seen if, how, and which chimps adapt to the changing options.

In the first 25 years of the Gombe project, Goodall and the chimpanzees of Gombe have been instrumental in engaging the interest of a large portion of the public and popularizing fieldwork, conservation, and the richness of primate behavior, the benefits of which extend far beyond Gombe. In recent years, Goodall and the chimpanzees have increasingly begun to face complex conservation issues that are now among the most critical for the future of wildlife and of major economic importance for the developing countries in which most of the wildlife resides. If she and the chimps can again lead the way to public awareness, they will again provide an invaluable service.

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From Gene to Embryo

Gene Activity in Early Development. ERIC H. DAVIDSON. Third edition. Academic Press, Orlando, FL, 1986. xvi, 670 pp., illus., + plates and loose charts. $49.50.

As the author points out, this edition is made up of almost entirely new material. It is half again as long as the second edition, an on RNA accumulation and distribution during development. Davidson also discusses in detail spatial regulation of gene expression in the embryo and its relationship to lineage determination, providing a strongly comparative point of view and generating broad and well-balanced interpretations of large bodies of connected facts. The result is an excellent book that represents the field from a personal yet broadly convincing vantage point.

As the author points out, this edition is made up of almost entirely new material. It is half again as long as the second edition, an increase that, though justified by the level of recent progress, nevertheless creates some burden for the reader. The present edition is divided into six chapters. After an introductory chapter on gene regulation in development, chapter 2 considers maternal transcripts in considerable detail; quantitation and complexity of oocyte RNA populations are described in different species. Chapters 3 and 4, on transcription and on differential gene function in the embryo, are closely related but differ in the type of material considered: chapter 3 emphasizes the quantitative and kinetic aspects of RNA populations, whereas chapter 4 deals with the establishment of cell lineages and the activation of individual genes in these lineages. The latter approach is more likely to advance our understanding of the genetic mechanisms of embryogenesis. Discussion of cell lineages is a key feature of the book; the sea urchin lineage presented in a detailed figure is particularly valuable since it not only provides a critical compilation of data from the literature but adds much unpublished new material from Davidson's laboratory.

Chapter 4 also points up an interesting dichotomy in developmental work in *Drosophila* and in other animals: in the other animals developmentally regulated genes encoding enzymes, structural proteins, and the like are studied, whereas in the fly the focus is on homeotic and segmentation genes. To some this simply indicates the superiority of the *Drosophila* system with its unequaled genetic possibilities. Yet we must remember that we do not at present know the functions of, say, *Ultrabithorax* and *fushi tarazu*, nor has it been demonstrated beyond question that they are more interesting in the context of development than, for example, actins or keratins. Many biologists will say that they are; we may conclude from the volume under review that its author is not among them. (Perhaps the reviewer should not be let off the hook: Do I believe that *Ubx* and *ftz* are more interesting? Yes I do, but I'm hedging my bet.)

After an interesting though perhaps too long chapter on oogenesis, the book concludes with a discussion of cytoplasmic localization. To me this final chapter is unquestionably the highlight of the volume. Here the discussion achieves a perfect mixture of historic and modern perspective and mixes facts and concepts in a way that is both clear and exciting, providing the definitive statement on the subject since E. B. Wilson's *The Cell in Development and Heredity*. Perhaps the strength of this chapter relative to others in the book conveys a message about the field of developmental biology. Many of the basic questions were raised and many fundamental biological observations made a long time ago. In the past 25 years or so, molecular approaches have been applied increasingly to developmental problems. Yet until quite recently, molecular work on single genes and single RNA species was restricted to a few examples, for instance, ribosomal genes. Consequently much work dealt with RNA populations and global properties, providing necessary baseline information but no direct insight into genetic mechanisms of development. With recombinant DNA technology all this has changed, but neither developmental biology as a field nor this book has absorbed the full impact of these changes. Parts of the book are philosophically products of the period of the first and second editions, emphasizing issues that, I believe, could well be treated more concisely. Thus I find those parts strongest that are totally recent or primarily classical. Perhaps the avenues of study treated mostly in chapters 4 and 6 will form the main subjects of the fourth edition of *Gene Activity in Early Development*, creating a new balance. Yet, some disagreements on emphasis notwithstanding, this volume is an important achievement that, like the earlier editions, will have considerable influence on the field. Every biologist concerned with development will want to read it.

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IRAS Observations

Light on Dark Matter. F. P. ISRAEL, Ed. Reidel, Dordrecht, 1986 (U.S. distributor, Kluwer, Norwell, MA). xxiv, 541 pp., illus. $98. Astrophysics and Space Science Library, vol. 124. From a conference, Noordwijk, The Netherlands, June 1985.

Whenever a new window to the universe is opened the only result that can be predicted with certainty is that there will be numerous unexpected discoveries. The Infrared Astronomical Satellite, IRAS, a superfluid, liquid-helium-cooled telescope system launched in January 1983, provided such a window for astronomers. Until its cryogen was exhausted in November 1983, IRAS performed a sensitive survey of the sky at infrared wavelengths of 12, 25, 60, and 100 micrometers. *Light on Dark Matter* is devoted to exploring results from the IRAS survey. The variety of topics covered in these proceedings is striking. Subjects include but are by no means limited to the zodiacal background emission (infrared radiation from interplanetary dust particles), stars, star-forming regions, the infrared "cirrus" emission of our galaxy, extremely active galaxies thought to be undergoing bursts of star formation, and cosmology.

One of the most useful aspects of this work is that because of the broad range of subjects covered the review papers provide overviews of the subdisciplines that are quite lucid even to the nonspecialist. As a result this book will benefit everyone, from the expert who wants to update a reference list to the novice who wishes to find out current