Book reviews

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Fetus into Man. Physical Growth from Conception to Maturity

By J. M. Tanner. (Pp. 250; Figures + Tables. £4.50.) London: Open Books. 1978.

This book gives an excellent account of current knowledge of the control of human growth from conception to the end of the adolescent growth spurt. One important principle derived from experimental observation is that a cessation of growth at the time of growth by cell division has permanent sequelae. Regrowth starts at a rate appropriate to chronological age. In contrast, a cessation at the time of growth by cell enlargement has no permanent after-effects and 'catch-up' is usually complete.

The section on growth before birth includes the recent information obtained by ultrasonography. In accordance with the principle stated above, retardation of growth in the first half of pregnancy tends to be associated with permanent small size and mental retardation. Later retardation, due to maternal malnutrition or small maternal size, tends to be followed by full catch-up growth if postnatal conditions are favourable.

The section on the development of sexual dimorphism incorporates recent developments in endocrinology. Particularly striking is the narrow sensitive period in the rat (just 5 days after birth) in which the hypothalamus is switched to the male pattern of non-cyclical activity by testosterone. It is not yet known whether there is a corresponding similar sensitive period (this would be the 12th to 14th weeks after conception) in man. Again, in the rat there is evidence of similar critical differentiation of a centre controlling mating behaviour. The account of the endocrine control of growth includes the recent advances in knowledge of the regulation of secretion of pituitary growth hormone which in man controls the production of somatomedin.

The section on genetic and environmental influences over the control of adult stature is well-balanced, though the author does attempt an estimation of heritability. Chinese and Japanese children, even under optimal conditions, are smaller than north Europeans, and are even shorter when full-grown because of earlier maturity (menarche is about 6 months earlier). Negroes, and, even more, Australian aborigines, have relatively greater leg length in relation to sitting height than Chinese and Japanese, while Europeans are intermediate in this

respect. These are genetic differences. It is noteworthy that differences in Sweden in full adult height by social class of parents appear to have disappeared. Further, the secular increase in full adult stature appears to be coming to an end in northern Europe. These were presumably environmental effects. Professor Tanner does not discuss the origin or the duration of the secular change, but it is the reviewer's belief that much of it represents a recovery from the stunting of children associated with the chronic malnutrition and long hours of work of young children at the time of the industrial revolution. Professor Tanner gives an equally well-balanced account of the controversial topic of the effects of malnutrition on brain growth.

A long chapter on the Standards of Normal Growth reflects the expertise and extensive experience of the author and his colleagues in longitudinal growth studies, including a convenient method of allowing for parental height in estimating a child's expected position in relation to his peers. Here, perhaps, the author might have included an explanation of the genetic reasons why individual children in a family tend to vary widely round the mid-parental mean, and why a child's height at age 10 (even after correcting for skeletal age) is only of limited value in predicting his full adult height.

The book ends with an admirably complete set of references.

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Introduction to Biological Scanning Electron Microscopy

By M. A. Hayat. (Pp. xviii + 323; 54 Figures + 7 Tables. £9.25, \$14.95.) Baltimore, London, Tokyo: University Park Press. 1978.

Professor Hayat's book is designed as a basic text in the principles and practice of biological scanning electron microscopy. In such a book, one of the formidable problems is to draw a balance between brevity and clarity. If the volume is to achieve its objective it must enable the inexperienced experimenter to attain at least an encouraging level of success. The first part of the book deals with instrumentation and supplies an adequate background to the history and principles of the method. The author sensibly avoids too much in the way of theoretical