

The detailed discussion of the space quartic curve is also somewhat of a departure, but one that is justified. Without using any other machinery than that provided in the previous part of the text, the appearance of the elliptic, nodal, and cuspidal quartics is found, and some of the properties derived. Here again the theory of shades and shadows is liberally applied.

The last chapter, comprising about one sixth of the volume, is devoted to orthogonal axonometry. Here the presentation is not so successful. Too much detail is given, and the reader does not see readily the advantage of the whole procedure. The elementary projections are given as before, in fact several figures are almost identical with those found in the earlier presentation. After twenty pages, however, the treatment is much more satisfactory. The purpose now appears, and the whole discussion is easier and clearer. A detailed treatment of the determination of the scale in each of three directions is followed by the representation of polyhedra, then by complicated architectural figures. A short discussion of the three round bodies is added, and the results applied to an extension coupling. Only a small number of exercises are given in this last part.

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*Die graphische Darstellung.* By FELIX AUERBACH. Leipzig and Berlin, B. G. Teubner, 1914. (Aus Natur und Geisteswelt, volume 437.) 97 pp. and 100 figures.

THIS little volume is written for readers without mathematical training. Its purpose is to compare the value of various methods of representation. It compares magnitudes by means of lengths of segments of lines, areas of rectangles with constant bases, areas of squares, circles, sectors, and even volumes of certain solids. Incidentally a mass of statistical information is given in the illustrations. After these preliminary notions follows a full and readable discussion of the idea of a plane curve, including periodic and general trigonometric representations. Finally, automatic tide registers, magnetic fields, seismographs, registering thermometers, solar photographs, and sound waves are briefly discussed.

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