Book Reviews

**Genethics: The Clash Between the New Genetics and Human Values.** By David Suzuki and Peter Knudtson. Cambridge, MA, Harvard University Press, 1989. 384 pp. $25.00.

Modern genetics allows us to interfere directly with the fundamental material of life. We can redesign structures to suit our own needs in just a few days. At the same time, we subvert mechanisms that nature was able to achieve only after millions of years. Even when considerable care is taken, the consequences are not always predictable. The current literature reflects these concerns, with prominent theorists agonizing over the implications of our guerrilla warfare against genes. *Genethics* is an attempt to agonize less and resolve more.

The first five chapters are meant to introduce the uninitiated reader to the world of modern genetics; these can easily be skipped if you have a biology background. Although well written, they are unfortunately too intimidating for all but the most dedicated novice. The chapter on recombinant DNA, for example, includes detailed steps on creating gene libraries and sequencing techniques. As the remainder of the book does not depend on understanding all of the intricate science, little is lost by jumping ahead.

Each of the next nine chapters focuses on a particular case study. These case studies result in a total of ten “genetic principles,” or moral guidelines, for the reader to consider. The authors begin by discussing the controversy over the XYY genotype and its unclear association with criminal behavior. Genetic screening in the workplace is analyzed from the perspective of employers (who may prematurely misuse these tests in a discriminatory fashion) and from the perspective of workers (who may become “economic untouchables” if their increased risk of disease is known). Gene therapy is also covered, along with the “moral difference” between altering somatic and germ cells. Although the authors believe somatic cell therapy may be valuable in the future, they speak strongly against germ cell therapy with well-reasoned arguments.

The chapter on biological warfare is particularly notable for its lack of wild speculation. While many researchers try desperately to maintain the “purity” of science by ignoring the military applications of their work, these authors deal directly with the secrecy and potential for deliberate destruction of life. Their practical conclusions should be of universal interest.

Environmental damage to DNA and the exchange of genetic material between distantly related species are the next topics. The “curious case of the crown gall bacterium” is discussed as the possible exception to the rule prohibiting genetic transfer between procaryotic and eucaryotic organisms. The importance of genetic diversity is then shown by a serious look at the Iowa cornfield. The world population now depends on only six main types of corn, each so inbred that only a few points of genetic variability exist. The vulnerability of this corn makes it easily exploited by an ingenious predator such as the Southern leaf blight fungus. As a result, the whole monoculture crop of a country could be devastated.

The final chapter on sequencing the human genome is an excellent discussion of its
possible rewards and perils. Although this project is often referred to as the "holy grail of modern genetics," the authors cover the potential for significant abuses and end with a cautionary note that could well summarize the entire book: "The accumulation of genetic knowledge . . . does not guarantee wisdom . . . if such knowledge breeds a false sense of human mastery over genes, it can even lead to folly."

These last nine chapters do an outstanding job of presenting complicated ideas to a nonscientific audience, as well as covering enough detail to satisfy those with a science background. The authors' presentation is balanced, and controversial arguments are examined from all sides. Their conclusions are reasonable from both a scientific and an ethical perspective. In addition, a convenient glossary of terms is included for easy reference, and explanations are clear and concise.

I would recommend this volume for anyone interested in the policy implications of the new genetics. Despite a slow beginning, these authors do an excellent job of making the world of biotechnology available to the general reader. While their "genethic principles" and conclusions will be controversial to some, their arguments are worth reading by all.

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Fundamentals of Radiology. 4th Edition. By Lucy Frank Squire and Robert A. Novelline. Cambridge, MA, Harvard University Press, 1988. 355 pp. $29.50.

It was a pleasure to read the new, and distinctly improved, fourth edition of Squire's classic introduction to radiology. The text has always been designed to present the beginning student with the fundamentals necessary to approach radiographic and other forms of diagnostic imaging. Dr. Squire and her present co-author have vastly updated the text by interspersing cross-sectional imaging techniques throughout. This close juxtaposition of the plain roentgenograms with sonograms, computer tomograms (CT), and magnetic resonance images (MRI) (compared to the previous edition where a separate chapter on cross-sectional images was presented) greatly enhances the utility and clarity for all four techniques. The text is oriented by organ system, as in the past. Starting with imaging of the chest, the authors develop an algorithmic system for the approach of any film. As well, they describe in brief but sufficient detail the many alternative modalities available for imaging each region. They have retained the excellent diagrams and colorful schema of previous editions, which ease the learning process considerably.

Chapters which discuss the heart (including an excellent section on nuclear imaging) and major vessels along with a complete and lucid description of abdominal radiography, sonography, and CT follow. Also helpful is their discussion of the indications for usage of contrast materials in imaging the abdomen, complemented by films given as "unknowns" for interpretation by the reader. A section on imaging of the urinary tract follows and clearly describes the complexities inherent in interpreting the intravenous pyelogram. A section on bone radiography is included, as well as a fairly up-to-date consideration of the ever-expanding field of neuroradiology, which is new to this edition.

Some of the images presented are difficult to visualize, especially in the sections on