describes "An interdisciplinary program for law students in the environmental field" offered at the University of Colorado, in which law students were exposed to a variety of problems and programs of science-based state and federal governmental agencies, and Charles H. W. Foster outlines in "Counsel for the concerned" some of the specific possibilities and opportunities open to persons who wish to enter the field of environmental law.

This is a landmark volume and will be a much used contribution to the literature for some time to come. Because it has to do with novel and dynamic developments, the specific doctrines and propositions with which it deals are certain to be affected by social and legislative change, and users of the volume seeking information on the current state of environmental law will need to update its contents by reference to more recent sources, notably in the environmental law reporters and in the law journals. But the benchmark value of this volume will not be impaired, and it will be a long time before anyone seriously concerned with law and the environment can afford to be unacquainted with it.

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Mathematician

Carl Friedrich Gauss. A Biography. TORD HALL. Translated from the Swedish edition by Albert Froderberg. M.I.T. Press, Cambridge, Mass., 1970. xii, 176 pp., illus. $7.95.

Carl Friedrich Gauss is usually described in superlatives. He is "the prince of mathematicians," and is ranked with Archimedes and Newton as one of the greatest mathematicians of all time. His contributions to mathematics and physics range from number theory to telegraphy, from differential geometry to the calculation of planetary orbits. Yet though there are abundant materials—collected works, letters, notebooks containing unpublished discoveries, detailed scholarly studies of many aspects of his work—no mathematical biography of Gauss has ever been written.

Tord Hall's biography is a more modest undertaking. He answers two questions: "What sort of man was Gauss?" and "What sort of mathematics do we owe to Gauss?" The book can best be described as a modern popularization of some important topics in mathematics and physics that were greatly advanced by Gauss: prime numbers, congruences and quadratic reciprocity, construction of the regular 17-sided polygon, the method of least squares, the Gauss-Weber telegraph, triangulation, differential geometry and curvature, non-Euclidean geometry, complex numbers, and elliptic functions. The account is interwoven with biographical data, and the topics are presented in the order in which Gauss took them up. In the brief last chapter, "Personal facts about Gauss," Hall has given us a nice picture of Gauss the man, including his aversion to teaching, his conservatism in politics, his views on religion, his attitude toward his children, his loneliness, and above all his love for the beauty of mathematics. There is no ground-breaking historical research here, but Hall makes some interesting nontechnical generalizations about Gauss's work.

The popularization of the mathematics is generally good, especially on the geometrical topics. But sometimes, though the mathematical problem is easily stated, no quick popular explanation of the solution is possible. Hall may leave the nonmathematical reader wondering, among other things, Where does the logarithm come from in the number of primes less than a given number n? How could one possibly prove the fundamental theorem of algebra?

Though Hall spends much time explaining the mathematics, he has chosen not to explain in any detail how Gauss himself approached the problems. In particular, no Gaussian proofs are reproduced. For a detailed account of Gauss's mathematics, its influence on his contemporaries and successors, and its relationship to the mathematics of earlier periods, the reader must turn elsewhere: to histories of mathematics, to detailed studies of particular works, or to Gauss's works themselves. But Gauss's works are notoriously difficult; the *Disquisitiones Arithmeticae* has been called "that book with the seven seals."

There are some errors in the historical remarks Hall does make. For instance, he implies that "There is one and only one parallel to a given line through a given outside point" is the famous Fifth Postulate of Euclid's *Elements*; it is a later equivalent. He believes that Newton and Gauss mean Euclid, rather than Archimedes, when they speak of the "rigor of antiquity." Finally, there are no footnotes, and the bibliography is brief and unselective.

For a nonmathematician, whether student or scientist, who wants a modernized, elementary account of some major topics in classical mathematics, Hall's book is not a bad source. The reader will at the same time get a feeling for Gauss as a human being. But we still await a major mathematical biography of the prince of mathematicians.

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Population Genetics

An Introduction to Population Genetics Theory. JAMES F. CROW and MOTOO KIMURA. Harper and Row, New York, 1970. xvi, 592 pp., illus. $13.95.

The genetic state of a population is determined by the genotypes of its members, their relative frequencies, and their values. Accordingly, the central concerns of population genetics are with the forces responsible for change (or stability) of genotype frequencies, expected rates of change, and the concurrent effects on the average genotypic values and genetic variances of populations. These, and many relevant ramifications, are the things about which Crow and Kimura have written. Their book is, as its title indicates, devoted to theory, primarily theory tailored to diploid organisms and populations subject only to natural selection. It is modestly labeled an introduction. Far less would have qualified as an introduction; it is not exhaustive, but it is a very thorough introduction, and on several subjects (among them inbreeding, Fisher's fundamental theorem of natural selection, and gene frequency drift in finite populations) the treatment is far better described as sophisticated than as introductory.

Attention is directed first to genotype frequencies as functions of gene frequencies, mating system (random, assortative, and consanguineous), and interlocus correlations in gametic allele content (amount of linkage disequilibrium). This done, the focus is shifted to the joint effects of selection, mutation, drift, and migration on gene frequencies. Changes in genotype frequencies arising from changes in mating system or gene frequency are trans-