

CONTENTS

Opening Remarks	1
Charles E. Hess	
An Overview of Crop Improvement: Chairman's Introduction	3
Kenneth J. Frey	
Plant Breeding: The State of the Art	5
N. W. Simmonds	
Genes: Chairman's Introduction	27
William C. Taylor	
Nuclear Genes Encoding the Small Subunit of Ribulose-1,5-Bisphosphate Carboxylase	29
A. R. Cashmore	
Osmoregulatory (Osm) Genes and Osmoprotective Compounds	39
A. R. Strøm, D. LeRudulier, M. W. Jakowec, R. C. Bunnell, and R. C. Valentine	
Differential Regulation of the <u>Adh1</u> Gene in Maize: Facts and Theories	61
Mitrick A. Johns, Mary Alleman, and Michael Freeling	
Cytoplasmic Male Sterility	81
C. S. Levings, III	
Genetic Engineering of Seed Storage Proteins	93
Brian A. Larkins	
Vectors: Chairman's Introduction	119
Eugene W. Nester	
Plant Viral Vectors: CaMV as an Experimental Tool	121
Richard C. Gardner	

Plant Cell Transformation by <u>Agrobacterium</u> Plasmids	143
A. Depicker, M. Van Montagu, and J. Schell	
<u>In Vitro</u> Plant Transformation Systems Using Liposomes and Bacterial Co-Cultivation	177
Robb T. Fraley and Rob B. Horsch	
Chromosomes from Protoplasts - Isolation, Fractionation, and Uptake	195
Russell L. Malmberg and Robert J. Griesbach	
Comparison of Genomic Clones Derived from the <u>Sh</u> Gene in <u>Zea Mays</u> L. and of Two Mutants of this Gene which are Caused by the Insertion of the Controlling Element <u>Ds</u>	203
H.-P. Döring, M. Geiser, E. Weck, W. Werr, U. Courage-Tebbe, E. Tillmann, and P. Starlinger	
Plant Gene Structure	211
Joachim Messing, Daniel Geraghty, Gisela Heidecker, Nien-Tai Hu, Jean Kridl, and Irwin Rubenstein	
Chromosome Structure in Cereals: The Analysis of Regions Containing Repeated Sequence DNA and Its Application to the Detection of Alien Chromosomes Introduced into Wheat	229
R. Appels	
Considerations of Developmental Biology for the Plant Cell Geneticist	257
R. S. Chaleff	
Protoplast Fusion: Agricultural Applications of Somatic Hybrid Plants	271
David A. Evans and C. E. Flick	
Somaclonal Variation and Crop Improvement	289
Philip J. Larkin and William R. Scowcroft	
On the Use of Microspores for Genetic Modification	315
N. Sunderland	
Crop Productivity and Quality: Chairman's Introduction	333
Donald Rasmusson	

Use of Pathogen-Produced Toxins in Genetic Engineering of Plants and Pathogens	335
O. C. Yoder	
Aspects of Salt and Drought Tolerance in Higher Plants	355
R. G. Wyn Jones and J. Gorham	
Raising the Yield Potential: By Selection or Design?	371
L. T. Evans	
Amino Acids, Nutrition and Stress: The Role of Biochemical Mutants in Solving Problems of Crop Quality	391
B. J. Mifflin, S. W. J. Bright, S. E. Rognes, and J. S. H. Kueh	
Challenges to Crop Improvement: Chairman's Introduction	415
Albert Ellingboe	
The Evolution of Host-Parasite Interaction	419
P. R. Day, J. A. Barrett, and M. S. Wolfe	
Disease Lesion Mimic Mutations	431
Virginia Walbot, David A. Hoisington, and M. G. Neuffer	
Determination of Plant Organs and Cells	443
I. M. Sussex	
Genetic Engineering of Plants: Some Perspectives on the Conference, the Present, and the Future	453
R. L. Phillips	
Genetic Engineering of Plants: An Agricultural Perspective - Roundtable Discussion on Research Priorities	467
Calvin O. Qualset and Alexander Hollaender (Co-chairmen), Mary Clutter, Donald N. Duwick, J. Eugene Fox, Ramon L. Garcia, Ernest G. Jaworski, and Robert H. Lawrence, Jr.	
Index	487