The session on radiation genetics began with a discussion by James (Chalk River) of sectoring of lethality in progeny of irradiated, diploid yeast cells. Beam (Brooklyn College) compared induced recombination in cells sensitive and resistant to potentially lethal radiation damage. During the course of this study he found that irradiated budding cells, in contrast to interdivisional ones, frequently give rise to inviable progeny at the first postirradiation division. Holliday (Hertford, now at Mill Hill) and Williamson (Hertford, now at University of Washington) found that cells are more sensitive to ultraviolet irradiation during the time of DNA synthesis. During pedigree studies, Haefner (Dallas) found that mitotic recombination is still enhanced in cells several generations after ultraviolet irradiation, and that lethal sectoring also appears in haploid *Saccharomyces* cells after ultraviolet and x-irradiation. It has long been known that yeast cells are more resistant to radiation during budding. Moustacchi (Paris, now at University of Washington) has shown that this resistance disappears if the cells are treated with 5-methyltryptophan or *p*-fluorophenylalanine. However, treatment with 5-fluorouracil has no effect. She also has collaborated with Hottinguer on studies of radiation-resistant mutants induced by ^{32}P decay. These mutants have the normal amount of DNA but have double the normal amount of RNA and most of the radiation-resistant mutants show irregular segregation patterns. Magni found that budding cells are not radioresistant when plated on a medium containing acridine.

During the session on recombination, Fogel and Hurst (Brooklyn College) presented an analysis of heteroallelic reversion based on the Whitehouse-Hastings hybrid, DNA polaron model. For pairs of alleles spaced roughly equally, they found a decline in the value of the site coefficient as the pairs were shifted from the proximal to the distal end of the cistron. They found that homoallelic reversion of complementing alleles was not associated with outside marker recombination. Also, for some mutants, homoallelic reversion resulted from mutation to a heteroallelic, complementing state. Nakai (Berkeley, now at Chiba-shi) described the induction of sectoring of seven markers on a chromosome arm of *Saccharomyces*. The frequency of mitotic exchange increased linearly with the meiotic distance (3 to 180 centimorgans) of the markers from the centromere, consistent with expectations of mitotic crossing-over. Gutz (Dallas) told how he had obtained haploidization of vegetative diploid *Schizosaccharomyces pombe* with 0.1 gram of *p*-fluorophenylalanine on a gradient plate. Heslot (Paris) believes that the haploidization effect is on the mitotic spindles and that the haploids arise by selection over the aneuploids. Luzzati (Gif, now at Yale) described a gene in *Saccharomyces* that suppresses heteroallelic reversion in the ad_3 gene.

The session on cytoplasmic inheritance began with a discussion by Wilkie (London) of actidione resistance in yeast. In certain strains the actidione resistance is transmitted to only about 5 percent of the spores. Slonimski (Gif), in collaboration with Yotsuyanagi and Mounolou, treated anaerobically grown cells with oxygen to make mitochondria appear. At this time the yeast cells were held in a nongrowing condition, and labeled thymine went into mitochondrial DNA only. Lindegren (Carbondale) discussed fixation methods for preparation of mitochondria for electron microscopy. Bevan (London) discussed the genetics of the killer factors. He stated that the molecular weight of these factors is so small that they are probably not viruses.

Ogur (Carbondale) introduced the topic of gene-enzyme relations with a discussion of how the auxotrophs requiring glutamic-acid affect aconitase synthesis in the citric acid cycle. Miller (University of Washington, now at Beirut) discussed the properties of a mutant which elaborates a surface-active agent. Since the complete amino acid sequence of cytochrome *c* is known, Slonimski (Gif) is conducting research on the two isocytochrome *c* molecules, one of which terminates in glutamic acid and the other in lysine. Five unlinked loci affect synthesis of isocytochrome *c-2*. Sherman (Rochester) has developed a staining method for recognizing mutants of the genes controlling synthesis of cytochrome *c*; mutants and reversions of these mutants have been found to have substituted amino acids in the cytochrome *c-1* molecule. Lacroute (Gif), who has worked out the pathway for uracil synthesis, discussed regulation of uracil and arginine biosynthesis by feedback inhibition and repression. De Robichon-Szulmajster (Gif) has shown that the strains resistant to canavanine allow arginine to enter into the cells. It had formerly been believed that such strains had an altered arginine permease system. Also, De Robichon-Szulmajster discussed the threonine and methionine pathways, the role of a gene that controls the uptake of amino acids, and some mechanisms of resistance to a number of amino acid analogues.

The cytological studies were given over entirely to Williamson, who has worked out in synchronized cultures the complete staging of DNA replication, nuclear migration, and nuclear fission. DNA synthesis begins in *Saccharomyces* just after appearance of the buds and is complete when a bud is one-fourth the size of the mother cell. Some of the stages of mitosis could be identified in electron microscope preparations. A "spindle-like" apparatus within the nucleus was seen in electron micrographs prepared by Robinow (London, Ontario).

The following additional pertinent information on yeast genetics was summarized from the discussion: 14 centromeres of *Saccharomyces* are marked, which is consistent with 18 chromosomes counted cytologically. More than half the known genes are in linkage groups, more than 50 gene-enzyme relations are categorized, and fine structure analysis is being done at eight loci. More than ten super-suppressor loci are known, and the evidence favors the interpretation that at least some of them are the genes that produce sRNA.

A grant, GB-3781, from the National Science Foundation enabled representatives from laboratories in Europe and Japan to attend.

R. C. VON BORSTEL
Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee

International Esperanto Congress

The 50th International Esperanto Congress was held in Tokyo between 1 and 8 August 1965 under the patronage of Yuji Shibata, president of the Japanese Academy. This was the first such congress to take place in Asia. About 1700 participants attended, from 40 countries; all proceedings, formal and informal, were in Esperanto. Scientific lecturers included F. Egami (molecular biology), M. Suzuki (electricity and life), S. Kawamura (soybean products), N. Oka (a film on orangutang intelligence), C. Støp-Bo-

witz (survival through glacial epochs), and R. A. Lewin (algae).

Among topics discussed at a meeting of the International Science Association of Esperantists were norms for standardization of editorial policy and format for publication, and translation by computer (chief discussant, H. D. Neumann). Members of the Universal Medical Esperanto Association visited the National Cancer Institute and the Cardiac Surgery Hospital; they were also treated to a social reception at Chinzan-So, as guests of H. Shinoda. There were various excursions in and around Kyoto between 8 and 13 August.

The 51st Congress is scheduled for next August in Budapest.

RALPH A. LEWIN
Scripps Institution of Oceanography, La Jolla, California

Forthcoming Events

June

1–3. **Electromagnetic Windows**, 8th symp., Georgia Inst. of Technology, Atlanta. (N. E. Poulos, Engineering Experiment Station, Georgia Inst. of Technology, Atlanta 30332)

1–3. Canadian Soc. of **Microbiologists**, Saskatoon, Sask. (Secretary-Treasurer, Research Branch, Canada Dept. of Agriculture, Central Experimental Farm, Ottawa, Ont.)

1–3. Canadian Soc. of **Plant Physiologists**, Canadian **Botanical** Soc., Canadian **Phytopathological** Soc., joint mtg., Univ. of British Columbia, Vancouver. (J. A. Webb, Dept. of Biology, Carleton Univ., Ottawa, Ont.)

1–3. Canadian **Psychological** Assoc., annual mtg., Montreal, P.Q. (G. A. Gerguson, Dept. of Psychology, McGill Univ., Montreal)

1–3. American Soc. for **Quality Control**, 20th annual technical conf., New York, N.Y. (E. J. Lancaster, General Precision, Inc., 150 Totowa Rd., Wayne, N.J. 07470)

1–4. **Acoustical** Soc. of America, 68th spring mtg., Boston, Mass. (The Society, 335 E. 45 St., New York 10017)

2–4. American Soc. for **Metals**, New England regional conf., Boston, Mass. (W. J. Hilty, The Society, Metals Park, Ohio)

5–8. **Smoking and Health**, 1st intern. congr., New York, N.Y. (J. M. Muckell, Overseas Press Club, 54 W. 40 St., New York 10018)

6–7. Association for Applied **Gnotobiotics**, annual mtg., Notre Dame Univ., Notre Dame, Ind. (B. S. Wostmann, Lobund Laboratory, Univ. of Notre Dame, Notre Dame)

6–8. **Chemical** Inst. of Canada, 49th annual conf., Univ. of Saskatchewan, Saskatoon. (The Institute, 48 Rideau St., Ottawa 2, Ontario)

6–9. **Biomedical Engineering**, symp., San Diego, Calif. (F. George, U.S. Naval Hospital, San Diego)

6–9. **Energy Conversion by Photosynthetic Apparatus**, conf., Upton, N.Y. (J. M. Olson, Biology Dept., Brookhaven Natl. Laboratory, Upton, L.I., N.Y.)

6–10. **Electric Contact Phenomena**, 3rd intern. symp., Univ. of Maine, Orono. (R. E. Armington, Dept. of Electrical Engineering, Univ. of Maine, Orono 04473)

6–10. **Food Irradiation**, symp., Karlsruhe, Germany. (J. H. Kane, Div. of Technical Information, U.S. Atomic Energy Commission, Washington, D.C. 20545)

6–10. **Medical Library** Assoc., annual mtg., Boston, Mass. (The Association, 919 N. Michigan Ave., Chicago, Ill.)

6–11. **Biota of the Amazon Basin**, symp., Belem, Brazil. (R. L. Dressler, Museo Nacional, Quinta de Boa Vista, Rio de Janeiro, GB, Brazil)

7–9. Society of the **Plastics Industry**, 13th natl. conf., New York, N.Y. (Public Relations Director, The Society, 250 Park Ave., New York 10017)

8–10. Canadian Federation of **Biological Socs.** (includes Canadian Physiological Soc., Pharmacological Soc. of Canada, Canadian Assoc. of Anatomists, Canadian Biochemical Soc.) 9th annual mtg., Univ. of British Columbia, Vancouver. (A. H. Neufeld, Faculty of Medicine, Univ. of Western Ontario, London, Ont.)

9. Canadian **Standards** Assoc., 39th annual mtg., Vancouver, B.C. (General Manager, 235 Montreal Rd., Ottawa 7, Ont.)

9–11. **Applications of Physics to Medicine**, symp., Univ. of Wisconsin, Madison. (J. R. Cameron, Dept. of Radiology, Univ. of Wisconsin, Madison 53706)

9–11. **Biomedical Engineering**, conf., New York Acad. of Sciences, New York, N.Y. (S. N. Levine, Dept. of Engineering, State Univ. of New York, Stony Brook, L.I.)

9–12. American Assoc. of **Neuropathologists**, Washington, D.C. (I. Feigin, 550 First Ave., New York 10016)

10–12. Society of **Biological Psychiatry**, conv. and scientific mtg., Washington, D.C. (W. A. Himwich, Galesburg State Research Hospital, Galesburg, Ill. 61401)

12–15. Canadian **Ophthalmological** Soc., 29th annual mtg., Jasper, Alta. (Secretary, 1849 Yonge St., Toronto 7, Ont.)

12–16. American Soc. of **Mammalogists**, annual mtg., California State College, Long Beach. (R. Hardy, Dept. of Biology, California State College, Long Beach)

12–16. **Iota Sigma Pi**, 15th mtg., Oregon State Univ., Corvallis. (G. Perlmann, Rockefeller Inst., New York, N.Y. 10021)

12–17. **Cellular Homeostasis** and Its Control, mtg., Cambridge, England. (Intern. Union of Biological Sciences, General Secretariat, Dept. of Zoology, Univ. of Washington, Seattle 98105)

12–18. **Ceramics**, intern. congr., Stockholm, Sweden. (Mrs. A. L. Laurell, Drottninggatan 20, IV, Stockholm C)

13–15. **Cryogenic Engineering**, conf., Boulder, Colo. (K. D. Timmerhaus, Engineering Research Center, Univ. of Colorado, Boulder)

13–15. American **Neurological** Assoc., 91st annual mtg., Washington, D.C. (Executive Vice President, 710 W. 168 St., New York 10032)

13–16. **Allergology**, 8th Scandinavian congr., Oslo, Norway. (O. Strömme, Rikshospitalet, Oslo 1)

13–17. **Late Type Stars**, colloquium, Trieste, Italy. (M. H. Hack, Astronomical Observatory, Via Tiepolo 11, Trieste)

13–17. Canadian **Medical** Assoc., 99th annual mtg., Edmonton, Alta. (The Association, 150 St. George St., Toronto, Ont.)

13–17. Society for Applied **Spectroscopy**, 5th natl. mtg., Chicago, Ill. (E. Lanterman, Borg-Warner Corp., Ingersoll Research Center, Wolf and Algonquin Rds., Des Plaines, Ill. 60018)

13–18. **American Assoc. for the Advancement of Science**, Pacific Div., Seattle, Washington. (R. C. Miller, California Acad. of Sciences, San Francisco)

13–18. **LSD and Related Drugs**, conf., Univ. of California, Berkeley. (Letters and Science Extension, Univ. of California, 2223 Fulton St., Berkeley 94720)

13–20. American Soc. of **Limnology and Oceanography**, Seattle, Wash. (H. Curl, Jr., Dept. of Oceanography, Oregon State Univ., Corvallis)

14–16. **Materials**, 3rd intern. symp., Berkeley, Calif. (J. A. Pask, Dept. of Mineral Technology, Univ. of California, Berkeley)

14–16. Unpredictable **Responses of Man to Drugs**, CBA Foundation symp., London, England. (W. Modell, 41 Portland Pl., London W.1)

14–17. Applied **Mechanics**, natl. congr., Univ. of Minnesota, Minneapolis. (R. Plunkett, 107 Aero Bldg., Univ. of Minnesota, Minneapolis 55455)

15–17. **Communications**, conf., Inst. of Electrical and Electronics Engineers, Philadelphia, Pa. (A. E. Joel, Room 2G-330, Bell Telephone Laboratories, Holmdel, N.J.)

15–22. **Science** Seminar, Air Force Office of Scientific Research, Albuquerque, N.M. (W. J. Price, Air Force Office of Scientific Research, Washington, D.C.)

15–24. European Federation of **Chemical Engineering**, 4th congr., London, England. (Inst. of Chemical Engineers, 16 Belgrave Sq., London S.W.1)

17–18. American **Rheumatism** Assoc., Denver, Colo. (G. W. Speyer, 1212 Sixth Ave., New York 10036)

19–22. **Botanical** Soc. of America, Northeast sect. and **Torrey Botanical Club**, summer field mtg., Univ. of Tennessee, Knoxville. (R. K. Zuck, Dept. of Botany, Drew Univ., Madison, N.J.)

19–23. American **Nuclear** Soc., 12th annual mtg., Denver, Colo. (Executive Secretary, 244 E. Ogden Ave., Hinsdale, Ill.)

19–24. American Soc. of **Medical Technologists**, Los Angeles, Calif. (R. Matthaei, Suite 25, Hermann Professional Bldg., Houston, Tex. 77025)

19–25. **Animal Nutrition**, 1st world congr., Madrid, Spain. (Intern. Veterinary Federation of Zootechnics, Calle Isabel la Católica 12, Madrid 13)

19–25. **Herpetologists' League**, Miami, Fla. (F. B. Turner, Laboratory of Nuclear Radiation and Biology, University of California, Los Angeles)

19–25. American Soc. of **Ichthyologists**