The *Astronomische Gesellschaft* are, however, publishing an eight­figure table on the sexagesimal system, under the charge of Dr. J. Bauschinger, the director of the k. Recheninstitut at Berlin. The arrangement is to be in groups of three as in Bremiker's tables.

*Collections of Tables.—*For a computer who requires in one volume logarithms of numbers and a ten-second logarithmic canon, perhaps the two best books are L. Schrön, *Seven-Figure Logarithms* (London, 1865, stereotyped, an English edition of the German work pub­lished at Brunswick), and C. Bruhns, /1 *New Manual of Logarithms to Seven Places of Decimals* (Leipzig, 1870). Both these works (of which there have been numerous editions) give logarithms of numbers and a complete ten-second canon to 7 places; Bruhns also gives log sines, cosines, tangents, and cotangents to every second up to 6o with proportional parts. Schrön contains an interpolation table, of 75 pages, giving the first 100 multiples of all numbers from 40 to 420. The logarithms of numbers extend to 108,000 in Schrön and to 100,000 in Bruhns. Almost equally convenient is Bremiker’s edition of Vega’s *Logarithmic Tables* (Berlin, stereotyped; the English edition was translated from the fortieth edition of Bremiker’s by W. L. F. Fischer). This book gives a canon to every ten seconds, and for the first five degrees to every second, with logarithms of numbers to 100,000. Schrön, Bruhns, and Bremiker all give the proportional parts for all the differences in the logarithms of numbers. In Babbage’s, Callet’s, and many other tables only every other table of pro­portional parts is given near the beginning for want of space. Schrön, Bruhns, and most modern tables published in Germany have title-pages and introductions in different languages. J. Dupuis, *Tables de logarithmes à sept décimales* (stereotyped, third tirage, 1868, Paris), is also very convenient, containing a ten-second canon, besides logarithms of numbers to 100,000, hyperbolic log­arithms of numbers to 1000, to 7 places, &c. In this work negative characteristics are printed throughout in the tables of circular functions, the minus sign being placed above the figure; for the mathematical calculator these are preferable to the ordinary char­acteristics that are increased by 10. The edges of the pages con­taining the circular functions are red, the rest being grey. Dupuis also edited Callet’s logarithms in 1862, with which this work must not be confounded. J. Salomon, *Logarithmische Tafeln* (Vienna, 1827), contains a ten-second canon (the intervals being one second for the first two degrees), logarithms of numbers to 108,000, squares, cubes, square roots, and cube roots to 1000, a factor table to 102,011, ten-place Briggian and hyperbolic logarithms of numbers to 1000 and of primes to 10,333, and many other useful tables. The work, which is scarce, is a well-printed small quarto volume.

Of collections of general tables among the most useful and accessible are Hutton, Callet, Vega, and Köhler. C. Hutton’s well-known *Mathematical Tables* (London) was first issued in 1785, but considerable additions were made in the fifth edition (1811). The tables contain seven-figure logarithms to 108,000, and to 1200 to 20 places, some antilogarithms to 20 places, hyperbolic logarithms from I to 10 at intervals of ∙01 and to 1200 at intervals of unity to 7 places, logistic logarithms, log sines and tangents to every second of the first two degrees, and natural and log sines, tangents, secants, and versed sines for every minute of the quadrant to 7 places. The natural functions occupy the left-hand pages and the logarithmic the right-hand. The first six editions, published in Hutton’s lifetime (d. 1823), contain Abraham Sharp’s 61-figure logarithms of numbers. Olinthus Gregory, who brought out the 1830 and succeeding editions, omitted these tables and Hutton’s introduction, which contains a history' of logarithms, the methods of constructing them, &c. F. Callet’s *Tables portatives de loga­rithmes* (stereotyped, Paris) seems to have been first issued in 1783, and has since passed through a great many editions. In that of 1853 the contents are seven-figure logarithms to 108,000, Briggian and hyperbolic logarithms to 48 places of numbers to 100 and of primes to 1097, log sines and tangents for minutes (centesimal) throughout the quadrant to 7 places, natural and log sines to 15 places for every ten minutes (centesimal) of the quadrant, log sines and tangents for every second of the first five degrees (sexagesimal) and for every ten seconds of the quadrant (sexagesimal) to 7 places, besides logistic logarithms, the first hundred multiples of the modulus to 24 places and the first ten to 70 places, and other tables. This is one of the most complete and practically' useful collections of logarithms that have been published, and it is peculiar in giving a centesimally divided canon. The size of the page in the editions published in the 19th century is larger than that of the earlier editions, the type having been reset. G. Vega’s *Tabulae logarithmo-trigonometricae* was first pub­lished in 1797 in two volumes. The first contains seven-figure logarithms to 101,000, log sines, &c., for every tenth of a second to 1', for every second to 1° 30', for every 10" to 6° 3', and thence at intervals of a minute, also natural sines and tangents to every minute, all to 7 places. The second volume gives simple divisors of all numbers up to 102,000, a list of primes from 102,000 to 400,313, hyperbolic logarithms of numbers to 1000 and of primes to 10,000, to 8 places, *ex* and log10ex to x = 10 at intervals of ∙01 to 7 figures and 7 places respectively, the first nine powers of the numbers from 1 to 100, squares and cubes to 1000, logistic logarithms, binomial theorem coefficients, &c. Vega also published *Manuale logarithmico-trigonometricum* (Leipzig, 1800), the tables in which are identical with a portion of those contained in the first volume of the *Tabulae.* The *Tabulae* went through many editions, a stereotyped issue being brought out by J. A. Hülsse *(Sammlung mathematischer Tafeln,* Leipzig) in one volume in 1840. The contents arc nearly the same as those of the original work, the chief difference being that a large table of Gaussian logarithms is added. Vega differs from Hutton and Callet in giving so many useful non-logarithmic tables, and his collection is in many respects complementary to theirs. J. C. Schulze, *Neue und erweiterte Sammlung logarithmischer, trigonometrischer, und anderer Tafeln* (2 vols. Berlin, 1778), is a valuable collection, and contains seven­figure logarithms to 101,000, log sines and tangents to 2° at intervals of a second, and natural sines, tangents, and secants to 7 places, log sines and tangents and *Napierian* log sines and tangents to 8 places, all for every ten seconds to 4° and thence for every minute to 45°, besides squares, cubes, square roots, and cube roots to 1000, binomial theorem coefficients, powers of *e,* and other small tables. Wolfram’s hyperbolic logarithms of numbers below 10,000 to 48 places first appeared in this work. J. H. Lambert’s *Supplementa tabularum logarithmicarum et tri- gonometricarum* (Lisbon, 1798) contains a number of useful and curious non-logarithmic tables and bears a general resemblance to the second volume of Vega, but there are also other small tables of a more strictly mathematical character. A very useful collection of non-logarithmic tables is contained in Peter Barlow’s *New Mathematical Tables* (London, 1814). It gives squares, cubes, square roots, and cube roots (to 7 places), reciprocals to 9 or 10 places, and resolutions into their prime factors of all numbers from 1 to 10,000, the first ten powers of numbers to 100, fourth and fifth powers of numbers from 100 to 1000, prime numbers from 1 to 100,103, eight-place hyperbolic logarithms to 10,000, tables for the solution of the irreducible case in cubic equations, &c. In the stereotyped reprint of 1840 only the squares, cubes, square roots, cube roots, and. reciprocals arc retained. The first volume of Shortrede’s tables, in addition to the trigonometrical canon to every second, contains antilogarithms and Gaussian logarithms.

F. R. Hassler, *Tabulae logarithmicae et trigonometricae* (New York, 1830, stereotyped), gives seven-figure logarithms to 100,000, log sines and tangents for every second to 1° , and log sines, cosines, tangents, and cotangents from 1° to 3° at intervals of 10" and thence to 45° at intervals of 30". Every effort has been made to reduce the size of the tables without loss of distinctness, the page being only about 3 by 5 inches. Copies of the work were published with the introduction and title-page in different languages. A. D. Stanley, *Tables of Logarithms* (New Haven, U.S., i860), gives seven-figure logarithms to 100,000, and log sines, cosines, tangents, cotangents, secants, and cosecants at intervals of ten seconds to 15° and thence at intervals of a minute to 45" to 7 places, besides natural sines and cosines, antilogarithms, and other tables. This collection owed its origin to the fact that Hassler’s tables were found to be inconvenient owing to the smallness of the type.

G. Luvini, *Tables of Logarithms* (London, 1866, stereotyped, printed at Turin), gives seven-figure logarithms to 20,040, Briggian and hyperbolic logarithms of primes to 1200 to 20 places, log sines and tangents for each second to 9', at intervals of 10" to 2°, of 30" to 9°, of 1' to 45° to 7 places, besides square and cube roots up to 625. The book, which is intended for schools, engineers, &c., has a peculiar arrangement of the logarithms and proportional parts on the pages. *Mathematical Tables* (W. & R. Chambers, Edinburgh), containing logarithms of numbers to 100,000, and a canon to every minute of log sines, tangents, and secants and of natural sines to 7 places, besides proportional logarithms and other small tables, is cheap and suitable for schools, though not to be compared as regards matter or typography to the best tables described above.

Of six-figure tables C. Bremiker’s *Logarithmorum VI. decimalium nova tabula Berolinensis* (Berlin 1852) is probably one of the best. It gives logarithms of numbers to 100,000, with proportional parts, and log sines and tangents for every second to 5°, and beyond 5° for every ten seconds, with proportional parts. J. Hantschl, *Logarithmisch-trigonometrisches Handbuch* (Vienna, 1827), gives five- figure logarithms to 10,000, log sines and tangents for every ten seconds to 6 places, natural sines, tangents, secants, and versed sines for every minute to 7 places, logarithms of primes to 15,391, hyperbolic logarithms of numbers to 11,273 to 8 places, least divisors of numbers to 18,277, binomial theorem coefficients, &c. R. Farley’s *Six-Figure Logarithms* (London, stereotyped, 1840), gives six-figure logarithms to 10,000 and log sines and tangents for every minute to 6 places.

Coming now to five-figure tables a very convenient little book is *Tables of Logarithms* (Useful Knowledge Society, London, from the stereotyped plates of 1839), which was prepared by De Morgan, though it has no name on the title-page. It contains five-figure logarithms to 10,000, log sines and tangents to every minute to 5 places, besides a few smaller tables. J. de Lalande’s *Tables de logarithmes* is a five-figure table with nearly the same contents as De Morgan’s, first published in 1805. It has since passed through many editions, and, after being extended from 5 to 7 places, passed