on the cubic surface, defined as the locus of intersections of corresponding planes of three related stars, which leads to the determinantal equation and the plane mapping—a treatment closely parallel to Reye's but expressed in algebraic terms. The pencil, range, and net of quadrics are then considered, with the cubic transformations determined by the latter, and Hesse's correspondence between its Jacobian sextic and a plane quartic—the last, only to the point of relating the 28 bitangents of the quartic to the 28 pencils of double contact in the net. Linear transformations in space are then treated, though nothing like a complete enumeration is attempted. There is here an interesting treatment of the collineations which leave a quadric invariant, and the applications of this theory to non-Euclidean geometry.

Last of all come a brief—too brief, perhaps—introduction to line geometry; and a final hint at the possibilities of n-dimensional geometry. The workings of duality in four and five dimensions, the general intersections relations in these spaces, the properties of the fifth associated plane in four dimensions, and the representation of conics in the plane and lines in ordinary space by points of five dimensions are offered to whet the appetite; and the student is left, a little abruptly perhaps, mature in outlook, and able to start in earnest on algebraic geometry.

P. Du Val

Real functions. By Casper Goffman. New York, Rinehart, 1953. 12+263 pp. $6.00.

Principles of mathematical analysis. By Walter Rudin. New York, McGraw-Hill, 1953. 9+227 pp. $5.00.

Theory of functions of real variables. By Henry P. Thielman. New York, Prentice-Hall, 1953. 11+209 pp. $6.65.

These three books, each an introductory text on real function theory, have appeared almost simultaneously. This unusual situation has led the reviewer to write a single article comparing the three rather than to write a separate review of each. Thus, the grouping of the three books into one review is not to be taken as an indication that no one of them is of sufficient significance to merit a separate discussion. Rather, it is a recognition of the fact that they will be considered competitively so that a discussion of their relative merits would seem to be the most pertinent.

The following chart gives a brief summary of the contents of the three books. It lists the major topics considered in the union of the