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 Book Reviews
 

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Fiechter, A. (ed.): *Advances in Biochemical Engineering: Vol. 18, Plant Cell Cultures II*. Springer: Berlin-Heidelberg-New York 1980. 193 pp., 90 figs. Hard bound DM 76,-.

Volume 18 of the series, like volume 16, is devoted to plant cell cultures and consists of five papers reviewing topics as diverse as the use of plant tissue cultures in studies of cell cycles, enzyme regulation, morphogenesis, application of in vitro culture methods for virus eradication, and low temperature storage of germplasm. The paper 'Plant Tissue Culture and the Cell Cycle' by P.J. King attempts to survey present methodology as applied to cell cycle studies in asynchronous and synchronous plant cell populations. Methods and tissue culture systems are described and the major part of the article deals with the question of cultured cell population synchronization. Unfortunately, cultured mesophyll protoplasts are not mentioned although this system offers both genetic homogeneity and high synchrony of the first cell cycle. The authors conclusion is that the transition probability model of cell proliferation developed with animal cells is applicable to higher plant cells. The review of K. Hahlbrock et al. 'Enzyme Regulation in Parsley and Soybean Cell Cultures' discusses the regulation of nitrate metabolism, general phenylpropanoid metabolism, and flavonoid and lignin biosynthesis in cells of two plant species. The results obtained are discussed with regard to the growth cycle of the cultures. The paper by P.J. Wang & C.Y. Hu 'Regeneration of Virus-Free Plants Through in Vitro Cultures' reviews the only area of research with in vitro cultured plant parts which has already developed into concrete technology. Methods described include multiple shoot formation, in vitro layering, adventitious organogenesis, and in vitro storage organ induction. A list of virus-free plant species obtained so far is given, including references. 'Low Temperature Storage of Plant Tissue Cultures' by L.A. Withers is devoted to the rapidly developing area of experimental work (for comparison, see review by the same author in 'Frontiers of Plant Tissue Culture 1978', ed. T. Thorpe, Calgary, IAPTC, 1978, pp. 297-306). Those interested in general reviews of the field will be glad to find a comprehensive and clearly written text, although, scientists wishing to use offered protocols for the cold preservation of specimens will probably need to consult more recently published papers. Since the review appeared in the 'Advances in Biochemical Engineering' series, I feel obliged to cite the author's

conclusion: 'freeze-preservation is *not* yet at a stage where it can simply be adapted as a routine laboratory procedure'. The paper of K. Tran Thanh Van 'Control or Morphogenesis or What Shapes a Group of Cells?' deals with the facts and questions related to the control of morphogenesis induced in differentiated cells cultured in vitro. Different experimental systems used in studies of morphogenesis as well as role of genetic, epigenetic, and environmental factors in the process of differentiation are described. Research scientists, advanced students and teachers will need this book.

Yu. Gleba, Kiev

**John Innes Institute: Seventy First Annual Report 1980.** Norwich, 1981 173 pp., 61 figs., £ 4.00

The 1980 report shows that a gradual shift in emphasis is taking place within the institute with attention being placed on newer areas of biotechnology through which problems fundamental to the manipulation of plants and animals are now becoming amenable to study. At the same time there is a decline in the more traditional approaches: the breeding of anemones and fruits has ceased although breeding for *Fusarium* resistance in carnations is being continued. The program of breeding leafless peas for the dried food market has been expanded to such a scale that one may ruefully inquire whether the production of finished varieties is wise relative to the resources available. Basic studies in *Pisum*, especially in cytology, genetic engineering, physiology, biochemistry and pathology are in progress. In the genetics program the studies of phage and plasmid vectors in *Streptomyces* is continuing. In the area of genetics of higher plants, the accent has been placed on the analysis of transposable elements in snapdragon. Such other fields, as Ti plasmids in *Agrobacterium*, RNA and DNA sequencing, and nitrogen fixation in legume symbiosis are actively being examined. As a new model for developmental studies, the moss *Physcomitrella* has been adopted. From the technical section comes word of a computer image analysis device, a simple tilting specimen holder for EM and an alternative for the determination of cysteine (*S*-carboxymethylcysteine).

Once again the annual report gives a very impressive reflection of the activity of this lively institute. H.F. Linskens, Nijmegen