A Laboratory Breed

The Beagle as an Experimental Dog. ALLEN C. ANDERSEN and LORAINE S. GOOD, Eds. Iowa State University Press, Ames, 1970. xiv, 616 pp., illus., + plates. $17.50.

The dog has long been a favorite animal in medical research, partly because of its size and docility but also because of the availability of large numbers of stray and unwanted dogs at low cost. In recent years stray animals have become less desirable because the increasing sophistication of modern research demands animals with known genetic constitutions, health records, and previous experiences. Thus there have been moves both to develop a new breed of "laboratory dogs" and to standardize one of the known breeds, the beagle. The chief advantages of the beagle are its relative hardiness and short hair, which make for easy care, and an extreme degree of nonaggressiveness which makes these dogs easy to handle with a minimum amount of human socialization and previous training.

The present book is an excellent reference volume for anyone starting and maintaining a dog research colony. It owes much to the experience with the large beagle colony maintained for many years by the Atomic Energy Commission at the University of California at Davis and used for radiation research. Many of the authors have been associated with this project, and their papers emphasize the kind of information that is useful in radiation studies. There are many new data, for example on fetal growth and postnatal organ weights.

The limitation of the book is that many of the papers summarize general information on dogs rather than specific information on the beagle, sometimes because information is not available for the beagle, but sometimes even when it is. For example, the paper on genetics could have listed the known genes in beagles and their variability as well as presented general information about genetics.

However useful the beagle may be, to adopt this breed as *"the* laboratory dog" in the same way that the albino rat has been used as "the organism" in psychological research, would be a serious error in research technique, for it would throw away the chief unique advantage of dogs, namely their genetic variation. While there is considerable within-breed variation in certain characteristics (our figures average at least 12 percent of the total variance), there is at least twice as much between-breed variance available. Far from being the "typical dog," the beagle is a very peculiar animal in certain respects, as in its nonaggressiveness.

The best overall solution of the problem of making available the genetic variation of dogs in animals with known experimental backgrounds would be to establish national centers of canine research comparable to the national primate centers, where a reasonable variety of pure breeds of dogs and their hybrids could be maintained both for intramural research and to supply extramural research and teaching institutions. There should be at least three such centers, located at convenient points around the country.

Although dogs, because of their peculiar carnivore physiology, are not as suitable for certain kinds of medical research as primates, they are in other respects superior, showing a degree of genetic variation comparable to that in man, as the wild primates certainly do not, and developing a social relationship with man which makes them far easier to handle. Furthermore, the kind of research that could be done in these centers would be welcome and useful to dog breeders and owners. Scientifically, the dog is still a poorly known animal, in spite of its close association with man for some 10,000 years.

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Non-Darkness

Daylight and Its Spectrum. S. T. HENDERSON. Elsevier, New York, 1970. x, 278 pp., illus. $15.75.

The expectations aroused in the reviewer by the attractive cover of this book were chilled by the first words of the preface, in which the author explains that the material in the book was accumulated when he was chairman of a British Standards Institution technical committee with a charter to revise an old and little-used specification for artificial daylight. In spite of this first encounter, the reviewer found that the book does give a very interesting account of the history of the topic as well as current observations of many technical aspects of daylight. An extensive bibliography of work cited is given.

The literature on daylight is reviewed chronologically starting in 1879. It is therefore necessary for a person seeking reliable and currently useful information to look at the later portions of each chapter. Nevertheless, to a person with general interest in learning something about the nature of daylight these historical results are of real interest. This reviewer was impressed by the number and variability of phenomena that come under the topic of daylight and by the fact that in most research tasks that involve evaluation of the influence of daylight or the action of the atmosphere on the transmission of radiation the experimentalist had better measure the relevant fluxes rather than rely on computations based on "standard results."

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Size and Distance

Psychophysical Analysis of Visual Space. JOHN C. BAIRD. Pergamon, New York, 1970. viii, 324 pp., illus. $10.50. International Series of Monographs in Experimental Psychology, vol. 9.

This is a highly specialized book on the problem of size constancy in visual perception. If the retinal image of an object is the basis of its perception, how can its physical size be perceived when its distance from the eye varies? There is no satisfactory answer, and the puzzle provides one of the worst muddles in scientific psychology. For, although we seem to see the actual sizes of ordinary surrounding things quite well, experiments in the laboratory under controlled conditions do not explain this common observation and do not even verify it. Should we accept common observation or the laboratory results?

The author is an experimentalist. He scorns "philosophy" and stays within the limits of the strict and methodical investigations of this problem. He surveys the experimental literature, which has become very large, and classifies it by methods. He admires psychophysical measurement, and his chapters are full of graphs. This makes the book dull reading for all but those who specialize in psychophysics. He admits at the outset that the experimental method "loses much, if not all, meaning when forced to match the conditions accompanying man's daily experience" (p. 6). He