reviews

Nutrition and the developing brain

John Dobbing

Malnutrition and Brain Development. By Myron Winick. Pp. xv+169. (Oxford University: Oxford and New York, April 1976.) £5.
Nutrition and the Developing Nervous System. By Philip R. Dodge, Arthur L. Prensky and Ralph D. Feigin. Pp. xvi+538. (Mosby: Saint Louis; Kimpton: London, January 1976.) £27.25.

THE suspicion is very strong that malnutrition during fetal and early neonatal life may lead to an irrecoverable diminution of intellect: and since the majority of the pregnant mothers and children in the world are underfed, this adds up to an assault on one of man's most distinguishing features by environmental circumstances which are theoretically within his control. The problem is proving it.

Human achievement is difficult to measure in any significant terms. Human growth from babyhood to adulthood is very slow, and nothing short of a longitudinal prospective study over many years is going to be satisfactory in communities where a reliable retrospective history of fetal and baby life is always especially difficult. Environmental contributions to the shaping of personal development (which are of course so numerous and so powerful compared with any genetic contribution) are nevertheless very difficult to enumerate and evaluate separately, especially as they are interacting as well as additive.

One mechanism amongst many by which early malnutrition may reduce eventual performance, may be by way of permanent alterations to the structure and some of the metabolic biochemistry of the physical brain, and we are now beginning to understand a great deal about this. Unfortunately the less well nourished members of any infant community who will probably suffer from this physical neuropathology are usually the most impoverished in every other facet of their environment, both physical and 'emotional': and so it is exceedingly difficult to know whether the newly discovered growth pathology of the brain matters, and if so how (relatively) much?

Both these books are predominantly about the physical effects of nutrition on the developing brain, and as such inevitably only consider that one aspect of the huge problem in any detail. Dodge's book is a compendious and suitably critical account for the serious student and is likely to have few competitors for a good time to come.

If Winick's much smaller book had been simplified in the sense of being a reliable introduction for the less professionally interested it could have been very useful for a wider readership. Unfortunately it is not. I think Winick confuses the main issues of vulnerable periods in developing brain and the relative importance of fetal and postnatal brain growth, to the point of being potentially misleading to nutritionist and politician alike; and in spite of its attractive appearance I am worried by it.

Dodge, painstakingly and with abundant references, reasons his way through a morass of much incompletely collected and questionably argued literature with remarkable astuteness; although he and his colleagues have occasionally tended to catalogue the information rather than evaluate it.

Both books in their way cover the elements of normal brain growth; and since the brain is an organ of the body like any other, both have paid attention to the very relevant effects of nutrition on somatic growth.

Dodge, as a clinical paediatric neurologist, adds some valuable shorter sections on minerals, vitamins and diseases of amino acid metabolism with implications for the brain. Neither book seems to have heard of our own finding that the period of vulnerability of the human brain is almost certainly predominantly postnatal, an important fact for practical social and political policy; or perhaps they do not agree. At all events they might have said so. Dodge discusses the rest of our work in Manchester very fully and appreciatively, but I do not think my very strong preference for his version over Winick's is entirely due to that. □

John Dobbing is Professor of Child Growth and Development in the Department of Child Health of the University of Manchester, UK.

Aspects of polymeric carbons

Polymeric Carbons: Carbon Fibre, Glass and Char. By G. M. Jenkins and K. Kawamura. Pp. vi+178. (Cambridge University: Cambridge and London, May 1976.) £8.50.

THE decomposition of resins at temperatures up to 2,500 °C gives rise to graphite in the form of small and highly distorted crystals. As every Materials Scientist knows such distortions can confer strength well above that of more perfect graphite; the resultant materials are very useful but very difficult to characterise. Vitreous carbon is used for crucibles and in some biomedical applications where high strength, chemical inertness or high temperature resistance are needed; whereas carbon fibres are used in a wide range of composites.

This book covers the production, properties and structure of these polymeric carbons and puts them in the context of other forms of carbon. The style is easy to read and the treatment is mainly factual, the emphasis being on what happens rather than why. The 200 references cover the scientific and patent literature up to 1973. A lot of attention is given to the author's own work on pyrolysed phenolic resins, which lends the book coherence.

As a text it has its limitations; there is not enough theoretical explanation and the treatment of chemistry is sloppy. For instance, the statement that "Commercial PAN is atactic and so contains two-dimensional order only" is simplistic, considering the importance of the resultant carbon structure on properties. It is also regrettable that there is no discussion of surface structure and properties when these are so important in practice.

In spite of this, for people in research or development using polymeric carbons, this monograph will be a good introduction and guide to the literature. Here, it fills a real lack.

Paul Calvert

Paul Calvert is a lecturer in polymer science in the School of Molecular Sciences at the University of Sussex, UK.