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TECHNICAL REPORT
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U. S. Army Materiel Command
U. S. ARMY NATICK LABORATORIES
Natick, Massachusetts

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U. S. ARMY NATICK LABORATORIES

COMMANDING GENERAL

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1. VAUGHAN, W. W. The Army's enigma - technology and the soldier.
U. S. Army Quartermaster School, Officer Career Class 65-1 and
Officer Basic Class 65-4 Graduations, Fort Lee, Virginia,
18 December
2. _____ Remarks. Dedication, Marine Products Development Irradiator,
U. S. Atomic Energy Commission and Bureau of Commercial Fisheries,
Gloucester, Mass., 28 September
3. _____ Remarks. International Conference on Radiation Preservation
of Foods, National Academy of Sciences-National Research Council;
U. S. Atomic Energy Commission; U. S. Army Natick Laboratories,
Natick, Mass., 28 September
4. _____ Remarks. Military-Industry Conference on Convenience Foods,
Research and Development Associates, Philadelphia, Pa., 17 November

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Technical Papers

5. SIELING, D. H. Programs and problems at Natick Laboratories. Armed
Forces Management Association, Cambridge Research Center, Bedford,
Mass., 21 April
6. _____ Research to protect the men and women in the service.
Framingham Women's Club, Framingham, Mass., 8 October
7. _____ Thoughts for food. Life Support Seminar, Northeastern States
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Journal Article

8. PETERSON, M. S. The trouble with technological forecasting. Science, 144(3620): 795 (15 May)

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Reports

9. Airdrop impact capability of the Shillelagh missile container, by A. P. MASCHL. ADED Report 64-4, July
10. Energy dissipation characteristics of hand-expanded paper honeycomb, by A. P. MASCHL. ADED Report 64-3, February
11. Minimum airdrop altitude using standard parachute equipment, by W. R. LEWIS. ADED Report 64-2, April

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17. PENCAK, W. Airdrop research and development. Wellesley Lions Club, Wellesley, Mass., 2 December

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Reports

18. Absorbers of near infrared radiation, by F. J. RIZZO, B. A. NATSIOS, and A. O. RAMSLEY. MRE Report 64-10, June
19. Calculation of reflectance of components in blended nylon/cotton fabrics, by A. O. RAMSLEY. MRE Report 64-9, June
20. Design tables for cotton fabrics, by L. L. WEINER and J. E. JOHNSTON, JR. Textile Series Report 128, August
21. Development of a labile sulfur test for dyed cellulosic fabrics, by A. M. CAMPBELL and R. J. EVANS. MRE Report 64-8, June
22. Development of low-density, high-strength foamed plastics via ionic polymerization, by R. J. F. PALCHAK, C. H. HASSIS, and J. A. TEREK, Atlantic Research Corp. Technical Report C&OM 2, March
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25. Evaluation of Italian pilot helmet for army light aviation, by A. L. LASTNIK. C&ED Report 39, June
26. Fabric-sizing properties of commercial laundry starches, by H. T. SKERRITT. MRE Report 64-2, February
27. Field and laboratory evaluation of starch, laundry, four types, commercial, by G. KIDDER and H. T. SKERRITT. MRE Report 64-12, October
28. The influence of resin finishes on the abrasion resistance of military fabrics, by C. J. POPE and L. L. WEINER. MRE Report 64-6, March
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30. Stability of nylon parachute materials during storage, by E. C. DOGLIOTTI, L. F. McCAFFERTY, F. FIGUCLA, JR., and W. E. C. YELLAND. MRE Report 64-4, March

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32. Study of chromotropic properties of colorants, by R. A. COLEMAN, W. H. FOSTER, JR., H. C. DONOIAN, and M. MASON, American Cyanamid Co. Textile Series Report 129, February
33. Study of the phenomenon of cold-drawing (plastic yield) in high polymers, by R. D. ANDREWS, JR., and W. WHITNEY, Massachusetts Institute of Technology. Technical Report C&OM 3, August
34. Wet abrasion resistance of military fabrics, by L. I. WEINER and C. J. POPE. MRE Report 64-1, January

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39. KUBAT, J., and R. C. LAIBLE Experimental studies on stress relaxation in crystalline polymers. III. Influence of strain rate and temperature on stress relaxation in polyethylene. Arkiv Fysik, 26(30): 439
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43. _____ and R. SUPNIK High speed testing as a measure of the resistance to penetration of needle-punched felts. *J. Appl. Polymer Sci.*, 8: 283 (January)
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54. _____ Transparent armor materials for aircraft. Air Force Materials Laboratory Conference, Wright-Patterson Air Force Base, Dayton, Ohio, 8-10 December
55. GRIFFIS, C. B. New polymers for the Armed Forces. Connecticut Rubber Division of the American Chemical Society, Ansonia, Conn., 14 May
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57. _____ and W. E. DAVIDSON Organometallic polymers. New York Academy of Sciences, NYC, 18-19 June
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59. KENNEDY, S. J. The biophysics of clothing and the problems of battlefield protection. U. S. Naval Medical School, National Naval Medical Center, Bethesda, Md., 10 March
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61. _____ Introduction of new items of clothing and equipment into the supply system. National Convention of the Defense Supply Association, Washington, D. C., 29 October
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66. LAIBLE, R. C. High speed penetration of non-woven fabrics. Army Science Conference, West Point, New York, 17-19 June
67. _____ The mechanical properties of polypropylene as related to ballistic applications. Symposium on Polypropylene Fibers, Birmingham, Ala., 17 September
68. McISAAC, H. J., and E. P. LAVELL The point system in textiles and clothing. Annual Convention of American Society of Quality Control, Philadelphia, Pa., 14 February
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78. SZCZEBLOWSKI, J., and F. J. RUBINATE Package integrity and performance. Paper presented by Dr. Edward A. Nebesky at Military-Industry Conference on Convenience Foods, sponsored by R&D Associates, Inc., Philadelphia, Pa., 17-19 November

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79. Areal distribution and diurnal variation of water vapor near the ground in the contiguous United States, by A. V. DODD. Ph.D. dissertation, Boston University, Boston, Mass. (Dissertation Abstracts, University of Michigan, Ann Arbor)
80. Canal Zone environment - Pacific sector, by R. L. ANSTEY. Technical Report ES-12, August
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85. Representative tropical days, by J. V. CHAMBERS. Special Report S-5, November
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91. DALRYMPLE, P. C. Antarctic micrometeorology and climatology. Seminars on the Stratosphere and Mesosphere and Polar Meteorology. Publications in Meteorology No. 65, Arctic Meteorology Research Group, Dept. of Meteorology, McGill University, Canada, p 223 (January)
92. _____ A new climatic classification for interior Antarctica. Abstracts of Papers, 20th International Geographical Congress, London, England, p 61 (July)
93. _____ Polar microclimatic research. Minutes of the 11th Meeting of the Army Meteorological R&D Coordination Committee, Natick, Mass., p 19 (October) [Abstract]
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95. DODD, A. V. The earth sciences division advisory services task. Minutes of the 11th Meeting of the Army Meteorological R&D Coordination Committee, Natick, Mass., p 21 (October) [Abstract]
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133. DODD, A. V. The earth sciences division advisory services task. 11th Meeting, U. S. Army Meteorological R&D Coordination Committee, Natick, Mass., 20-22 October
134. JAMES, J. W. The employment of a dense rain gage network to determine the distribution of precipitation over a small area in western Oregon. 60th Annual Meeting, Association of American Geographers, Syracuse, N. Y., 29 March-1 April
135. _____ Large-scale temperature differences over a relatively small area in an inland valley in the central coastal region of California. 45th Meeting, Pacific Division, American Association for the Advancement of Science, Vancouver, British Columbia, Canada, 22-27 June

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145. Absolute dose measurements on a megacurie Co-60 source by means of calorimetry, by N. W. HOLM and W. B. ALEXANDER. Research Report, December
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168. KLICKA, M. V. Development of space foods. J. Am. Dietet. Assoc., 44: 358 (May)
169. MANDELS, M., and E. T. REESE Fungal cellulases and the microbial decomposition of cellulosic fabric. Develop. Ind. Microbiol., 5: 5
170. McILLRATH, W. J., E. G. PIRES, E. D. DEKAZOS, K. R. JOHNSON, and F. HEILIGMAN Correlation of percentage dry matter in leaves with their capacity to rehydrate. Food Technol., 18: 1961 (December)
171. MEHRLICH, F. P. The Army radiation preservation of foods program, historic highlights. Proc. Eighth Contractors' Meeting Radiation Preservation of Foods Program, p 4 (OTS, U. S. Dept. of Commerce, Washington, D. C., PB 166166)
172. MILLER, A. T., H. M. EL-BISI, and F. M. SAWYER Microbiological and public health aspects of prepared frozen foods. Bulletin 548, Department of Food Science and Technology, Experiment Station, University of Massachusetts, Amherst, Mass.
173. ROWLEY, D. B., and H. R. NEWCOMB Radiosensitivity of several dehydrogenases and transaminases during sporogenesis of Bacillus subtilis. J. Bacteriol., 87: 701 (March)
174. SOLLARS, W. F., and F. F. BARRETT Soft wheat flour evaluation at the Western Wheat Quality Laboratory. Baker's Dig., 38: 34 (June)
175. TUOMY, J. M., and J. FELDER Effect of processing temperatures and cooking methods on the quality of freeze-dried cooked pork. Food Technol., 18: 1959 (December)
176. _____ and R. J. LECHNIR Effect of cooking temperature and time on the tenderness of pork. Food Technol., 18: 219 (February)

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Journal Articles (continued)

177. WHITEHAIR, L. A., R. W. BRAY, K. G. WECKEL, G. W. EVANS, and F. HEILIGMAN Influence of intramuscular fat level on organoleptic, physical, and chemical characteristics of irradiated pork. I. High-temperature short-time pre-irradiation treatment. Food Technol., 18: 230 (February)
178. _____ R. W. BRAY, K. G. WECKEL, G. W. EVANS, and F. HEILIGMAN Influence of intramuscular fat level on organoleptic, physical, and chemical characteristics of irradiated pork. II. Low-temperature, long-time pre-irradiation heat treatment. Food Technol., 18: 236 (February)
179. WIERBICKI, E. Packaging for radiation sterilized foods. Proc. Eighth Contractors' Meeting Radiation Preservation of Foods Program, p 139 (OTS, U. S. Dept. of Commerce, Washington, D. C., PB 166166)
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181. _____ M. SIMON, and E. S. JOSEPHSON Preservation of meats by sterilizing doses of ionizing radiation. Proc. International Conference on Radiation Preservation of Foods, U. S. Army Natick Laboratories and National Research Council-National Academy of Sciences, 27-30 September (in press)

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182. FISHER, F. R., and E. S. JOSEPHSON Proceedings of Eighth Contractors' Meeting on Radiation Preservation of Foods Program, U. S. Army Natick Laboratories, 7-9 October 1963. Office of Technical Services, U. S. Department of Commerce, Washington, D. C., 186 pp PB 166166

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Technical Papers

183. ANDERSON, E. E. Ration and space food developments. Central and Western New York Sections of the Institute of Food Technologists, Fulton, N. Y., 19 November
184. BARRETT, F. M. Quality characteristics of advanced PNW wheat selections. Annual Meeting Pacific Northwest Section of American Association of Cereal Chemists, Great Falls, Mont., 22-23 July
185. BLOCK, A., F. ELLISON, M. WOLF, and J. G. KAPSALIS Manometric and electrical hygrometric measurements of the moisture content of dehydrated foods. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
186. BROCKMANN, M. C. Development of new operational rations. Naval Reserve Research Company, Washington, D. C., 14 July
187. CALHOUN, W. K. Nutrition. Providence I Leadership Workshop, State Teachers College, Farmington, Maine, 17 October
188. COOPER, R. D., W. B. ALEXANDER, and A. BRYNJOLFSSON Charge distribution and ranges of high-energy electrons in light materials. Annual Meeting of American Physical Society, New York City, 25 January
189. DEAN, E. E. Irradiated food and the Army's irradiated food program. Senior Veterinary Officer Refresher Class, U. S. Army Medical Service Veterinary School, Chicago, Ill., 20 May
190. _____ Irradiated food program. U. S. Army Veterinary Corps Curriculum Advisory Council, Chicago, Ill., 3-5 February
191. DRIVER, M., J. G. KAPSALIS, and A. S. HENICK Comparison of reflectance and transmittance methods of examining cured meat pigments during frankfurter processing and storage. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
192. EL-BISL, H. M. Principles of microbiological safety and stability of radiation sterilized foods. International Conference on Radiation Preservation of Foods, Boston, Mass., 27-30 September
193. _____ Radiation microbiology program philosophy, principles, and objectives. Eighth Contractors' Meeting, Radiation Preservation of Foods Program, Natick, Mass., October 1963

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Technical Reports (continued)

194. GAINES, G. D. Mandatory contractor inspection program. Panelist, 18th Annual Meeting of the R&D Associates, Boston, Mass., 28-30 April
195. GRECZ, N., A. ANELLIS, and H. M. EL-BISI Radiation microbiology program progress report. Eighth Contractors' Meeting, Radiation Preservation of Foods Program, Natick, Mass., October 1963
196. HEILIGMAN, F. Radiation sprout inhibition of potatoes. Fourteenth National Potato Utilization Conference, Yakima, Wash., 20 July
197. HENICK, A. S. Biochemical aspects of food radiation. Eighth Contractors' Meeting, Radiation Preservation of Foods Program, Natick, Mass., October 1963
198. _____ Chemical changes in dehydrated foods. Monsanto Research Corp. Chemistry Seminar, Everett, Mass., August
199. _____ Deteriorative reactions in dehydrated foods. Gordon Research Conference on Food and Nutrition, New London, N. H., August
200. HOLLENDER, H. A. Handling and storage of food for short flights. NASA-NAS Working Conference on Space Nutrition and Related Waste Problems, University of South Florida, Tampa, Fla., 27-30 April
201. _____ Wanted - a new product. 12th Annual Meeting and Management Seminar of the Institutional Food Service Manufacturer's Association, sponsored by Quaker Oats Company, Oak Brook, Ill., 17-19 November
202. JARRETT, R. D., SR. Dosimetry and dose distribution. Eighth Contractors' Meeting, Radiation Preservation of Foods Program, Natick, Mass., October 1963
203. _____ and N. W. HOLM An evaluation of dosimetry procedures applicable for use in food irradiation. International Conference on Radiation Preservation of Foods, Boston, Mass., 27-30 September (by title)
204. JOHNSON, K. R. Combat feeding systems and current advances in food research. Subsistence Officer Class 65-1, Fort Lee, Va., November
205. _____ Feeding the Armed Forces. Weston Rotary Club, Weston, Mass., June
206. _____ Research and development of dehydrated fruits and vegetables. Subsistence Officer Class 64-2, Fort Lee, Va., June

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Technical Papers (continued)

207. JOSEPHSON, E. S. The Army's food irradiation program. Craftsman Club, Elks Club, Concord, Mass., 30 October
208. _____ Foods of tomorrow. Concord Women's Club, Concord, Mass., 10 February
209. _____ Irradiation of foods. Radio interview, Nightline Program, WEEL, Boston, Mass., March
210. _____ Radiation preservation of foods. Monthly seminar of Canadian Department of Agriculture, Ottawa, Canada, 5-9 April; Danish Atomic Energy Commission and Danish Meat Research Institute, Riso, Denmark, 18 April; Division of Commerce and Industry, Department of Conservation and Development, State of North Carolina, Raleigh, N. C., 20 February; Food Service Executives Association, Inc., Portland, Oreg., 10 August; New England Innkeepers Association Annual Workshop, East Northfield, Mass., 12 March; Oregon State University, Corvallis, Oreg., 11 August; Wellesley Unitarian Women's Group, Wellesley, Mass., 14 January; and Western Regional Research Laboratories, U. S. Department of Agriculture, Albany, Calif., 12 August
211. _____ The radiation preservation of foods and its implication to mankind. B'nai B'rith, Sidney Hill Country Club, Newton, Mass., 23 February
212. _____ Radiation preservation of foods and their potential role in closing the world's nutrition gap. Temple Sinai, Brookline, Mass., March
213. KAPSALIS, J. G., M. WOLF, M. DRIVER, and A. S. HENICK The moisture sorption isotherm as a basis for the study of sorption and stability characteristics in dehydrated foods. 16th Research Conference, American Meat Institute Foundation, Chicago, Ill., July
214. KENYON, E. M. Man as a material - operations in cold environment. Joint Meeting American Society of Testing Materials, Society of Professional Engineers, and American Society of Civil Engineers, University of New Hampshire, Durham, N. H., 24 April
215. _____ U. S. Army combat feeding systems. U. S. Army Security Training Center, Fort Devens, Mass., 10 December
216. KILLORAN, J. J. Packaging for radiation sterilized foods. 18th Annual Meeting, R&D Associates, Natick, Mass., 29 April

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Technical Papers (continued)

217. KLICKA, M. V. Combat feeding systems through food research and development. Fifth U. S. Army Chief Nurses' Conference, Chicago, Ill., 6 November
218. _____ Development of canned military rations. U. S. Army Medical Service Veterinary School, Chicago, Ill., 5 November
219. _____ Development of space foods and future feeding. Home Economics College Chapter, State College at Framingham, Framingham, Mass., 16 March
220. _____ Development of special rations and space foods. Annual Fall Meeting, Connecticut Dietetic Association, Stratford, Conn., 14 October
221. _____ Developments in special rations and space feeding. Northeast Section, Institute of Food Technologists' and American Candy Technologists' Meeting, Cambridge, Mass., 17 November
222. _____ Foods of tomorrow. YWCA, Burlington, Mass., 18 November
223. _____ New development in military rations. Walter Reed Army Medical Center, Washington, D. C., 29 October
224. LAMPL, R. A., G. W. POLEY, J. G. KAPSALIS, and M. WOLF Effect of compression on the moisture sorption isotherms of dried foods. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
225. LEE, F. H. Dehydrated food in the experimental kitchens. Annual Fall Meeting, Connecticut Dietetic Association, Stratford, Conn., 14 October
226. MARTIN, T. G. Radioisotope techniques. Course given at NLABS, Natick, Mass., May-June
227. MASON, O. E. Present status of the instant bread mix system and cereal products research and development. Subsistence Officer Class, Fort Lee, Va., March
228. MEHRLICH, F. P. The boom stage. International Conference on Radiation Preservation of Foods, Boston, Mass., 27-30 September

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Technical Papers (continued)

229. MEHRLICH, F. P. Combat feeding - R&D. Military Medical Training for Medical Department Officers of the Armed Forces, U. S. Naval Medical School, Bethesda, Md., 8-21 March
230. _____ Combat feeding systems and current advances in food research. Commandants' Conference, Fort Lee, Virginia, 9 December
231. _____ The concept of convenience in the design of military rations. Military-Industry Conference on Convenience Foods, R&D Associates, Philadelphia, Pa., 17-19 November
232. _____ Current progress in the radiation program of the U. S. Army. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
233. _____ New horizons in meat preservation and experimentation. National Association of Hotel and Restaurant Meat Purveyors Meeting, Phoenix, Ariz., 19-22 October
234. _____ New products from research and development. Defense Supply Association Convention, Washington, D. C., 28-30 October
235. _____ Present and future concepts of operational rations. Transportation Officer Career Course, Class 1-65, Fort Eustis, Va., 25 November
236. _____ Radiation processing. Western Experimental Station Collaborators' Conference on Advances in Food Processing Methods, Western Utilization R&D Division, U. S. Department of Agriculture, Albany, Calif., 2-4 March
237. _____ Space - food - industry. National Security Industrial Association, Food Advisory Committee Annual Meeting, Boston, Mass., 30 March-1 April
238. PHILLIPS, C. E. Radiation preservation of foods. Radiation Biology Class, State College at Framingham, Framingham, Mass., 2 December
239. PRELL, P. A. A look at foods of the future. Southeastern Food and Nutrition Associates, Cushing Hospital, Framingham, Mass., 4 November

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217. KLICKA, M. V. Combat feeding systems through food research and development. Fifth U. S. Army Chief Nurses' Conference, Chicago, Ill., 6 November
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229. MEHRLICH, F. P. Combat feeding - R&D. Military Medical Training for Medical Department Officers of the Armed Forces, U. S. Naval Medical School, Bethesda, Md., 8-21 March
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240. SCANLAN, R. A., G. W. SHULTS, and E. WIERBICKI Factors affecting the flavor and textural characteristics of irradiated beef. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
241. TUOMY, J. M. Development of dehydrated meat and fish salads for military use. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
242. _____ and J. FELDER Effect of processing temperatures and cooking methods on the quality of cooked, freeze-dried pork. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
243. WARNECKE, M. O., F. HELIGMAN, A. S. HENICK, and E. WIERBICKI Chemical changes in irradiated bacon during one year storage. 24th Annual Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
244. WESTCOTT, D. E. Freeze-drying foods and applications to military feeding. Food Science Seminar, University of Connecticut, Storrs, Conn., 28 April
245. WHITE, V. M. Foods irradiated and dehydrated. Massachusetts State Vocational Teachers, Fitchburg, Mass., 25 June
246. _____ Foods of the future. Home Economics Club, Simmons College, Boston, Mass., 26 February; and Meal Planning Class, Regis College, Weston, Mass., 12 May
247. _____ Future in convenience foods. Home Economics Teachers of Framingham, NLABS, Natick, Mass., 10 December
248. WIERBICKI, E. Developments in meat irradiation. Meat Hygiene Seminar, Meat Inspection Division, U. S. Department of Agriculture, University of Chicago, Chicago, Ill., 17 July
249. _____ Irradiation - its present status and future in the military food program. Commandants' Conference, U. S. Army Quartermaster School, Fort Lee, Va., 3 June
250. _____ Sterilization of foods by ionizing radiation. 60th Annual Health Conference, State of New York Department of Health, Buffalo, N. Y., 9 June

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251. WIERBICKI, E. , and F. HEILIGMAN Present status and future outlook of radiation sterilization in processing of meats. 16th Research Conference, American Meat Institute Foundation, Chicago, Ill. , July
252. _____ R. A. SCANLAN, and G. W. SHULTS Methods for sensory evaluation of irradiated foods. 24th Annual Meeting, Institute of Food Technologists, Washington, D.C. , 24-28 May
253. _____ M. SIMON, and E. S. JOSEPHSON Preservation of meats by sterilizing doses of ionizing radiation. Tenth European Congress of Meat Research Workers, Roskilde, Denmark, 10-16 August; and International Conference on Radiation Preservation of Foods, Boston, Mass. , 27-30 September (by title)

MECHANICAL ENGINEERING DIVISION

Reports

254. Military typesetting equipment and systems for Indo-Aryan and Dravidian languages, by E. NITENSON. February

Technical Papers

255. WEIKERT, C. W. Magnesium in support of Army items of equipment. Annual Convention and Technical Meeting of the Magnesium Association, New York City, 6 October

PIONEERING RESEARCH DIVISION

Reports

256. Anthropometric survey of the Royal Thai Armed Forces, by R. M. WHITE. Work sponsored by the Advanced Research Projects Agency, Washington, D. C., June
257. Evaluation of rot- and weather-resistance of cotton fabrics treated with methylomelamine resins by wet fixation methods, by A. G. KEMPTON and A. M. KAPLAN. Microbiological Deterioration Series Report No. 7, June
258. Minutes of the 12th conference on prevention of microbiological deterioration of military materiel, by A. G. KEMPTON. November 1963
259. Reference anthropometry of the arctic-equipped soldier, by R. M. WHITE, J. L. KOBRICK, and T. R. ZIMMERER. Pioneering Research Division Technical Report EPT-2, August
260. A shadowgraphic study of shock front interaction with non-rigid models, by W. ZAGIEBOYLO and S. D. TANENHOLTZ. Radiation Physics Laboratory Report S-2, July
261. Some effects of jet compressor geometry on efficiency: compression-ratio curves with two maxima, by R. A. SEGARS and H. J. HOGE. Technical Report PR-10, June
262. A study of the detection of chemically contaminated persons by dogs, by J. T. WHITLAW, J. J. PRATT, JR., and J. D. HILCHEY. Pioneering Research Division, Insecticides and Rodenticides Laboratory Report No. 7, April
263. Thermal conductivity of polystyrene. Selected values, by L. C. K. CARWILE and H. J. HOGE. Thermodynamics Laboratory Report No. TC-2, April

Journal Articles

264. BALL, D. H., E. D. M. EADES, and L. LONG, JR. Unexpected conversion of carbohydrate mesyl esters to ethers with retention of configuration by reaction with alkoxides in dimethyl sulfoxide. J. Am. Chem. Soc. 86: 3579 (5 September)
265. BLUHM, A. L., J. A. SOUSA, and J. WEINSTEIN Photoisomerization of o-nitrobenzyl compounds. J. Org. Chem. 29: 636 (March)

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Journal Articles (continued)

266. CLAPP, R. C., L. LONG, JR., and T. HASSELSTROM The interconversion of 2-substituted 2-oxazolines and 2-thiazolines. *J. Org. Chem.* 29: 2172 (August)
267. DI PIETRO, C., and W. A. SASSAMAN Microdetermination of arsenic in organic compounds by iodimetry. *Anal. Chem.* 36: 2213 (October)
268. DONNELLAN, J. E., JR., E. H. NAGS, and H. S. LEVINSON Chemically defined, synthetic media for sporulation and for germination and growth of Bacillus subtilis. *J. Bacteriol.* 87: 332 (February)
269. EVELEIGH, D. E., G. P. DATEO, and E. T. REESE Fungal metabolism of complex glycosides: ustilagic acid. *J. Biol. Chem.* 239: 839 (March)
270. FORSS, D. A., M. L. BAZINET, and S. M. SWIFT Sampling devices for gas chromatography. *J. Gas Chromatog.* 2: 134 (April)
271. HEINMETS, F. Analog computer analysis of a model-system for the induced enzyme synthesis. *J. Theoret. Biol.* 6: 60 (January)
272. _____ Elucidation of induction and repression mechanisms in enzyme synthesis by analysis of model systems with the analog computer. Chapter in "Electronic Aspects of Biochemistry", Academic Press, Inc., New York, N. Y., pp 415-478
273. HOGE, H. J., and G. F. FONSECA The thermal conductivity of a multi-layer sample of underwear material under a variety of experimental conditions. *Textile Res. J.* 34(5): 401 (May)
274. HOLMES, L. G., and M. J. KRONMAN A convenient cell arrangement for solvent perturbation measurements. *Anal. Biochem.* 7(1): 124 (January)
275. HYATT, M. T., and H. S. LEVINSON Effect of sugars and other carbon compounds on germination and postgerminative development of Bacillus megaterium spores. *J. Bacteriol.* 88: 1403 (November)
276. KRONMAN, M. J., and R. E. ANDREOTTI Inter- and intramolecular interactions of α lactalbumin. I. The apparent heterogeneity at acid pH. *Biochemistry* 3: 1145 (August)
277. _____ R. E. ANDREOTTI, and R. VITOLS Inter- and intramolecular interactions of α lactalbumin. II. Aggregation reactions at acid pH. *Biochemistry* 3: 1152 (August)

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278. LEVINSON, H. S., and M. T. HYATT Effect of sporulation medium on heat resistance, chemical composition, and germination of Bacillus megaterium spores. J. Bacteriol. 87(4): 876 (April)
279. LINDQVIST, L. High voltage flash photolysis lamp. Rev. Sci. Instr. 35: 993 (August)
280. MERRITT, C., JR., J. T. WALSH, D. A. FORSS, P. ANGELINI, and S. M. SWIFT Wide-range programmed temperature gas chromatography in the separation of very complex mixtures. Anal. Chem. 36: 1502 (July)
281. _____ J. T. WALSH, P. ISSENBERG, and K. J. McCARTHY Apparatus for programmed cryogenic temperature gas chromatography. J. Gas Chromatog. 2: 314 (April)
282. _____ J. T. WALSH, and D. H. ROBERTSON Qualitative gas chromatographic analysis by means of retention volume constants - behavior of isomers. J. Gas Chromatog. 2: 125 (April)
283. MILLER, R. A. L., J. M. ROBERTSON, G. A. SIM, R. C. CLAPP, L. LONG, JR., and T. HASSELSTROM Structure of an anomalous heterocyclic intermediate. Nature 202(4929): 287 (18 April)
284. PASQUINO, A. D., and M. N. PILSWORTH, JR. The thermal conductivity of polystyrene, oriented and unoriented, with measurements of the glass-transition temperature. Polymer Letters 2: 253 (March)
285. REESE, E. T., and M. MANDELS A new α -glucanase mycodextranase. Can. J. Microbiol. 10: 103 (May)
286. ROBBINS, F. M., and M. J. KRONMAN A simplified method for preparing α lactalbumin and β lactoglobulin from cow's milk. Biochim. Biophys. Acta 82: 186 (January)
287. ROBERTSON, D. H., P. ISSENBERG, and C. MERRITT, JR. Conversion of the F and M model 240 power proportioning programmer for cryogenic operation. Facts & Methods for Sci. Res. (F & M Scientific Corp.) 5(1) (June)
288. ROTH, L. M. Control of reproduction in female cockroaches with special reference to Nauphoeta cinerea. I. First preoviposition period. J. Insect Physiol. 10: 915 (December)

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289. ROTH, L. M. Control of reproduction in female cockroaches with special reference to Nauphoeta cinerea. II. Gestation and postparturition. *Psyche* (December)
290. _____ and R. H. BARTH, JR. The control of sexual receptivity in female cockroaches. *J. Insect Physiol.* 10: 965 (December)
291. _____ and G. P. DATEO, JR. Uric acid in the reproductive system of males of the cockroach, Blattella germanica. *Science* 146: 782 (6 November)
292. _____ and W. HAHN Size of new-born larvae of cockroaches incubating eggs internally. *J. Insect Physiol.* 10: 65 (February)
293. SIMMONS, E. G. Conservation of Alternaria Nees against Macrosporium Fries. *Regnum Vegetabile* 34: 46
294. SOUSA, J. A., and J. D. LOCONTI A colorless photoinduced intermediate of o-nitrobenzylpyridine. *Science* 146: 397 (16 October)
295. WEINSTEIN, J., J. A. SOUSA, and A. L. BLUHM Photoisomerizations of 3,3'-dinitro-4,4'-di(2-pyridylmethyl) - azoxybenzene. *J. Org. Chem.* 29: 1586 (June)
296. WETTERMARK, G., and L. DOGLIOTTI Transient species in the photolysis of anils. *J. Chem. Phys.* 40: 1486 (15 March)
297. WHITLAW, J. T., JR., and L. W. SMITH, JR. Equipment for trapping and rearing the American cockroach, Periplaneta americana. *J. Econ. Entomol.* 57: 164 (February)
298. ZAGIEBOYLO, W., and S. TANENHOLTZ Effect of a baffle on shock wave modifications due to reflected waves. *J. Environ. Sci.* 7(2): 40 (April)

Technical Papers

299. BAILEY, S. D. Research studies related to NDT methods. Sixth Meeting, Panel 4, Subgroup P, TTCP, Quebec, Canada, June

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Technical Papers (continued)

300. BALL, D. H., E. D. M. EADES, and L. LONG, JR. Reactions of sulfonate esters with alkoxides in dimethyl sulfoxide. Division of Carbohydrate Chemistry, American Chemical Society Meeting, Chicago, Ill., September
301. _____ J. M. WILLIAMS, and L. LONG, JR. Potential radiation-protective compounds. Synthesis of the three isomeric three-carbon aminohydroxy Bunte salts and related compounds. Army Science Conference, West Point, N. Y., June
302. CRIST, B. Proposed standardization of operator's platform and controls. 10th Annual Meeting, Joint Materials Handling Equipment - Industry Advisory Committee for Standardization of Warehouse Fork-Lift Trucks and Tractors, Washington, D.C., October
303. DARBY, R. T., B. J. WILEY, and E. G. SIMMONS Isolation, activity and identification of fungi from jet fuels. 31st Annual Meeting, Mycological Society of America, Boulder, Colo., August
304. DEGERING, E. F. Irradiation "factor-dependency". Seminars at Union College, Lincoln, Nebr., 7 September; University of Nebraska, Lincoln, 8 September; University of Washington, Seattle, 14 September; Shell Development Co., Emeryville, Calif., 17 September; California Research Corporation, Richmond, Calif., 17 September; Stanford Research Institute, Menlo Park, Calif., 18 September; University of Arizona, Tucson, 23 September; Southern Utilization Research & Development Division, U. S. D. A., New Orleans, La., 30 September; and Oak Ridge National Laboratory, Oak Ridge, Tenn., 2 October
305. _____ G. J. CALDARELLA, and G. H. HAINES Irradiation "factor-dependency" as evidence of results from factorial-design experiments with trihydroperfluoroalkyl acrylates. Division of Fluorine Chemistry, American Chemical Society Meeting, Chicago, Ill., September
306. _____ G. J. CALDARELLA, and G. H. HAINES Irradiation "factor-dependency" as evidenced by results from factorial-design experiments with acrylonitrile. Radiation Research Society of America, Miami, Fla., May
307. _____ G. J. CALDARELLA, and G. H. HAINES Irradiation "factor-dependency" as evidenced by statistical evaluation of data for vinyl acetate. Sixth Electron Beam Symposium, Cambridge, Mass., April

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308. DONNELLAN, J. E., JR., E. H. NAGS, and H. S. LEVINSON Nucleic acid synthesis during germination and postgerminative development. Spore Conference III, Allerton Park, University of Illinois, Urbana, Ill., October
309. DUSEK, R. Psychological research to improve efficiency of use and acceptance of food, clothing and personal equipment. Psychology and Management Series, Purdue University, Lafayette, Ind., February
310. FORSS, D. A. Analytical instrumentation in flavor chemistry. Seminar, University of Connecticut, Storrs, April
311. _____ Recent advances in flavor chemistry. Seminar, Canadian Dept. of Agriculture, Ottawa, Canada, January; and Seminar, Massachusetts Institute of Technology, Cambridge, Mass., May
312. _____ Unsaturated carbonyl compounds in food flavors. Seminar, Bureau of Commercial Fisheries, Gloucester, Mass., June
313. HASSELSTROM, T. Synthesis of amino acids and related products by ionizing radiation. Inter-Scandinavian Chemistry Symposium on Natural Products, Abiska, Sweden; Society Biochemica, Biophysica et Microbiologica Fenniae, Helsinki, Finland; and University of Uppsala, Uppsala, Sweden, August and September
314. HEINMETS, F. Computer analysis of induced enzyme synthesis in cells. National Institutes of Health, Washington, D. C., October
315. _____ Effect of various biological compounds on proton conductivity and activation energy in ice. Conference on "Forms of Water in Biologic Systems," N. Y. Academy of Sciences, New York City, October
316. HYATT, M., and H. LEVINSON Effect of carbohydrates on Bacillus megaterium spore germination and postgerminative development. American Society for Microbiology, Washington, D. C., May
317. KAPLAN, A. M. Comments on the respirometric technique for assessment of microbiological susceptibility of materials. Annual Meeting, Society for Industrial Microbiology, Boulder, Colo., August
318. KRONMAN, M. J. The molecular basis for the alteration of α lactalbumin at low pH. Army Science Conference, West Point, N. Y., June

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Technical Papers (continued)

319. KRONMAN, M. J. Physical chemical techniques, proteins and enzymes. 13th Conference on Prevention of Microbiological Deterioration of Military Materiel, Natick, Mass., November
320. LEVINSON, H. Bacterial spores. Departmental Seminar, Microbiology Dept., School of Medicine, Tufts University, Medford, Mass., April
321. _____ Nucleic acid synthesis during germination and postgerminative development. 13th Research Conference on Prevention of Microbiological Deterioration of Military Materiel, Natick, Mass., November
322. _____ and E. B. GARBER Radiation biodosimetry and screening for radioprotective compounds. Army Science Conference, West Point, N. Y., June
323. MCGINNIS, J. M. Applied and basic research program of the PRD psychology laboratories. Army Human Factors Research Advisory Committee, Army Research Office, Washington, D. C., November
324. MERRITT, C., JR. Applications of gas chromatography and mass spectrometry to the analyses of complex mixtures isolated from natural products. Special seminar, Purdue University, Lafayette, Ind., October
325. _____ Food flavor components - isolation and identification by gas chromatography and related techniques. Seminar, North Carolina State University, Raleigh, N. C., February
326. _____ Gas chromatography and mass spectrometry - complementary analytical tools. Seminar, North Carolina State University, Raleigh, N. C., February
327. _____ Mass spectroscopy. Symposium on Methods for Studying Proteins, Lipoproteins and Lipids in Animal Tissues, 16th Annual Reciprocal Meat Conference, Oklahoma State University, Stillwater, Okla., June
328. _____ Qualitative identification of gas chromatographic effluents by ancillary chemical and instrumental methods. Panelist, 3rd Annual Meeting, ASTM Committee E-19, Houston, Texas, October
329. _____ Thermoramic programmed gas chromatography in the separation of very complex mixtures. 2nd International Symposium - Advances in Gas Chromatography, University of Houston, Houston, Texas, March

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Technical Papers (continued)

330. REESE, E. T. Enzymatic breakdown of cellulose. Cellulase Symposium, Osaka, Japan, November (This lecture was also presented elsewhere in Japan and in other countries)
331. ROBBINS, F. M., M. J. KRONMAN, and R. E. ANDREOTTI The amidination of α lactalbumin. American Chemical Society Meeting, Denver, Colo., January
332. ROGERS, M. R., and A. M. KAPLAN A survey of the microbiological contamination in a military fuel distribution system. Annual Meeting, Society for Industrial Microbiology, Boulder, Colo., August
333. ROTH, L. M. Control mechanisms in the reproduction of cockroaches. Tufts University, Medford, Mass., December
334. _____ The loci of sensory end-organs used by cockroaches in mating behavior. XII International Congress of Entomology, London, England, July
335. _____ Mechanisms controlling sexual receptivity and oöcyte development in cockroaches. Providence College, Providence, Rhode Island, October
336. _____ and G. DATEO Mating as a form of excretion in male roaches. Annual Meeting, Entomological Society of America, Philadelphia, Pa., December
337. SARAVACOS, G. D. Freeze-drying rates of model food gel. 24th Meeting, Institute of Food Technologists, Washington, D. C., 24-28 May
338. SIMMONS, E. G. The theoretical basis for the classification of micro-organisms. Symposium at dedication of new building of the American Type Culture Collection, Washington, D. C., May
339. WETTERMARK, G. K. G., M. E. LANGMUIR, and D. G. ANDERSON Catalysis of the *cis*→*trans* isomerization of 2-hydroxy-5-methylazobenzene. Division of Physical Chemistry, American Chemical Society Meeting, Chicago, Ill., September
340. WHITE, R. M. Anthropometry of U. S. Army aviators. 10th Anniversary Meeting of Army Human Factors Research and Development Conference, Fort Rucker, Alabama, October

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Technical Papers (continued)

341. WHITE, R. M. Military anthropometry of aviation personnel. USNR Intelligence Division 1-1, Boston, Mass., August
342. _____ Military anthropometry in Southeastern Asia. 33rd Annual Meeting, American Association of Physical Anthropologists, Mexico City, Mexico, June

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