

Broad survey of teratology

Handbook of Teratology. Edited by J. G. Wilson and F. Clarke Fraser. Vol. 1: Pp. 476; vol. 2: Pp. 491. (Plenum: New York and London, 1977.) \$54 each volume.

Two prestigious investigators have undertaken a monumental task of editing as well as contributing to this authoritative new treatise in four volumes. The first two volumes on "General Principles and Etiology" and on "Mechanisms and Pathogenesis" have now appeared. A third volume on "Comparative Maternal and Epidemiologic Aspects" has just been published, and a fourth and final volume on "Research Procedures and Data Analysis" is yet to come.

These first two volumes, with no fewer than 30 contributors to twenty-seven elegant chapters, cover the aspects of teratology with a wealth of published and original data and very full and useful bibliographies. After a fascinating review of teratological history by Joseph Warkany, Wilson in his usual concise and common-sense style places our knowledge of the teratogenicity of drugs and environmental chemicals into perspective in three profusely referenced chapters. Clarke Fraser has written an excellent review chapter on the relationship between animal studies to the problem in man, which should be read by anybody planning to embark on teratological surveillance or research.

Brent provides a good summary of mutagenicity and teratogenicity of radiation and other physical agents. The discussions of the role of nutritional deficiencies by Lucille Hurley, of atmospheric gases by Gobovski and of extremes of temperature by Edwards and Warner, point to neglected areas of research. The whole section on examples of abnormal organogenesis, consisting of seven chapters of volume two together with the chapter on time-position relationships with particular reference to cleft lip and cleft palate, by Daphne Transler and Clarke Fraser, are well written and well illustrated, and provide concise and authoritative summaries of the subject, together with good bibliographies.

An all too brief review of the enormous subject of the action of mutagenic agents has been included with valuable space being devoted to lists of chemicals, agricultural agents, industrial compounds, feed and feeding additives, and so on; but there has been no real attempt at an evaluation of the dangers. The chapter on maternal and endocrine imbalances, an important subject today, is lamentably brief and surprisingly omits any discussion of sexual ambiguity produced by maternal 'hormone' ingestion or endo-

crine abnormalities. The one on gene expression is also extremely brief and would certainly benefit from more elaboration. The section on numerical and structure chromosome abnormalities is a repetitive review of clinical entities, information about which might better be obtained from a reference book on that subject alone. This section also lacks an in-depth discussion of the mechanisms producing chromosome aberrations which should be its rightful place in this treatise.

The problems inherent in the creation of this type of treatise are only too well illustrated by the handbook. The numerous authors, each an established scientist and generally a leader in the field, tend to make for excessive repetition, and in this instance repetitious discussion of drug effects. These volumes suffer from a

certain lack of consistency and continuity; the reading of such a treatise would be enhanced by fewer contributing authors and a consolidation of chapters in order to present more in-depth material regarding, for example, techniques pertinent to that chapter. Nonetheless, Wilson and Fraser are to be commended for their efforts, very largely successful, to provide a summary of a mass of information. The handbook will be a useful addition to the library, particularly for those interested in a broad survey of teratology and a guide to the relevant literature.

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Reproductive strategies in langurs

The Langurs of Abu: Female and Male Strategies of Reproduction. By Sarah Hrdy. Pp. 361. (Harvard University Press: London and Cambridge, Massachusetts, 1978.) £12.25; \$17.50.

"FROM his high vantage point, Mug strikes a sentinel's pose and stares off into the distance. Then, abruptly, the stocky gray form descends from his rooftop perch, charges directly at Itch, and grabs at the infant clinging to her belly. Itch whirls to face Mug, plants her front paws as she lunges at him, grimaces, and bares her teeth. Within seconds of this assault, Old Sol, the one-armed female Pawless, and a third, unidentified female, join in the counterattack. The three defenders interpose themselves between Mug and Itch, lunge at the male, and chase him up a tree. In the wake of this assault, a trembling Itch is left alone to hold her infant, Scratch, who is spattered with flecks of blood. Here was the phenomenon, the bizarre Dharwar aberration of adult males attacking infants, that had brought me to India to study langurs . . .".

It is commonly supposed that murder is a uniquely human event. When a Japanese primatologist, Yukimaru Sugiyama first described systematic killing of infants by male langurs in 1965, the phenomenon was widely explained by others as a pathological product of high population density. Sarah Hrdy's book (from which the above extract is taken) provides convincing evidence that this is not the case and that infanticide permits males which have recently established hegemony over a breeding unit to maximize their reproductive success.

Female langurs live in harem groups including, on average, about a dozen

mature females and their offspring plus one, or sometimes two, mature males. Young males leave their mothers' groups to join all male bands whose ranges overlap those of several breeding groups. There is evidently strong competition between males for possession of harems; and from time to time male bands invade breeding groups, expelling the resident male. The invading males then leave, or are driven out by the strongest animal, until (in most cases) only one remains. Successful invaders systematically kill infants, a strategy which serves to bring females quickly into oestrus, thus allowing the male to increase his reproductive success. Further evidence strongly supports this interpretation of infanticide: resident males never kill the infants which they themselves have sired, and similar events have now been described in a wide variety of other species which live in harem-type groups when resident males are replaced by outsiders. As might be expected, females attempt to prevent their infants being killed. Of particular interest here are the cooperative efforts of older females to rescue infants attacked by males. As Hrdy points out, they probably increase their inclusive fitness by doing so, as females belonging to the same troop are closely related.

The book covers several other aspects of social behaviour and makes extensive and imaginative use of modern evolutionary theory. It is written with wit, humour and an almost complete lack of formal statistics. As a result it is easy to read, but firm results based on adequate observation samples are sometimes difficult to disentangle from suggestions relying on selected anecdotes.

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