Cognitive development

Development of Cognitive Processes. Edited by Vernon Hamilton and Magdalen D. Vernon. Pp. 772. (Academic: London and New York, 1977.) £21.00.

It was not so long ago that childhood as a distinct state, with its own distinguishing qualities, was not part of the consciousness of our society. Children wore smaller versions of the same clothes as adults, did similar work, and were expected to behave as much like their elders as possible. There were hardly any books either for, or about, children. Judged by the present volume, although the rest of the world has in the meantime discovered childhood in an upsurge of kids' lib., developmental psychology is still in this undeveloped state.

Current psychological models of cognitive processing are based on empirical investigations with adults. In the present book these models seem to have been adopted without questioning their validity for child development. It is therefore not surprising, that most of the conclusions that are reached are of one of two kinds. First, children, from birth or from a very early age, may show certain information handling capacities, which differ little from those of adults. Alternatively, children are much worse than adults on many cognitive operations, though they become better as they get older. This view is expressed in statements such as: "Increasing age brings increasing ability to make cognitive decisions about a task, and to absorb more information"—which is perhaps not too surprising to anyone but developmental psychologists.

Some of the contributors are clearly aware of the shortcomings of this approach. Thus one of the editors urges in her conclusions that investigators should concentrate on the specific qualities and properties of cognitive processes in children. Two introductory, theoretical chapters do not even pretend to a relevance for development, and though in themselves adequate, state nothing which has not been published extensively elsewhere. In spite of the heavy reliance of cognitive models on the analysis of memory functions, which is reflected in these chapters, the book does not even contain an account of the development of memory

As one might expect from such a miscellaneous collection, quality of style and content varies greatly. The first ranges from barely comprehensible jargon, such as: "It is worth restating, therefore, that human information processing systems may be variably aroused by diverse mechanisms and cognitive events, that they contain dynamically organised goal-seeking programmes, and that they possess an autonomous general capacity and need to continue operations upon inputs and their stores, which elaborate and reorganise their representations long after the event", to the admirable simplicity of statements such as: "We have two eyes and the most natural way to perceive space is through both of them".

There are excellent accounts of perception of form by Vernon, spatial perception by Walk, conceptualisation by Donaldson and language by Cromer. But in spite of the high qualities of these contributions, and notwithstanding the irrelevant, peudoscientific design of the dust jacket, there is little indication in this book that developmental psychology has begun to put forward its own models and theories. These will have to account for the specific qualitative rather than the merely quantitative characteristics of childrens' cognitive processes.

In the meantime, *vivat vivat* Piaget!

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Plant embryogenesis

Experimental Embryogenesis in Vascular Plants. By V. Raghavan. Pp. 603. Academic: London and New York, 1977.) £21.00, $45.65.

In an era of symposia and other multi-authored volumes, V. Raghavan deserves to be congratulated on producing this fine volume dealing with a very complex subject which has an immense literature. The reader is immediately impressed with the breadth of topics and the depth of treatment that most receive.

The first and longest section of the book deals with the development from egg to embryo. Among the topics covered by chapters are: structure and organisation of the egg, zygote and embryo; biochemical embryogenesis; nutritional aspects of embryogenesis—both physiological and morphological considerations; embryo culture; embryogenesis in cultured ovaries, ovules and seeds; nutrition and metabolism of cultured embryos; extracellular control of morphogenesis; biochemical ontogeny of cultured embryos, and applied aspects of embryo culture. I was especially impressed with this section because of the excellent organisation, lucid writing and relating of various approaches to one another. While most of the information deals with angiosperm embryos, references are made to pteridophyte and gymnosperm embryos when appropriate.

The second section discusses adventive embryogenesis, including the induction of both haploid and diploid embryoids. The author has made these chapters very informative, for he has not merely summarised the literature but has tried to make some sense out of the many factors controlling embryoid formation, showing clearly that more work is necessary before these factors are understood satisfactorily. A similar appeal is made in relation to the low percentage of microspores that give rise to haploid embryoids. The last section deals with seed dormancy and germination and no doubt many readers will disagree with the author's decision to include them. The last chapters, however, are useful in giving a full perspective of embryogenesis. The argument is put forth that dormacy involves a mechanism of preventing embryo growth and that factors regulating the normal growth and development of the embryo should also apply to the induction and release of dormancy. All three sections are written with clarity and usefully illustrated with drawings, micrographs and graphs. Unfortunately some of the electron micrographs are printed too darkly but on the whole the book's illustrations are very informative. An appendix containing the mineral salt composition of 18 different nutrient media used in embryo culture should prove useful for many readers. The 103 pages of references should also be valuable to the reader.

In the introduction Professor Raghavan expresses the hope that the book will bring together some of the scattered embryological literature and present the current and future perspectives of plant embryogenesis. The book not only attains that goal in its comprehensive treatment but undoubtedly this book will be the definitive volume on experimental plant embryogenesis for some time. It is highly recommended for all those interested in this most interesting and important area of plant morphogenesis.

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