



Review

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Factor Table for the First Ten Millions. By D. N. LEHMER. Washington, D.C., Carnegie Institution of Washington, 1909. Pp. xiv + 476.

The most important factor tables hitherto published are those by Burckhardt for the first three millions, Glaisher for the next three millions, and Dase and Rosenberg for the 7th to 9th millions. In view of the difficulty of obtaining certain of these tables, the appearance of Lehmer's table in a single volume is timely. Since the new table was constructed independently of the earlier tables, it was possible to eliminate errors by noting discrepancies detected by a comparison, made five times, entry for entry. An observation of the rate of error made in the earlier tables shows that there is less than an even chance that both the new table and the earlier tables shall contain an error in the same place in the ten millions. Lastly, a very important check was made by counting the primes within various limits and comparing these counts with the numbers computed by Bertelsen by Meissl's method, the results tallying in every case. It is therefore highly probable that Lehmer's table contains no error in regard to the primes, and it is just here that one using the table is forced to rely entirely upon the accuracy of the table, in contrast with a composite entry and with tables for continuous functions.

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The Public School Geometry. By F. J. W. WHIPPLE, M.A. Pp. xii + 154. 1910. J. M. Dent & Sons.

It was somewhat difficult to express a decided opinion upon Mr. Whipple's book for this reason. It is intended for the use of pupils who are quite beginners, and yet, within the limit of 151 pages we find such subjects dealt with as the radii of inscribed and escribed circles, Heron's formula for the area of a triangle, Apollonius' circle, etc. Still, when we study the book and its methods carefully, these results seem attainable in the hands of a good teacher. Mr. Whipple recognises that at an early stage a boy's mental attitude leads him to grasp new truths which are presented to him in a concrete form much more readily than when they are supported by abstract reasoning, and he very wisely makes use of inductive rather than deductive proofs. Another very prominent feature of the book consists in the 2,216 examples. As a rule we do not advocate too many riders, which the ordinary student looks at with wonder, but with very little desire to attempt them because their proofs are almost invariably deductive, and therefore make little or no appeal to his feelings of curiosity. But Mr. Whipple's ingenuity enables him to leave the beaten track, and to give a class of examples which cannot fail to have a stimulating effect upon a boy's mind. From this point of view No. 2104 is a model rider, and the same can be said of many of the early ones.

We are not quite sure that some of Mr. Whipple's new terms appeal to us, *e.g.* stretch = distance or length, way = construction, cutter = transversal, (capital) II = 2 right angles, checks = rectangles, etc. His proofs are of various kinds, viz. inductive, deductive, folding, Euclidean, algebraic, and elastic, of which the last named is certainly novel, and we are not sure whether it is inductive, or what it is. Some of the proofs are excellent, *e.g.* that on p. 60, but we think the geometrico-algebraic proof of Pythagoras' Theorem given on p. 91 would hardly carry conviction to the mind of a beginner. The circle chapter seems rather incomplete, as nothing is given about the equality of angles on equal areas in equal circles, etc., and on the other hand we could have spared the pages dealing with the spherometer and solid geometry, which seem too hard, and somewhat out of place.

On the whole the book is distinctly original, and is evidently written by a teacher who loves his subject and is gifted with an invaluable fund of imagination which he uses to good effect. In the hands of such a teacher, who would always be on the watch carefully to guide his pupils and encourage them to work out the examples, it could not fail to be productive of good results. We can cordially recommend it.

JOHN J. MILNE.

Führer durch die Mathematische Litteratur, mit besonderer Berücksichtigung der Historisch-wichtigen Schriften. By F. MÜLLER. Pp. x + 252. 7 m. paper covers. 1909. (Teubner.)

This guide should be found useful to many students and teachers who are