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Produced by the NASA Center for Aerospace Information (CASI)

November 19, 1968

BIOLOGICAL SCIENCES COMMUNICATION PROJECT

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FACILITY FORM 602
N69-14627 (ACCESSION NUMBER)
47 (PAGES)
CR-98672 (NASA CR OR TMX OR AD NUMBER)
1 (THRU)
(CODE)
04 (CATEGORY)

SCIENTIFIC PUBLICATIONS

OF THE

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VOLUME V. PLANETARY QUARANTINE

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VOLUME V. PLANETARY QUARANTINE, SECOND EDITION

by

Mary Shipp Watson and Frances Hong

of the

Biological Sciences Communication Project

C. W. Shilling, M. D., Director

The George Washington University Medical Center

November 19, 1968

work performed under NASA Contract

NSR 09 010 027

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PREFACE

As the amount of scientific information continues to "explode", bibliographies have become an important means by which science administrators and research scientists can maintain a current awareness of their primary and relative fields of interest. In addition to listing the available literature, bibliographies can be used to identify scientists, laboratories, and institutions conducting research in similar disciplines, and to examine the growth and changing directions of research in specific subject areas.

The second edition of Scientific Publications of the Bioscience Programs Division of the National Aeronautics and Space Administration consists of five volumes: Volume I, Behavioral Biology; Volume II, Environmental Biology; Volume III, Exobiology; Volume IV, Physical Biology; and Volume V, Planetary Quarantine. Each principal investigator was requested to contribute his current list of publications resulting from research support by the Bioscience Programs Division, and to edit the citations included in last year's bibliography.

Publications appearing as serial literature, monographs, books, reports and speeches were used in compiling this bibliography. This volume contains a list of citations arranged chronologically according to author's names, a permuted title index, an author index, and a senior author and laboratory directory.

The authors gratefully acknowledge the technical assistance of Mrs. Roger Allen and Betty Yee in the preparation of this report.

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SCIENTIFIC PUBLICATIONS OF THE PLANETARY QUARANTINE PROGRAM.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

1962

1. CORNELL, R. G. A method for fitting linear combinations of exponentials. Biometrics 18(1):104-113. 1962.

1964

2. CORNELL, R. G. Spearman estimation for a simple exponential model. FSU Statistical Rept. M-52. Tallahassee, Fla., Florida State University, 1964. 9 p.

3. KOLODZIEJ, B. J., and SLEPECKY, R. A. Trace metal requirements for sporulation of Bacillus megaterium. J. Bacteriol. 88:821-830. 1964.

4. ROGOLSKY, M., and SLEPECKY, R. A. Elimination of a genetic determinant for sporulation of Bacillus subtilis with acriflavin. Biochem. Biophys. Res. Commun. 16:204-208. 1964.

1965

5. CORNELL, R. G. Spearman estimation for a simple exponential model. Biometrics 21(4):858-864. 1965.

6. CORNELL, R. G., and SPECKMAN, J. A. Estimation for a one-parameter exponential model. J. Amer. Stat. Ass. 60:560-572. 1965.

7. FAVERO, M. S., PULEO, J. R., and TRITZ, G. J. Techniques for removing microbial contamination from spacecraft hardware. I. A model system. Presented at Arizona Chapter of the American Society for Microbiology, Phoenix, Arizona, December 11, 1965.

8. GILLIS, J. R., ROSAS DEL VALLE, M., VINTER, V., and SLEPECKY, R. A. Sporulation studies in a synchronous culture of B. megaterium. Bacteriol. Proc., p. 37. 1965.

9. GRUFT, H. M., BUCKMAN, J., and SLEPECKY, R. A. Amino acid replacement of the manganese sporulation requirement of B. megaterium in a synchronous system. Bacteriol. Proc., p. 37. 1965.

10. POWERS, E. M. Microbial contamination of a surface by handling. GSFC Document X-624-65-491. Greenbelt, Md., Goddard Space Flight Center, November, 1965. 5 p.

11. POWERS, E. M. Microbial profile of laminar flow clean rooms. GSFC Document X-600-65-308. Greenbelt, Md., Goddard Space Flight Center, September, 1965. 40 p.

12. PULEO, J. R., and FAVERO, M. S. Recovery of viable microorganisms from solids. Presented at Arizona Chapter of the American Society for Microbiology, Phoenix, Arizona, December 11, 1965.

13. ROGOLSKY, M., and SLEPECKY, R. A. Induction of asporogeny in B. subtilis with acriflavin.. Bacteriol. Proc., p. 36. 1965.

14. VINTER, V., and SLEPECKY, R. A. Direct transition of outgrowing bacterial spores to new sporangia without intermediate cell division. J. Bacteriol. 90:803-807. 1965.

1966

15. BEAKLEY, J. W., WHITFIELD, W. J., and MASHBURN, J. C. Deposition of nutrients to surfaces by Rodac plates. Rept. SC-RR-66-386. Albuquerque, N. M., Sandia Corp., July, 1966. 16 p. Refs.

16. BEAKLEY, J. W., WHITFIELD, W. J., and MASHBURN, J. C. Evaluation of the efficiency of a class 100 laminar-flow clean room for viable contamination cleanup. Rept. SC-RR-66-385. Albuquerque, N. M., Sandia Corp., September, 1966. 9 p. 9 refs.

17. BEAUCHAMP, J. J., and CORNELL, R. G. Simultaneous nonlinear estimation. Technometrics 8(2):319-326. May, 1966.

18. COOLEY, W. C., and SCHALKOWSKY, S. Special problems in spacecraft sterilization. In Proceedings of the National Conference on Spacecraft Sterilization Technology, Pasadena, Calif., Nov. 16-18, 1965, p. 547-556. Washington, D. C., Nat. Aeron. Space Admin., 1966. 7 refs. (NASA SP-108)

19. DUGAN, V. L. Production of low concentration particulate aerosols by a sonic disseminator technique. Rept. SC-RR-67-14. Albuquerque, N. M., Sandia Corp., December, 1966. 16 p.

20. FAVERO, M. S. Assessment of microbial contamination on space hardware. Presented before the American Society for Microbiology, Los Angeles, Calif., May 1-5, 1966 and published in Bacteriol. Proc., 1966. (Abstract)

21. FAVERO, M. S. Factors influencing detection and enumeration of microbial contaminants on space hardware. Presented at Fifth Annual Meeting of the American Association for Contamination Control, Houston, Texas, March 29, 1966.

22. FAVERO, M. S., and DRAKE, C. H. Factors influencing the occurrence of high numbers of iodine-resistant bacteria in iodinated swimming pools. Appl. Microbiol. 14:627-635. July,1966.

23. FAVERO, M. S., PETERSON, N. J., and OXBORROW, G. S. Occurrence of non-logarithmic death rates of bacterial spores exposed to dry heat. Presented at Arizona Chapter, American Society for Microbiology, Phoenix, Arizona, October 8, 1966.

24. FAVERO, M. S., PULEO, J. R., MARSHALL, J. H., and OXBORROW, G. S. Comparative levels and types of microbial contamination detected in industrial clean rooms. Appl. Microbiol. 14:539-551. July, 1966.

25. FAVERO, M. S., PULEO, J. R., MARSHALL, J. H., and OXBORROW, G. S. Environmental factors influencing the survival of microorganisms on surfaces. Presented at the Arizona Chapter of the American Society for Microbiology, Tucson, Arizona, April 23, 1966.

26. FAVERO, M. S., PULEO, J. R., MARSHALL, J. H., and OXBORROW, G. S. Microbial contamination in conventional and laminar flow clean rooms. Presented at Fifth Annual Technical Meeting of the American Association for Contamination Control, Houston, Texas, March 29-April 1, 1966. 10 p. Bacteriol. Proc., 1966.

27. FAVERO, M. S., PULEO, J. R., and TRITZ, G. J. Use of ultrasonication for the enumeration of microbial contamination on surfaces. Presented before the American Society for Microbiology, Los Angeles, Calif., May 1-5, 1966. Bacteriol. Proc., 1966.

28. FIELDS, N. D., MOORE, B., and TRITZ, G. J. Microbial contamination levels encountered by the Lunar Orbiter spacecraft. Presented at Southeastern Branch, American Society for Microbiology, Gainesville, Florida, October 21-22, 1966.

29. GREENE, V. W., and QUAN, T. J. Sensitivity of bacteriological detection techniques to low levels of contamination. Appl. Microbiol. 14:979. 1966.

30. IMANAKA, H., and SLEPECKY, R. A. Enzyme synthesis during sporulation of Bacillus megaterium in a synchronous growth system. Ninth International Congress of Microbiology. Abstracts of Papers, p. 151. 1966.

31. KALFAYAN, S. H., and CAMPBELL, B. A. Effects of the thermal sterilization procedure on polymeric products. JPL Tech. Rept. 32-973. Pasadena, Calif., Jet Propulsion Laboratory, November, 1966.

32. McDADE, J. J., FAVERO, M. S., and HALL, L. B. Sterilization requirements for space exploration. Presented at International Association of Milk, Food, and Environmental Sanitarians, Minneapolis, Minn., August 15-18, 1966. J. Milk Food Technol. 30:179-185. 1966.

33. McDADE, J. J., FAVERO, M. S., MICHAELSEN, G. S., and VESLEY, D. Environmental microbiology and the control of microbial contamination. Presented at First Annual National Conference on Spacecraft Sterilization Technology, Pasadena, Calif., November 16-18, 1965. In Spacecraft Sterilization Technology, p. 51-86. Washington, D. C., Nat. Aeron. Space Admin., 1966. 35 refs. (NASA SP-108)

34. MARDRES, J. W. Dry heat survival of Bacillus subtilis var. niger in association with soil mineral particles. GSFC Document X-624-66-187. Greenbelt, Md., Goddard Space Flight Center, May, 1966. 11 p.

35. MARDRES, J. W. Survival of selected microorganisms in high ultraviolet flux. GSFC Document X-624-66-189. Greenbelt, Md., Goddard Space Flight Center, December, 1966. 9 p.

36. MARSHALL, J. H., FAVERO, M. S., PULEO, J. R., and OXBORROW, G. S. Comparative levels of microbial contamination among hospital operating rooms and industrial clean rooms. Presented at Arizona Chapter of the American Society for Microbiology, Tucson, Arizona, April 23, 1966.

37. MOORE, B., FIELDS, N.D., and TRITZ, G. J. Reduction of microbial contamination levels by use of laminar flow clean rooms. Presented at Southeastern Branch, American Society for Microbiology, Gainesville, Florida, October 21-22, 1966.

38. NORTHROP, J., and SLEPECKY, R. A. Temperature-induced sporulation mutations in Bacillus subtilis. Bacteriol. Proc., p. 16. 1966.

39. OXBORROW, G. S., FAVERO, M. S., PULEO, J. R., and MARSHALL, J. H. Microbiological profiles of conventional and laminar flow clean rooms. Presented at the Arizona Chapter of the American Society for Microbiology, Tucson, Arizona, April 23, 1966.

40. PETERSEN, N. J. Preliminary results using coated stainless steel strips as an assay tool. Presented at the Fifth Annual Meeting of the American Association for Contamination Control, Houston, Texas, March 29, 1966.

41. PICCIOLO, G. L. Bioluminescence, a selected bibliography from the Literature Retrieval System, GSFC Document X-624-66-152. Greenbelt, Md., Goddard Space Flight Center, April, 1966. 14 p.

42. PICCIOLO, G. L., POWERS, E. M., and RICH, E. An experiment to detect microorganisms in the upper atmosphere flown on Aerobee NASA 4,150. GSFC Document X-624-66-359. Greenbelt, Md., Goddard Space Flight Center, December, 1966. 26 p.

43. PICCIOLO, G. L. Sterilization, a selected bibliography from the Literature Retrieval System. GSFC Document X-450-66-53. Greenbelt, Md., Goddard Space Flight Center, March, 1966. 18 p.

44. POWERS, E. M. Microbiological burden on the surfaces of the AIMP spacecraft, Part 1. GSFC Document X-624-66-342. Greenbelt, Md., Goddard Space Flight Center, May, 1966. 10 p.

45. POWERS, E. M. Microbiological burden on the surfaces of the AIMP spacecraft, Part 2. GSFC Document X-624-66-368. Greenbelt, Md., Goddard Space Flight Center, June, 1966. 6 p.

46. POWERS, E. M. Microbiological burden on the surfaces of the AIMP spacecraft, Part 3. GSFC Document X-624-66-369. Greenbelt, Md., Goddard Space Flight Center, July, 1966. 25 p.

47. POWERS, E. M. Microbiological burden on the surfaces of the AIMP spacecraft, Part 4. GSFC Document X-624-66-370. Greenbelt, Md., Goddard Space Flight Center, August, 1966. 12 p.

48. PULEO, J. R., and FAVERO, M. S. Factors influencing the recovery of microorganisms from solids. Presented to the American Society for Microbiology, Los Angeles, Calif., May 1-5,1966.

49. PULEO, J. R., and FAVERO, M. S. Heat sterilization of activated carbon. A note. Biotechnol. Bioeng. 8(4):631-632. November, 1966.

50. PULEO, J. R., and FAVERO, M. S. Reliability and efficiency of ultrasonics in recovery of microbial contamination from surfaces. Presented at the Arizona Chapter of the American Society for Microbiology, Tucson, Arizona, April 23, 1966.

51. PULEO, J. R., FAVERO, M. S., and TRITZ, G. J. Factors influencing the recovery of viable microorganisms from surfaces. Presented at the Fifth Annual Technical Meeting of the American Association for Contamination Control, Houston, Texas, March 29-April 1, 1966, and published in Proceedings. 6 p.

52. PULEO, J. R., PETERSEN, N. J., and FAVERO, M. S. The recovery of embedded spores from a plastic. Presented at Arizona Chapter, American Society for Microbiology, Phoenix, Arizona, October 8, 1966.

53. REMSEN, C. C., LUNGREN, D. G., and SLEPECKY, R. A. Inhibition of spore septum and forespore membrane development in Bacillus cereus by beta-phenethyl alcohol. J. Bacteriol. 91:324-331. 1966.

54. SCHALKOWSKY, S. Analytical techniques in planetary quarantine and spacecraft sterilization. Final report. Washington, D. C., Exotech, Inc., November, 1966. 44 p.

55. SCHALKOWSKY, S. A critique of current spacecraft sterilization standards. Washington, D. C., Exotech, Inc., January 3, 1966. 11 p.

56. SCHALKOWSKY, S. Estimation of planetary contamination probabilities due to flight of the USSR Venus 3. Washington, D. C., Exotech, Inc., August 10, 1966. 14 p.

57. SCHALKOWSKY, S., and COOLEY, W. C. Analysis of planetary quarantine requirements. Washington, D. C., Exotech, Inc., April 5, 1966. 11 p.

58. SCHALKOWSKY, S., and WIEDERKEHR, R. Log-normal model for microbial survival in heat sterilization. Topical report. Washington, D. C., Exotech, Inc., October, 1966. 39 p.

59. SCHALKOWSKY, S., and WIEDERKEHR, R. A stochastic sterilization model. Rept. No. TR-13. Washington, D. C., Exotech, Inc., May 6, 1966. 19 p. 3 refs.

60. SHERRY, E. J., and TRAUTH, C. A., JR. An assembly contamination model. Rept. SC-RR-66-421. Albuquerque, N. M., Sandia Corp., July, 1966. 32 p.

61. SHERRY, E. J., and TRAUTH, C. A., JR. A model for planetary quarantine. requirements. Rept. SC-RR-66-588. Albuquerque, N. M., Sandia Corp., September, 1966. 46 p. 9 refs.

62. SLEPECKY, R. A. The use of combined sonication-germacide treatment in surgical instrument cleaning. Hospital Topics 44:133-134. 1966.

63. TRAUTH, C. A., and TIERNEY, M. S. A model for determining the probability of failure of a valve having a particle contamination failure mode. Rept. SC-TM-66-697. Albuquerque, N. M., Sandia Corp., December, 1966.

64. TRAUTH, C. A., JR., and WOOLSEY, R. E. IPSC, a machine independent integer linear program. Rept. SC-RR-66-433. Albuquerque, N. M., Sandia Corp., July, 1966.

65. TRAUTH, C. A., JR., and WOOLSEY, R. E. Practical aspects of integer linear programming. Rept. SC-RR-66-925. Albuquerque, N. M., Sandia Corp., July, 1966.

66. TRITZ, G. J., FIELDS, N. D., and MOORE, B. Surveyor 2 -- its microbial load. Presented at Southeastern Branch, American Society for Microbiology, Gainesville, Florida, October 21-22, 1966.

67. VESLEY, D., KEENAN, K. M., and HALBERT, M. M. Effect of time and temperature in assessing microbial contamination on flat surfaces. Appl. Microbiol. 14(2):203-205. March, 1966. 7 refs.

68. WHITFIELD, W. J. Monitoring a class 100 clean room. Rept. SC-RR-66-956. Albuquerque, N. M., Sandia Corp., October, 1966.

69. WHITFIELD, W. J., and MASHBURN, J. C. Development of an increased sampling rate monitoring system. Rept. SC-RR-66-585. Albuquerque, N. M., Sandia Corp., October, 1966. 11 p.

1967

70. ANGELOTTI, R. Protective mechanisms affecting dry-heat sterilization. In Proceedings of the COSPAR Symposium on Sterilization Techniques for Instruments and Materials as Applied to Space Research, London, England, August, 1967.

71. BERQUIST, K. R., and FAVERO, M. S. Laminar air flow systems for microbiology. Presented at Arizona Chapter of the American Society for Microbiology, Phoenix, Arizona, November 3-4, 1967.

72. BRANNEN, J. P. An analysis for sterilization requirements. To appear in the Proceedings of the Rocky Mountain Symposium for Aerospace Science and Technology, sponsored by the American Astronautical Society, July 13, 14, 1967, Denver, Colorado, 1967.

73. BRANNEN, J. P. A rational model for spacecraft sterilization requirements. Rept. SC-RR-67-256. Albuquerque, N. M., Sandia Corp., April, 1967. 30 p. Refs.

74. BREWER, J. H. Sampling and verification in large-scale sterilization procedures. Symposium on Sterilization Techniques for Instruments and Materials as Applied to Space Research, 10th COSPAR Meeting, London, England, July 18-22, 1967.

75. BREWER, J. H., and SCHMITT, R. F. Laminar air flow for sterility testing procedures. 67th Annual Meeting of the American Society for Microbiology, New York City, April 30-May 4, 1967. 5 p.

76. BRUCH, C. W. Microbes in the upper atmosphere and beyond. Symposia of the Society for General Microbiology. Airborne Microbes, XVII, p. 346-374. 1967.

77. CAMERON, R. G., BLANK, G. B., and HOROWITZ, N. H. Growth of aerobic and anaerobic bacteria in agar subjected to freezing, diurnal freezing and thawing. JPL Tech. Memo. 33-331. Pasadena, Calif., Jet Propulsion Laboratory, June, 1967.

78. CHAMBERLAIN, R. G. The Voyager planetary quarantine model 1973 mission. JPL Tech. Memo. 33-252. Pasadena, Calif., Jet Propulsion Laboratory, June, 1967.

79. CHAPPELLE, E. W., RICH, E., and MacLEOD, N. H. Prevention of protein denaturation during exposure to sterilization temperatures. Science 155(3767):1287-1288. March 10, 1967.

80. CHRISTENSEN, M. R., GREEN, R. H., and STERN, J. A. Microbiological sampling program for the Mariner Venus '67 flight spacecraft (Mariner V). JPL SPS No. 37-46, Vol. IV:48-55. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

81. CORNELL, R. G., and SPECKMAN, J. A. Estimation for a simple exponential model. Biometrics 23:717-737. 1967.

82. CRAVEN, C. W. Sterilization and decontamination techniques for space vehicles. JPL Tech. Memo. 33-370. Pasadena, Calif., Jet Propulsion Laboratory, December 1, 1967. 8 p.

83. CRAVEN, C. W., and WOLFSON, R. P. Techniques for the prevention of contamination of the planets by unsterile spaceflight hardware. JPL Tech. Rept. 32-1216. Pasadena, Calif., Jet Propulsion Laboratory, December 15, 1967. 14 p.

84. CRAWFORD, A. M. Fireflies for space research. GSFC Special Report. Greenbelt, Md., Goddard Space Flight Center, 1967.

85. DUGAN, V. L. Automatic, instantaneous monitor for counting the bacterial loading of an aerosol. Rept. SC-TM-67-687. Albuquerque, N. M., Sandia Corp., August, 1967.

86. DUGAN, V. L. Principles of operation of the vacuum probe microbiological sampler. Rept. SC-RR-67-688. Albuquerque, N. M., Sandia Corp., August, 1967.

87. DUGAN, V. L., WHITFIELD, W. J., McDADE, J. J., BEAKLEY, J. W., and OSWALT, F. W. A new approach to the microbiological sampling of surfaces: The vacuum probe sampler. Rept. SC-RR-67-114. Albuquerque, N. M., Sandia Corp., March, 1967.

88. ELLAR, D. J., LUNDGREN, D. G., and SLEPECKY, R. A. Fine structure of Bacillus megaterium during synchronous growth. J. Bacteriol. 94:1189-1205. 1967.

89. FAVERO, M. S. Application of laminar airflow systems in assaying space hardware. Presented at American Society for Microbiology, New York, April 30 - May 4, 1967. Bacteriol. Proc., p. 7. 1967.

90. FAVERO, M. S. Assay techniques for planetary quarantine. Proceedings of the AEC/NASA Symposium on Contamination Control, Albuquerque, New Mexico, September 12-14, 1967, p. 268-270. 1967.

91. FAVERO, M. S. Dual meaning of activation. Spore Newsletter 2(12): 163-164. September, 1967.

92. FAVERO, M. S. Factors influencing the detection and the enumeration of microbial contamination on space hardware. Presented at International Symposium for Spacecraft Sterilization, London, England, July 18-22, 1967.

93. FAVERO, M. S. The hospital engineer and infection control. Presented before American Society for Hospital Engineers, Phoenix, Arizona, October 27, 1967.

94. FAVERO, M. S. Services provided in support of the Planetary Quarantine requirements of NASA. Phoenix, Arizona, Planetary Quarantine Unit, Phoenix Field Station Section, Ecological Investigations Program, National Communicable Disease Center, Public Health Service, U. S. Department of Health, Education and Welfare, Rept. No. 16. January 18, 1967.

95. FAVERO, M. S. Services provided in support of the Planetary Quarantine requirements of NASA. Phoenix, Arizona, Planetary Quarantine Unit, Phoenix Field Station Section, Ecological Investigations Program, National Communicable Disease Center, Public Health Service, U. S. Department of Health, Education and Welfare, Rept. No. 17. April, 1967.

96. FAVERO, M. S. Services provided in support of the Planetary Quarantine requirements of NASA. Phoenix, Arizona, Planetary Quarantine Unit, Phoenix Field Station Section, Ecological Investigations Program, National Communicable Disease Center, Public Health Service, U. S. Department of Health, Education and Welfare, Rept. No. 18. July, 1967.

97. FAVERO, M. S. Services provided in support of the Planetary Quarantine requirements of NASA. Phoenix, Arizona, Planetary Quarantine Unit, Phoenix Field Station Section, Ecological Investigations Program, National Communicable Disease Center, Public Health Service, U. S. Department of Health, Education and Welfare, Rept. No. 19. October 10, 1967.

98. FAVERO, M. S., and HALL, L. B. Latest aspects of sterility testing. Presented before American Public Health Association, Miami Beach, Florida, October 23-27, 1967.

99. FAVERO, M. S., PULEO, J. R., MARSHALL, J. H., and OXBORROW, G. S. A comparison of microbial contamination levels among hospital operating rooms and industrial clean rooms. Proceedings of the 6th Annual Technical Meeting and Exhibit of the American Association for Contamination Control, Washington, D. C., May 15-18, 1967, p. 218-221. 1967.

100. FIELDS, N. D., MOORE, B., and GRAVES, R. C. Effect of systems tests on the microbial load of a lunar spacecraft. Presented at Southeastern Branch, American Society for Microbiology, Atlanta, Georgia, November 3-4, 1967.

101. FRITZ, G. J., FIELDS, N. D., and MOORE, B. Comparative levels of microbial contamination in clean rooms used for the assembly and test of lunar spacecraft. In Proceedings of the American Association for Contamination Control, p. 149-152. May, 1967.

102. GAVIN, T. R. Visual monitoring during assembly of sterilizable planetary landing capsules. JPL Tech. Memo. 33-345. Pasadena, Calif., Jet Propulsion Laboratory, July, 1967. 6 p.

103. GODDARD SPACE FLIGHT CENTER. A selected bibliography from the Literature Retrieval System, Space Biology Branch. X-624-67-564-Revised X-450-67-53. Greenbelt, Md., November, 1967.

104. GRENIER, W. G. Anchored interplanetary monitoring platform compilation materials and decontaminate compatibility tests. Goddard Report X-723-67-516. July, 1967. 518 p.

105. GUYTON, H. G., and MICK, C. E. Evaluation of two NASA biological isolation garments. Tech. Rept. No. 3-68. Frederick, Md., U. S. Army Biological Laboratories, December, 1967.

106. HAGEN, C. A., HAWRYLEWICZ, E. J., and EHRLICH, R. Survival of microorganisms in a simulated Martian environment. II. Moisture and oxygen requirements for germination of Bacillus cereus and Bacillus subtilis var. niger spores. Appl. Microbiol. 15(2):285-291. March, 1967.

107. HALL, L. B. Criteria for selection of germicides. Amer. J. Public Health 51(7):1054-1060. July, 1967.

108. HALL, L. B. The importance of sterilization techniques in spacecraft. International Space Science Symposium, COSPAR, London, England, August, 1967. 31 p.

109. HALL, L. B. Recent developments in planetary quarantine. Presented at Society for Industrial Microbiology, August 21-24, 1967, London, Ontario, Canada. 15 p.

110. HARSTAD, J. B., DECKER, H. M., BUCHANAN, L. M., and FILLER, M. E. Filtration of submicron virus aerosols. Amer. J. Public Health 57(12):2186-2193. 1967.

111. HAWRYLEWICZ, E. J., and HAGEN, C. A. Contamination of planets. Science 157:582-583. August 4, 1967.

112. HAWRYLEWICZ, E. J., HAGEN, C. A., TOLKACZ, V., and EHRLICH, R. Effect of reduced barometric pressure on water availability related to microbial growth. In A. H. Brown and F. G. Favorite, eds. Life Sciences and Space Research, V:174-186. Amsterdam, North-Holland Publ. Co., 1967.

113. HAWRYLEWICZ, E. J., HAGEN, C. A., TOLKACZ, V., ANDERSON, B. T., and EWING, M. Probability of growth (p_G) of viable microorganisms in Martian environments. International Space Sciences Symposium, COSPAR, London, England, July, 1967. 4 p.

114. HOFFMAN, A. R., and STERN, J. A. Terminal sterilization process calculation for spacecraft. Presented at Society for Industrial Microbiology, London, Ontario, Canada, August, 1967. JPL Tech. Rept. 32-1209. Pasadena, Calif., Jet Propulsion Laboratory, November, 1967.

115. HOLLANDER, M. Asymptotic efficiency of two nonparametric competitors of Wilcoxon's two sample test. J. Amer. Statist. Asso 62: 939-949. September, 1967. 12 refs.

116. HOLLANDER, M. Rank tests for randomized blocks when the alternatives have an a priori ordering. Ann. Math. Statist. 38(3):867-877. June, 1967. 21 refs.

117. HOROWITZ, N. H., SHARP, R. P., and DAVIES, R. W. Planetary contamination. I. The problems and agreements. Science 155(3769):1501-1505. 1967.

118. IMANAKA, H., GILLIS, J. R., and SLEPECKY, R. A. Synchronous growth and sporulation of Bacillus megaterium. J. Bacteriol. 93: 1624-1630. 1967.

119. IRONS, A. S. Microbiological evaluation of HEPA filters. JPL SPS 37-43, IV:53-58. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

120. JET PROPULSION LABORATORIES. Clothing study - EASL. JPL 67-108. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

121. JET PROPULSION LABORATORIES. CMTM Biological monitoring plan. JPL-001.01. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

122. JET PROPULSION LABORATORIES. Evaluation of preliminary standard procedure for microbiological examination of space hardware. JPL-67-105. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

123. JET PROPULSION LABORATORIES. Identification of microbiological isolates-EASL. JPL-67-115. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

124. JET PROPULSION LABORATORIES. Microbiological assay and certification of spacecraft hardware sterility. JPL-300.01. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

125. JET PROPULSION LABORATORIES. Personnel procedures for EASL operations. JPL-201.01. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

126. JET PROPULSION LABORATORIES. Personnel procedures for SADL operations. JPL-201.00. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

127. JET PROPULSION LABORATORIES. Process specification, decontamination of component parts, tools and equipment. JPL-200.01. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

128. JET PROPULSION LABORATORIES. Report on determination of heat resistance of microbiological isolates. JPL-67-116. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

129. JET PROPULSION LABORATORIES. Report on a study of chemical germicides. JPL-67-113. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

130. JET PROPULSION LABORATORIES. Report on a study of plateau of microbiological contamination on surfaces. JPL-67-114. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

131. JET PROPULSION LABORATORIES. Routine cleaning and decontamination. JPL-202.01. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

132. JET PROPULSION LABORATORIES. Routine cleaning and decontamination of SADL facility. JPL-202.00. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

133. JET PROPULSION LABORATORIES. SADL assembly of CMTM for purposes of determining areas of contact during the assembly process. JPL-67-545. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

134. JET PROPULSION LABORATORIES. SADL - Development of procedures for estimating the CMTM microbial burden. JPL-67-623. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

135. JET PROPULSION LABORATORIES. SADL monitoring plan. JPL-003.00. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

136. JET PROPULSION LABORATORIES. SADL quality assurance program plan. JPL-002.00. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

137. JET PROPULSION LABORATORIES. SADL - A study of chemical residues left on surfaces after biological assay procedures. JPL-67-551. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

138. JET PROPULSION LABORATORIES. SADL - A study of the effects of varying the established operating and maintenance procedures of the EASL facility. JPL-67-544. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

139. JET PROPULSION LABORATORIES. SADL - A study of the microbial burden accumulated on assemblies built in EASL under disrupted vertical airflow. JPL-67-550. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

140. JET PROPULSION LABORATORIES. SADL 3000 cu. ft. decontamination chamber. JPL-005.00. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

141. JONES, L. A., HOFFMAN, R. K., and PHILLIPS, C. R. Sporicidal activity of peracetic acid and beta-propiolactone at subzero temperatures. Appl. Microbiol. 15:357-362. 1967.

142. KALFAYAN, S. H., CAMPBELL, B. A., and SILVER, R. H. Effects of ethylene oxide-freon 12 decontamination and dry heat sterilization procedures on polymeric products. JPL Tech. Rept. 32-1160. Pasadena, Calif., Jet Propulsion Laboratory, September, 1967.

143. LeDOUX, F. N. Decontamination of the AIMP-D spacecraft. GSFC X-723-67-171. Greenbelt, Md., Goddard Space Flight Center, April, 1967. 66 p.

144. LeDOUX, F. N. Microbial decontamination and sampling program for anchored interplanetary monitoring platform (AIMPE) spacecraft. GSFC X-723-67-375. Greenbelt, Md., Goddard Space Flight Center, July, 1967. 30 p.

145. McDADE, J. J. Laminar air flow in the surgical theater. In Proceedings of American Society of Microbiology, 67th Annual Meeting, May, 1967.

146. McDADE, J. J., FAVERO, M. S., and HALL, L. B. Sterilization requirements for space exploration. J. Milk Food Technol. 30(6):179-185. June, 1967.

147. McDADE, J. J., TRAUTH, C. A., JR., WHITFIELD, W. J., and SIVINSKI, H. D. Techniques for the limitation of biological loading of spacecraft before sterilization. For presentation at COSPAR, London, England, July, 1967. 57 p.

148. McDADE, J. J., WHITCOMB, J. G., RYPKA, E. W., WHITFIELD, W. J., and FRANKLIN, C. M. The microbial profile of a vertical laminar airflow surgical theater. Rept. SC-RR-67-456. Albuquerque, N. M., Sandia Corp., June, 1967. 30 p. 24 refs.

149. MOORE, B., GRAVES, R. C., and FIELDS, N. D. Bacterial spore contamination of lunar spacecraft. Presented at Southeastern Branch, American Society for Microbiology, Atlanta, Georgia, November 3-4, 1967.

150. MORRIS, M. E. The vacuum probe for removing microorganisms for counting. In Proceedings of the NASA/AEC Symposium on Current and Advanced Concepts in Instrumentation and Automation in Contamination Control, Albuquerque, New Mexico, September 12-14, 1967.

151. NASH, D. B. Sampling of planetary surface solids for unmanned in situ geological and biological analysis: Strategy, principles, and instrument requirements. JPL Tech. Rept. 32-1225. Pasadena, Calif., Jet Propulsion Laboratory, November 15, 1967. 35 p.

152. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. NASA standard procedures for the microbiological examination of space hardware. NHB 5340.1. August, 1967. 40 p.

153. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION. Standards for clean rooms and work stations for the microbially controlled environment. NHB 5340.2. August, 1967. 35 p.

154. NORTHROP, J., and SLEPECKY, R. A. Sporulation mutations induced by heat in Bacillus subtilis. Science 155:839. February, 1967. 7 refs.

155. OLSON, R. L., GREEN, R. N., and TRITZ, G. J. Progressive biological monitoring on lunar orbiters. Presented at the 24th meeting of the Society for Industrial Microbiology, London, Ontario, Canada, August 20-24, 1967.

156. OPFELL, J. B., and SHANNON, J. L. Comparison of methyl-bromide and ethylene-oxide resistances of Bacillus subtilis and Staphylococcus epidermidis population. Presented at American Society of Microbiology, New York, N. Y., 1967. 14 p.

157. OFFELL, J. B., and SHANNON, J. L. Synergism in ethylene-oxide-methyl-bromide sterilization of very dry spore and staphylococcal populations. International Space Science Symposium, COSPAR, London, England, July, 1967. 10 p.

158. OSWALT, F. W., McDADE, J. J., FRANKLIN, C. M., and DUGAN, V. L. An improved sonication method for removal of microorganisms from surfaces. Rept. SC-RR-67-492. Albuquerque, N. M., Sandia Corp., June, 1967. 25 p.

159. OXBORROW, G. S., and FAVERO, M. S. A combination medium for demonstrating starch and gelatin hydrolysis. Amer. J. Med. Technol. 33(4):334-335. July/August, 1967.

160. PAIK, W. W., MICHAEL, S. C., SMITH, C. D., and STERN, J. A. Resistance of bacterial spores. (Bacillus globigii). JPL 37-46, IV:43-55. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

161. PETERSEN, N. J. The probability of releasing microorganisms on fracture from solids. In Proceedings of the NASA/AEC Symposium on Current and Advanced Concepts in Instrumentation and Automation in Contamination Control, Albuquerque, New Mexico, September 12-14, 1967, p. 287-288. 1967.

162. PETERSEN, N. J., and PULEO, J. R. Estimating the probability of release of viable microorganisms from fractured solids. Presented at Arizona Chapter of the American Society for Microbiology, Phoenix, Arizona, November 3-4, 1967.

163. PFLUG, I. J. Dry heat sterilization of interplanetary vehicles. Presented at 67th Annual Meeting of the American Society for Microbiology, New York, N. Y., April 30 - May 4, 1967.

164. PHILLIPS, G. B. Laminar air flow for microbiological contamination control: Needs and areas of application. Presented at the 67th Annual Meeting of the American Society for Microbiology, New York, N. Y., April 30 - May 4, 1967. 7 p.

165. PHILLIPS, G. B., and BREWER, J. H. Recent advances in microbiological environmental control. Presented at the 24th Meeting of the Society of Industrial Microbiology, University of Western Ontario, London, Ontario, Canada, August 20-24, 1967. 25 p.

166. PORTNER, D. M. Quantitative spore recoveries from diatomaceous earth pellets used as a protective material in dry heat sterilization studies. Rept. No. 13-67. Frederick, Md., U. S. Army Biological Laboratories, Physical Defense Div., February, 1967.

167. PORTNER, D. M. Recovery of vegetative bacteria from eccofoam FP and diatomaceous earth. Rept. No. 16-67. Frederick, Md., U. S. Army Biological Laboratories, Physical Defense Div., April, 1967.

168. PORTNER, D. M., PHILLIPS, C. R., and HOFFMAN, R. K. Certification of probability of sterilization of liquid by filtration. Appl. Microbiol. 15(4):800-807. July, 1967.

169. POWERS, E. M. Microbiological burden on the surfaces of Explorer XXXIII spacecraft. Appl. Microbiol. 15(5):1045-1048. September, 1967.

170. PULEO, J. R., FAVERO, M. S., and PETERSEN, N. J. Assessment of microbial contamination on surfaces of space hardware by ultrasonics. In Proceedings of the 6th Annual Technical Meeting and Exhibit of the American Association for Contamination Control, Washington, D. C., May 15-18, 1967, p. 153-156.

171. PULEO, J. R., FAVERO, M. S., and PETERSEN, N. J. Use of ultrasonic energy in assessing microbial contamination on surfaces. Appl. Microbiol. 15(6):1345-1351. November, 1967.

172. PULEO, J. R., FAVERO, M. S., and PETERSEN, N. J. Use of ultrasonics in assessing microbial contamination on surfaces. Presented at the American Society for Microbiology. Bacteriol. Proc., p. 20. 1967.

173. PULEO, J. R., FAVERO, M. S., and TRITZ, G. J. Feasibility of using ultrasonics for removing viable microorganisms from surfaces. Contamination Control. J. 4:58-67. April, 1967.

174. ROTHSTEIN, A. A. Sterilization reference booklet. Denver, Colo., Martin Marietta Corp., Denver Div., 1967. 36 p.

175. ROTHSTEIN, A. A., and ARNETT, J. C. Sterile insertion - An aerospace application of gnotobiotic technology. Presented at the Society of Industrial Microbiology, London, Ontario, Canada, August, 1967.

176. SAVAGE, C. H. Sterilization of impact limiters. JPL SPS 37-43, IV:128-138. Pasadena, Calif., Jet Propulsion Laboratory, 1967.

177. SCHALKOWSKY, S. Study of analytical techniques in planetary quarantine. Final report. Washington, D. C., Exotech, Inc., December 7, 1967. 105 p.

178. SCHALKOWSKY, S., and WIEDERKEHR, R. Estimation of microbial survival in heat sterilization. Presented at COSPAR Symposium on Sterilization Techniques, London, England, July, 1967. 15 p.

179. SILVERMAN, G. J., and BEECHER, N. Survival of cocci after exposure to ultrahigh vacuum at different temperatures. Appl. Microbiol. 15(3):665-667. May, 1967.

180. SILVERMAN, G. J., DAVIS, N. S., and BEECHER, N. Resistivity of spores to ultraviolet and γ radiation while exposed to ultrahigh vacuum or at atmospheric pressure. Appl. Microbiol. 15(3):510-515. May, 1967.

181. SIVINSKI, H. D., WHITEFIELD, W. J., and PAULHAMUS, J. A. Contamination control principles. Washington, D. C., Nat. Aeron. Space Admin., 1967. (NASA SP-5045)

182. STERN, J. A., and HOFFMAN, A. R. Determination of terminal sterilization process parameters. JPL Tech. Rept. 32-1191. Pasadena, Calif., Jet Propulsion Laboratory, October 1, 1967. 8 p.

183. STOCKHAM, J. D., HAGEN, C. A., MILLER, S., NELSON, M., and ROBERTS, D. Results of bioclean room survey. Heating, Piping and Airconditioning 39:115-117. 1967.

184. TRAUTH, C. A., JR. A sequential decision model of planetary quarantine primary objectives. Rept. SC-RR-67-462. Albuquerque, N. M., Sandia Corp., June, 1967. 48 p.

185. TRAUTH, C. A., JR. A systems approach to contamination control. In Proceedings of the NASA/AEC Symposium on Current and Advanced Concepts in Instrumentation and Automation in Contamination Control, Albuquerque, N. M., September 12-14, 1967.

186. TRITZ, G. J., FIELDS, N. D., and MOORE, B. Comparative levels of microbial contamination in clean rooms used for the assembly and test of lunar spacecraft. In Proceedings of the 6th Annual Technical Meeting and Exhibit of the American Association for Contamination Control, Washington, D. C., May 15-18, 1967, p. 149-152.

187. TRITZ, G. J., FIELDS, N. D., and MOORE, B. Microbial contamination detected on the Surveyor 2 spacecraft. Presented at the 67th Annual Meeting of the American Society for Microbiology, New York, N. Y. April 30-May 4, 1967. Bacteriol. Proc., p. 16. 1967.

188. VESLEY, D. Laminar air-flow for the care of hospital patients. Presented at the 67th Annual Meeting of the American Society for Microbiology, New York, N. Y., April 30-May 4, 1967.

189. WHITFIELD, W. J. Principles of laminar air flow. Presented at the 67th Annual Meeting of the American Society for Microbiology, New York, N. Y., April 30 - May 4, 1967. 12 p.

190. WHITFIELD, W. J., and MASHBURN, J. C. The development of a faster monitoring system. Contamination Control J. 6:10-11. 1967.

191. WRIGHT, D. E. Bibliography on applications of ethylene oxide. Washington, D. C., George Washington University, Biological Sciences Communication Project, June, 1967. 26 p. 137 refs.

192. WRIGHT, D. E. Bibliography on planetary quarantine, Vol. I. Policy. Washington, D. C., George Washington University, Biological Sciences Communication Project, November, 1967. 22 p. 123 refs.

193. WRIGHT, D. E. Bibliography on planetary quarantine, Vol. II. Environmental Microbiology. Washington, D. C., George Washington University, Biological Sciences Communication Project, November, 1967. 69 p. 359 refs.

194. WRIGHT, D. E. Bibliography on planetary quarantine, Vol. III. Engineering Parameters. Washington, D. C., George Washington University, Biological Sciences Communication Project, November, 1967. 43 p. 251 refs.

195. WRIGHT, D. E. Significant achievements in space bioscience. Spacecraft Sterilization and Planetary Quarantine. Washington, D. C., George Washington University, Biological Sciences Communication Project, May, 1967. 45 p.

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