proof by Wielandt using a minimax argument gives a ready entry into the arena of these results and makes all these results accessible to reasonable juniors and seniors.

The second axe that I have to grind is that, with all the hullabaloo about applications of algebra to economics, genetics, physics, electrical engineering, and so on, little attempt is made, at the early level, to show how algebra can be applied in *mathematics* itself. Sure, using beginning field theory, or some Galois theory, the question of constructibility by straight edge and compass, or the insolvability of the quintic are presented. Outside of these, very little effort is made to illustrate how algebra, even elementary algebra, can be successfully employed in other parts of mathematics. With a modicum of commutative ring theory nice results in number theory can be obtained. Very few of our students see how configurations in a projective plane translate into algebraic statements about the ring of coordinates of the plane, and how, once this is done, theorems in geometry can be proved by proving theorems about these associated rings. There have been resounding successes in combinatorics using deep results in commutative ring theory. By concentrating on specialized situations of these one might be able to get nice applications of very elementary commutative ring theory to interesting (albeit special) problems in combinatorics. One of my own favorite applications of algebra to number theory is Schur's argument for the Gaussian sums, using the fact that the trace of a matrix A is the sum of its characteristic roots and that the characteristic roots of A^2 are the squares of those of A, together with a hand-dirtying argument (which is healthy for our students to see) at the end.

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Integral geometry and geometric probability, by Luis A. Santaló, Addison-Wesley Publishing Company, Reading, Mass., 1976, xvii + 404 pp., $ 19.50.

Integral geometry was the name coined by Wilhelm Blaschke in 1934 for the classical subject of geometric probability. During that year the author came to Hamburg from Madrid and the reviewer from China, and we sat in Blaschke's course on geometric probability. The main reference was an "Ausarbeitung" of a course by the same name given by G. Herglotz in Göttingen. At the end of 1934 the author found his now famous proofs of the isoperimetric inequality in the plane and Blaschke himself found the fundamental kinematic formula and started a series of papers under the general title of "integral geometry". It was a fruitful and enjoyable year for all concerned.

Integral geometry is exactly 200 years old if we identify its birth with Buffon's solution in 1777 of the needle problem: A needle of length h is placed at random on a plane on which are ruled parallel lines at a distance $D \geqslant h$ apart. Find the probability that it will intersect one of these lines. In fact, the answer is $p = 2h/\pi D$. Experiments were made to determine π on the basis of this result, usually with great accuracy.

Elementary problems on geometric probability are many and are interesting. But until 1928 J. L. Coolidge still held the opinion that the subject is