 | ·114368 | 11 |
| 12 | ·110375 | ·111220 | ·111964 | ·112607 | ·113149 | ·113591 | ·113933 | ·114175 | ·114320 | ·114363 | 12 |
| 13 | ·094243 | ·095820 | ·097322 | ·098747 | ·100093 | ·101358 | ·102539 | ·103636 | ·104647 | ·105570 | 13 |
| 14 | ·074721 | ·076656 | ·078553 | ·080409 | ·082219 | ·083982 | ·085694 | ·087350 | ·088950 | ·090489 | 14 |
| 15 | ·055294 | ·057236 | ·059177 | ·061110 | ·063035 | ·064946 | ·066841 | ·068716 | ·070567 | ·072391 | 15 |
| 16 | ·038360 | ·040065 | ·041793 | ·043541 | ·045306 | ·047086 | ·048877 | ·050678 | ·052484 | ·054293 | 16 |
| 17 | ·025047 | ·026396 | ·027780 | ·029198 | ·030648 | ·032129 | ·033639 | ·035176 | ·036739 | ·038325 | 17 |
| 18 | ·015446 | ·016424 | ·017440 | ·018492 | ·019581 | ·020706 | ·021865 | ·023060 | ·024288 | ·025550 | 18 |
| 19 | ·009023 | ·009682 | ·010372 | ·011095 | ·011852 | ·012641 | ·013465 | ·014322 | ·015212 | ·016137 | 19 |

TABLE—(continued).

| <i>x</i> | <i>m</i> | | | | | | | | | | <i>x</i> |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| | 11·1 | 11·2 | 11·3 | 11·4 | 11·5 | 11·6 | 11·7 | 11·8 | 11·9 | 12·0 | |
| 20 | ·005008 | ·005422 | ·005860 | ·006324 | ·006815 | ·007332 | ·007877 | ·008450 | ·009051 | ·009682 | 20 |
| 21 | ·002647 | ·002892 | ·003153 | ·003433 | ·003732 | ·004050 | ·004388 | ·004748 | ·005129 | ·005533 | 21 |
| 22 | ·001336 | ·001472 | ·001620 | ·001779 | ·001951 | ·002136 | ·002334 | ·002547 | ·002774 | ·003018 | 22 |
| 23 | ·000645 | ·000717 | ·000796 | ·000882 | ·000975 | ·001077 | ·001187 | ·001307 | ·001435 | ·001575 | 23 |
| 24 | ·000298 | ·000335 | ·000375 | ·000419 | ·000467 | ·000521 | ·000579 | ·000642 | ·000712 | ·000787 | 24 |
| 25 | ·000132 | ·000150 | ·000169 | ·000191 | ·000215 | ·000242 | ·000271 | ·000303 | ·000339 | ·000378 | 25 |
| 26 | ·000057 | ·000065 | ·000074 | ·000084 | ·000095 | ·000108 | ·000122 | ·000138 | ·000155 | ·000174 | 26 |
| 27 | ·000023 | ·000027 | ·000031 | ·000035 | ·000041 | ·000046 | ·000053 | ·000060 | ·000068 | ·000078 | 27 |
| 28 | ·000009 | ·000011 | ·000012 | ·000014 | ·000017 | ·000019 | ·000022 | ·000025 | ·000029 | ·000033 | 28 |
| 29 | ·000004 | ·000004 | ·000005 | ·000006 | ·000007 | ·000008 | ·000009 | ·000010 | ·000012 | ·000014 | 29 |
| 30 | ·000001 | ·000002 | ·000002 | ·000002 | ·000003 | ·000003 | ·000003 | ·000004 | ·000005 | ·000005 | 30 |
| 31 | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000002 | 31 |
| 32 | — | — | — | — | — | — | — | ·000001 | ·000001 | ·000001 | 32 |
| <i>x</i> | 12·1 | 12·2 | 12·3 | 12·4 | 12·5 | 12·6 | 12·7 | 12·8 | 12·9 | 13·0 | <i>x</i> |
| 0 | ·000006 | ·000005 | ·000005 | ·000004 | ·000004 | ·000003 | ·000003 | ·000003 | ·000002 | ·000002 | 0 |
| 1 | ·000067 | ·000061 | ·000056 | ·000051 | ·000047 | ·000042 | ·000039 | ·000035 | ·000032 | ·000029 | 1 |
| 2 | ·000407 | ·000374 | ·000344 | ·000317 | ·000291 | ·000268 | ·000246 | ·000226 | ·000208 | ·000191 | 2 |
| 3 | ·001641 | ·001522 | ·001412 | ·001309 | ·001213 | ·001124 | ·001042 | ·000965 | ·000894 | ·000828 | 3 |
| 4 | ·004966 | ·004643 | ·004341 | ·004057 | ·003791 | ·003541 | ·003307 | ·003088 | ·002882 | ·002690 | 4 |
| 5 | ·012017 | ·011330 | ·010679 | ·010062 | ·009477 | ·008924 | ·008400 | ·007905 | ·007436 | ·006994 | 5 |
| 6 | ·024233 | ·023037 | ·021892 | ·020794 | ·019744 | ·018740 | ·017781 | ·016864 | ·015988 | ·015153 | 6 |
| 7 | ·041889 | ·040151 | ·038467 | ·036836 | ·035258 | ·033733 | ·032259 | ·030837 | ·029464 | ·028141 | 7 |
| 8 | ·063358 | ·061230 | ·059142 | ·057095 | ·055091 | ·053129 | ·051212 | ·049339 | ·047511 | ·045730 | 8 |
| 9 | ·085181 | ·083000 | ·080828 | ·078665 | ·076515 | ·074381 | ·072266 | ·070171 | ·068100 | ·066054 | 9 |
| 10 | ·103069 | ·101261 | ·099418 | ·097544 | ·095644 | ·093720 | ·091777 | ·089819 | ·087849 | ·085870 | 10 |
| 11 | ·113376 | ·112308 | ·111168 | ·109959 | ·108686 | ·107352 | ·105961 | ·104516 | ·103023 | ·101483 | 11 |
| 12 | ·114321 | ·114180 | ·113947 | ·113624 | ·113215 | ·112720 | ·112142 | ·111484 | ·110749 | ·109940 | 12 |
| 13 | ·106406 | ·107153 | ·107811 | ·108380 | ·108860 | ·109251 | ·109554 | ·109769 | ·109897 | ·109940 | 13 |
| 14 | ·091965 | ·093376 | ·094720 | ·095994 | ·097197 | ·098326 | ·099381 | ·100360 | ·101263 | ·102087 | 14 |
| 15 | ·074185 | ·075946 | ·077670 | ·079355 | ·080997 | ·082594 | ·084143 | ·085641 | ·087086 | ·088475 | 15 |
| 16 | ·056103 | ·057909 | ·059709 | ·061500 | ·063279 | ·065043 | ·066788 | ·068513 | ·070213 | ·071886 | 16 |
| 17 | ·039932 | ·041558 | ·043201 | ·044859 | ·046529 | ·048208 | ·049895 | ·051586 | ·053279 | ·054972 | 17 |
| 18 | ·026843 | ·028167 | ·029521 | ·030903 | ·032312 | ·033746 | ·035204 | ·036683 | ·038193 | ·039702 | 18 |
| 19 | ·017095 | ·018086 | ·019111 | ·020168 | ·021258 | ·022379 | ·023531 | ·024713 | ·025925 | ·027164 | 19 |
| 20 | ·010342 | ·011033 | ·011753 | ·012504 | ·013286 | ·014099 | ·014942 | ·015816 | ·016721 | ·017657 | 20 |
| 21 | ·005959 | ·006409 | ·006884 | ·007383 | ·007908 | ·008459 | ·009036 | ·009640 | ·010272 | ·010930 | 21 |
| 22 | ·003278 | ·003554 | ·003849 | ·004162 | ·004493 | ·004845 | ·005216 | ·005609 | ·006023 | ·006459 | 22 |
| 23 | ·001724 | ·001885 | ·002058 | ·002244 | ·002442 | ·002654 | ·002880 | ·003122 | ·003378 | ·003651 | 23 |
| 24 | ·000869 | ·000958 | ·001055 | ·001159 | ·001272 | ·001393 | ·001524 | ·001665 | ·001816 | ·001977 | 24 |
| 25 | ·000421 | ·000468 | ·000519 | ·000575 | ·000636 | ·000702 | ·000774 | ·000852 | ·000937 | ·001028 | 25 |
| 26 | ·000196 | ·000219 | ·000246 | ·000274 | ·000306 | ·000340 | ·000378 | ·000420 | ·000465 | ·000514 | 26 |
| 27 | ·000088 | ·000099 | ·000112 | ·000126 | ·000142 | ·000159 | ·000178 | ·000199 | ·000222 | ·000248 | 27 |
| 28 | ·000038 | ·000043 | ·000049 | ·000056 | ·000063 | ·000071 | ·000081 | ·000091 | ·000102 | ·000115 | 28 |
| 29 | ·000016 | ·000018 | ·000021 | ·000024 | ·000027 | ·000031 | ·000035 | ·000040 | ·000046 | ·000052 | 29 |
| 30 | ·000006 | ·000007 | ·000009 | ·000010 | ·000011 | ·000013 | ·000015 | ·000017 | ·000020 | ·000022 | 30 |
| 31 | ·000002 | ·000003 | ·000003 | ·000004 | ·000005 | ·000005 | ·000006 | ·000007 | ·000008 | ·000009 | 31 |
| 32 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000002 | ·000002 | ·000003 | ·000003 | ·000004 | 32 |
| 33 | — | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | 33 |
| 34 | — | — | — | — | — | — | — | — | — | ·000001 | 34 |

TABLE—(continued).

| <i>x</i> | <i>m</i> | | | | | | | | | | <i>x</i> | |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|----|
| | 13·1 | 13·2 | 13·3 | 13·4 | 13·5 | 13·6 | 13·7 | 13·8 | 13·9 | 14·0 | | |
| 0 | ·000002 | ·000002 | ·000002 | ·000002 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | 0 |
| 1 | ·000027 | ·000024 | ·000022 | ·000020 | ·000019 | ·000017 | ·000015 | ·000014 | ·000013 | ·000012 | ·000012 | 1 |
| 2 | ·000175 | ·000161 | ·000148 | ·000136 | ·000125 | ·000115 | ·000105 | ·000097 | ·000089 | ·000081 | ·000081 | 2 |
| 3 | ·000766 | ·000709 | ·000657 | ·000608 | ·000562 | ·000520 | ·000481 | ·000445 | ·000411 | ·000380 | ·000380 | 3 |
| 4 | ·002510 | ·002341 | ·002183 | ·002035 | ·001897 | ·001768 | ·001648 | ·001535 | ·001429 | ·001331 | ·001331 | 4 |
| 5 | ·006575 | ·006180 | ·005807 | ·005455 | ·005123 | ·004810 | ·004514 | ·004236 | ·003974 | ·003727 | ·003727 | 5 |
| 6 | ·014356 | ·013596 | ·012872 | ·012183 | ·011526 | ·010902 | ·010308 | ·009743 | ·009206 | ·008696 | ·008696 | 6 |
| 7 | ·026867 | ·025639 | ·024458 | ·023322 | ·022230 | ·021181 | ·020173 | ·019207 | ·018280 | ·017392 | ·017392 | 7 |
| 8 | ·043994 | ·042304 | ·040661 | ·039064 | ·037512 | ·036007 | ·034547 | ·033132 | ·031762 | ·030435 | ·030435 | 8 |
| 9 | ·064036 | ·062046 | ·060088 | ·058161 | ·056269 | ·054410 | ·052588 | ·050802 | ·049054 | ·047344 | ·047344 | 9 |
| 10 | ·083887 | ·081901 | ·079916 | ·077936 | ·075963 | ·073998 | ·072046 | ·070107 | ·068185 | ·066282 | ·066282 | 10 |
| 11 | ·099901 | ·098281 | ·096626 | ·094940 | ·093227 | ·091489 | ·089730 | ·087953 | ·086162 | ·084359 | ·084359 | 11 |
| 12 | ·109059 | ·108109 | ·107094 | ·106017 | ·104880 | ·103687 | ·102441 | ·101146 | ·099804 | ·098418 | ·098418 | 12 |
| 13 | ·109898 | ·109773 | ·109566 | ·109279 | ·108914 | ·108473 | ·107957 | ·107370 | ·106713 | ·105989 | ·105989 | 13 |
| 14 | ·102833 | ·103500 | ·104087 | ·104595 | ·105024 | ·105373 | ·105644 | ·105836 | ·105951 | ·105989 | ·105989 | 14 |
| 15 | ·089807 | ·091080 | ·092291 | ·093439 | ·094522 | ·095539 | ·096488 | ·097369 | ·098181 | ·098923 | ·098923 | 15 |
| 16 | ·073530 | ·075141 | ·076717 | ·078255 | ·079753 | ·081208 | ·082618 | ·083981 | ·085295 | ·086558 | ·086558 | 16 |
| 17 | ·056661 | ·058345 | ·060019 | ·061683 | ·063333 | ·064966 | ·066580 | ·068173 | ·069741 | ·071283 | ·071283 | 17 |
| 18 | ·041237 | ·042786 | ·044348 | ·045920 | ·047500 | ·049086 | ·050675 | ·052266 | ·053856 | ·055442 | ·055442 | 18 |
| 19 | ·028432 | ·029725 | ·031043 | ·032385 | ·033750 | ·035135 | ·036539 | ·037962 | ·039400 | ·040852 | ·040852 | 19 |
| 20 | ·018623 | ·019619 | ·020644 | ·021698 | ·022781 | ·023892 | ·025030 | ·026193 | ·027383 | ·028597 | ·028597 | 20 |
| 21 | ·011617 | ·012332 | ·013074 | ·013846 | ·014645 | ·015473 | ·016329 | ·017213 | ·018125 | ·019064 | ·019064 | 21 |
| 22 | ·006917 | ·007399 | ·007904 | ·008433 | ·008987 | ·009565 | ·010168 | ·010797 | ·011452 | ·012132 | ·012132 | 22 |
| 23 | ·003940 | ·004246 | ·004571 | ·004913 | ·005275 | ·005656 | ·006057 | ·006478 | ·006921 | ·007385 | ·007385 | 23 |
| 24 | ·002151 | ·002336 | ·002533 | ·002743 | ·002967 | ·003205 | ·003457 | ·003725 | ·004008 | ·004308 | ·004308 | 24 |
| 25 | ·001127 | ·001233 | ·001348 | ·001470 | ·001602 | ·001744 | ·001895 | ·002056 | ·002229 | ·002412 | ·002412 | 25 |
| 26 | ·000568 | ·000626 | ·000689 | ·000758 | ·000832 | ·000912 | ·000998 | ·001091 | ·001191 | ·001299 | ·001299 | 26 |
| 27 | ·000275 | ·000306 | ·000340 | ·000376 | ·000416 | ·000459 | ·000507 | ·000558 | ·000613 | ·000674 | ·000674 | 27 |
| 28 | ·000129 | ·000144 | ·000161 | ·000180 | ·000201 | ·000223 | ·000248 | ·000275 | ·000305 | ·000337 | ·000337 | 28 |
| 29 | ·000058 | ·000066 | ·000074 | ·000083 | ·000093 | ·000105 | ·000117 | ·000131 | ·000146 | ·000163 | ·000163 | 29 |
| 30 | ·000025 | ·000029 | ·000033 | ·000037 | ·000042 | ·000047 | ·000053 | ·000060 | ·000068 | ·000076 | ·000076 | 30 |
| 31 | ·000011 | ·000012 | ·000014 | ·000016 | ·000018 | ·000021 | ·000024 | ·000027 | ·000030 | ·000034 | ·000034 | 31 |
| 32 | ·000004 | ·000005 | ·000006 | ·000007 | ·000008 | ·000009 | ·000010 | ·000012 | ·000013 | ·000015 | ·000015 | 32 |
| 33 | ·000002 | ·000002 | ·000002 | ·000003 | ·000003 | ·000004 | ·000004 | ·000005 | ·000006 | ·000006 | ·000006 | 33 |
| 34 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | ·000002 | ·000003 | ·000003 | 34 |
| 35 | — | — | — | — | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | 35 |
| <i>x</i> | 14·1 | 14·2 | 14·3 | 14·4 | 14·5 | 14·6 | 14·7 | 14·8 | 14·9 | 15·0 | <i>x</i> | |
| 0 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | — | — | — | — | — | 0 | |
| 1 | ·000011 | ·000010 | ·000009 | ·000008 | ·000007 | ·000007 | ·000006 | ·000006 | ·000005 | ·000005 | 1 | |
| 2 | ·000075 | ·000069 | ·000063 | ·000058 | ·000053 | ·000049 | ·000045 | ·000041 | ·000038 | ·000034 | 2 | |
| 3 | ·000352 | ·000325 | ·000300 | ·000277 | ·000256 | ·000237 | ·000219 | ·000202 | ·000186 | ·000172 | 3 | |
| 4 | ·001239 | ·001153 | ·001073 | ·000999 | ·000929 | ·000864 | ·000803 | ·000747 | ·000694 | ·000645 | 4 | |
| 5 | ·003494 | ·003275 | ·003070 | ·002876 | ·002694 | ·002523 | ·002362 | ·002211 | ·002069 | ·001936 | 5 | |
| 6 | ·008212 | ·007752 | ·007316 | ·006902 | ·006510 | ·006139 | ·005787 | ·005454 | ·005138 | ·004839 | 6 | |
| 7 | ·016541 | ·015726 | ·014946 | ·014199 | ·013486 | ·012804 | ·012152 | ·011530 | ·010937 | ·010370 | 7 | |
| 8 | ·029153 | ·027913 | ·026715 | ·025559 | ·024443 | ·023367 | ·022330 | ·021331 | ·020370 | ·019444 | 8 | |
| 9 | ·045673 | ·044040 | ·042447 | ·040894 | ·039380 | ·037907 | ·036472 | ·035078 | ·033723 | ·032407 | 9 | |
| 10 | ·064399 | ·062537 | ·060700 | ·058887 | ·057101 | ·055343 | ·053614 | ·051915 | ·050247 | ·048611 | 10 | |
| 11 | ·082547 | ·080730 | ·078910 | ·077089 | ·075270 | ·073456 | ·071648 | ·069850 | ·068062 | ·066287 | 11 | |

TABLE—(continued).

| <i>x</i> | <i>m</i> | | | | | | | | | | <i>x</i> |
|----------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| | 14·1 | 14·2 | 14·3 | 14·4 | 14·5 | 14·6 | 14·7 | 14·8 | 14·9 | 15·0 | |
| 12 | ·096993 | ·095530 | ·094034 | ·092507 | ·090951 | ·089371 | ·087769 | ·086148 | ·084510 | ·082859 | 12 |
| 13 | ·105200 | ·104349 | ·103437 | ·102469 | ·101446 | ·100371 | ·099247 | ·098076 | ·096862 | ·095607 | 13 |
| 14 | ·105951 | ·105839 | ·105654 | ·105396 | ·105069 | ·104672 | ·104209 | ·103681 | ·103089 | ·102436 | 14 |
| 15 | ·099594 | ·100195 | ·100723 | ·101181 | ·101567 | ·101881 | ·102125 | ·102298 | ·102402 | ·102436 | 15 |
| 16 | ·087768 | ·088923 | ·090021 | ·091063 | ·092045 | ·092967 | ·093827 | ·094626 | ·095361 | ·096034 | 16 |
| 17 | ·072795 | ·074277 | ·075724 | ·077135 | ·078509 | ·079842 | ·081133 | ·082380 | ·083581 | ·084736 | 17 |
| 18 | ·057023 | ·058596 | ·060158 | ·061708 | ·063243 | ·064761 | ·066259 | ·067735 | ·069187 | ·070613 | 18 |
| 19 | ·042317 | ·043793 | ·045277 | ·046768 | ·048264 | ·049763 | ·051263 | ·052762 | ·054257 | ·055747 | 19 |
| 20 | ·029834 | ·031093 | ·032373 | ·033673 | ·034992 | ·036327 | ·037678 | ·039044 | ·040422 | ·041810 | 20 |
| 21 | ·020031 | ·021025 | ·022045 | ·023090 | ·024161 | ·025256 | ·026375 | ·027517 | ·028680 | ·029865 | 21 |
| 22 | ·012838 | ·013570 | ·014329 | ·015114 | ·015924 | ·016761 | ·017623 | ·018511 | ·019424 | ·020362 | 22 |
| 23 | ·007870 | ·008378 | ·008909 | ·009462 | ·010039 | ·010640 | ·011264 | ·011911 | ·012584 | ·013280 | 23 |
| 24 | ·004624 | ·004957 | ·005308 | ·005677 | ·006065 | ·006472 | ·006899 | ·007345 | ·007812 | ·008300 | 24 |
| 25 | ·002608 | ·002816 | ·003036 | ·003270 | ·003518 | ·003780 | ·004057 | ·004348 | ·004656 | ·004980 | 25 |
| 26 | ·001414 | ·001538 | ·001670 | ·001811 | ·001962 | ·002123 | ·002294 | ·002475 | ·002668 | ·002873 | 26 |
| 27 | ·000739 | ·000809 | ·000884 | ·000966 | ·001054 | ·001148 | ·001249 | ·001357 | ·001473 | ·001596 | 27 |
| 28 | ·000372 | ·000410 | ·000452 | ·000497 | ·000546 | ·000598 | ·000656 | ·000717 | ·000784 | ·000855 | 28 |
| 29 | ·000181 | ·000201 | ·000223 | ·000247 | ·000273 | ·000301 | ·000332 | ·000366 | ·000403 | ·000442 | 29 |
| 30 | ·000085 | ·000095 | ·000106 | ·000118 | ·000132 | ·000147 | ·000163 | ·000181 | ·000200 | ·000221 | 30 |
| 31 | ·000039 | ·000044 | ·000049 | ·000055 | ·000062 | ·000069 | ·000077 | ·000086 | ·000096 | ·000107 | 31 |
| 32 | ·000017 | ·000019 | ·000022 | ·000025 | ·000028 | ·000032 | ·000035 | ·000040 | ·000045 | ·000050 | 32 |
| 33 | ·000007 | ·000008 | ·000009 | ·000011 | ·000012 | ·000014 | ·000016 | ·000018 | ·000020 | ·000023 | 33 |
| 34 | ·000003 | ·000003 | ·000004 | ·000005 | ·000005 | ·000006 | ·000007 | ·000008 | ·000009 | ·000010 | 34 |
| 35 | ·000001 | ·000001 | ·000002 | ·000002 | ·000002 | ·000002 | ·000003 | ·000003 | ·000004 | ·000004 | 35 |
| 36 | — | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000001 | ·000002 | ·000002 | 36 |
| 37 | — | — | — | — | — | — | — | ·000001 | ·000001 | ·000001 | 37 |