

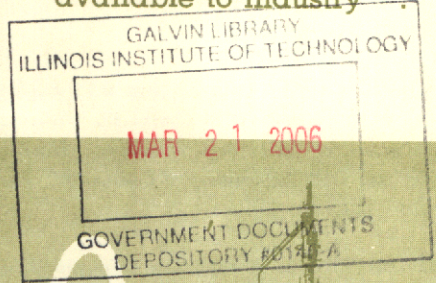
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March 18, 1955

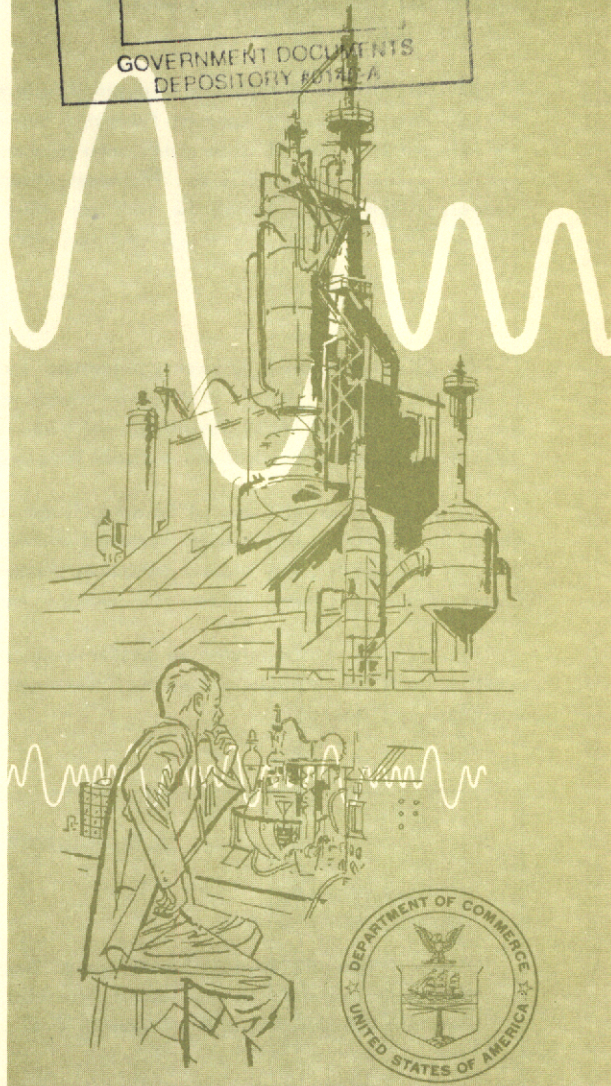
Vol. 23, No. 3

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U. S. DEPARTMENT OF COMMERCE

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U. S. DEPARTMENT OF COMMERCE

OFFICE OF TECHNICAL SERVICES

Vol. 23, No. 3

March 13, 1955

CHEMICALS AND ALLIED PRODUCTS

Agricultural Chemicals

Studies of increasing resistance of insects to insecticides, by Charles D. Michener and Robert R. Sokal. Kansas. University, Lawrence, Kansas. Jan 1954. 8p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116274

Annual progress report, Jan 1, 1953 to Dec 31, 1953, under Contract Nonr 171(00), Project NR 160-170. 1. Insecticides - Evaluation 2. Insects - Effects of insecticides.

Plastics and Plasticizers

Balloon material evaluation. Technical report no. 4 under Contract no. AF 19(604)-718 for 1 Jun-31 Aug 1954, by L. W. Sheridan. General Mills, Inc. Engineering Research and Development Dept., Minneapolis, Minn. Sep 1954. 8p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116160

Tests were made on material taken from a balloon that had been stored and shipped. The effect of immersion of polyethylene film in salt solution, having the concentration of sea water, was studied. Limited samples of laminated film from a new supplier were evaluated. A study of the variation of tensile strength of two types of Saran film with temperature, at reduced temperatures, was made. Seals on Saran and on a polyethylene-mylar laminate were tested at reduced temperatures.

Development of a heat-resistant foamed-in-place low-density silicone resin core material, by

Kenneth R. Hoffman and Donald E. Weyer. Dow Corning Corp., Midland, Mich. Dec 1953. 125p photos, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$3.25. PB 111555

Low-density silicone resin core materials were developed which are unicellular and have excellent heat stability along with low moisture absorption and good electrical properties. Numerous silicone resins were evaluated, and the revised specifications of the contract were met by using Resin XR-544. Several of the foams were exposed to 700°F for 10 hr without qualitative change. These foams were nonflammable and very resistant to a direct flame. The resins were also foamed-in-place between glass fabric base silicone resin laminated skins. Contract no. AF 33(600)-6320. AAF WADC TR 53-146.

Investigation of the shelf life of liquids in polyethylene bottles, by Jules Pinsky, A. R. Nielsen, James H. Parlman. Plax Corporation, West Hartford, Conn. Jun 1954. 127p photos, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$3.25. PB 111546

Contract no. AF 33(616)-112.

1. Plastics, Polyethylene - Permeability 2. Containers, Polyethylene - Tests 3. Liquids - Storage 4. AAF WADC TR 53-133 Part 1.

Ionization chamber insulating material. Federal Telecommunication Laboratories, Inc., Nutley, N.J. Contract DA36-039-sc-5424. Dept. of the Army project no. 3-99-15-022. Signal Corps project no. 32-152 B-O. Continues work done under Contract W36-039-sc-44548. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

First quarterly report, July 15-Oct 15, 1951, by H. G. Nordlin, D. K. Keel, C. H. Mayhew, S. Kaganoff. Oct 1951. 51p graph, tables

Microfilm \$3.00, Photocopy \$7.75. PB 116191

National defense contractual progress report no. 3.

1. Insulating materials - Plastics - Electrical properties
2. Polystyrene - Hydrogenation
3. Ionization chambers - Insulation
4. SIG Contract DA36-039-sc-5424, Quarterly report no. 1.

Second quarterly report, Oct 15, 1951-Jan 15, 1952, by H. G. Nordlin, D. K. Keel, C. H. Mayhew, S. Kaganoff. Jan 1952. 55p graphs, tables
Microfilm \$3.00, Photocopy \$7.75. PB 116192

National defense contractual progress report no. 6.

1. Insulating materials - Plastics - Electrical properties
2. Ionization chambers - Insulation
3. Styroflex (Trade name)
4. Gamma rays - Effect
5. Wave guides - Attenuators
6. SIG Contract DA36-039-sc-5424, Quarterly report no. 2.

Third quarterly report, Jan 15-Apr 15, 1952, by H. G. Nordlin and D. K. Keel. Apr 1952. 31p drawing, graphs
Microfilm \$2.50, Photocopy \$5.25. PB 116193

National defense contractual progress report no. 9.

1. Insulating materials - Plastics - Electrical properties
2. Polystyrene - Radiation effects
3. Styroflex - Radiation effects
4. Gamma rays - Effects
5. SIG Contract DA36-039-sc-5424, Quarterly report no. 3.

Fourth quarterly report, Apr 15-July 15, 1952, by H. G. Nordlin, D. K. Keel, C. H. Mayhew. Jul 1952. 32p graphs
Microfilm \$2.50, Photocopy \$5.25. PB 116194

National defense contractual progress report no. 12.

1. Insulating materials - Plastics - Electrical properties
2. Gamma rays - Effects
3. Polystyrene - Hydrogenation
4. Polystyrene - Preparation
5. Teflon - Electrical properties
6. Electric conduction
7. SIG Contract DA36-039-sc-5424, Quarterly report no. 4.

Fifth quarterly report, Jul 15-Oct 15, 1952, by H. G. Nordlin. Nov 1952. 35p graphs
Microfilm \$2.50, Photocopy \$5.25. PB 116195

National defense contractual progress report no. 13.

Appendix A: Effects of ionizing radiation on the electrical conductivity of high-quality insulating materials, by F. A. Muller and H. G. Nordlin (Presented at Conference on Electrical Insulation, Lenox, Mass., Oct 2-4, 1952). (Abstract).

1. Insulating materials - Plastics - Electrical properties
2. Gamma rays - Effect
3. Polystyrene - Hydrogenation
4. Ethylene, Chlorotrifluoro - Radiation effects
5. Teflon - Electric properties - Radiation effects
6. SIG Contract DA36-039-sc-5424, Quarterly report no. 5.

Sixth quarterly report, Oct 15, 1952-Jan 15, 1953, by H. G. Nordlin, F. A. Muller, C. H. Mayhew. Feb 1953. 48p graphs (1 fold)
Microfilm \$2.75, Photocopy \$6.50. PB 116196

National defense contractual progress report no. 14.

1. Insulating materials - Plastics - Electrical properties
2. Gamma rays - Effects
3. Polystyrene - Hydrogenation
4. SIG Contract DA36-039-sc-5424, Quarterly report no. 6.

Seventh quarterly report, Jan 15, 1953-Apr 15, 1953, by H. G. Nordlin, F. A. Muller, C. H. Mayhew. May 1953. 43p drawing, graphs, table
Microfilm \$2.75, Photocopy \$6.50. PB 116197

National defense contractual progress report no. 15.

1. Insulating materials - Plastics - Electrical properties
2. Gamma rays - Effects
3. Polystyrene - Purification
4. Polystyrene - Chlorination
5. Polyvinyl chloride - Electrical properties
6. Mylar (Trade name)
7. Q-641 (Dielectric material)
8. SIG Contract DA36-039-sc-5424, Quarterly report no. 7.

Final report, by H. G. Nordlin, D. K. Keel, C. H. Mayhew. Oct 1953. 268p photo, drawings, graphs (1 fold), tables
Microfilm \$9.25, Photocopy \$34.00. PB 116198

Appendix A. Analysis of cobalt-60 radiation field. - B. Irradiation-rate correction factors. - C. Calibration of bridge resistors. - D. Discussion of the mechanisms of conduction. - E. Dielectric absorption calculations. - F. Theoretical study of irradiation effects. - G. Relation between D-C and A-C characteristics of low-loss insulating materials. - H. Effects of ionizing radiation on the electrical conductivity of high-quality insulating materials, by F. A. Muller and H. G. Nordlin (Presented at Conference on Electrical Insulation, Lenox, Mass., Oct 2-4, 1952). - I. Electrical conductivity induced by ionizing radiation in some polymeric materials, by F. A. Muller (Presented at Seminar on the Effects of Ionizing Radiation, Evans Signal Laboratory, Bolinar, N. J., Apr 2-3, 1953). Abstract only.

1. Insulating materials - Plastics - Electrical properties
2. Dielectrics - Electrical conduction
3. Dielectrics - Radiation effects
4. Dielectrics - Preparation
5. Polystyrene - Purification
6. Polystyrene - Electrical conductivity
7. Cobalt - Radioactivity
8. Electric conductivity - Theory
9. Electric conductivity - Measurement
10. Gamma rays - Effects
11. Plastics - Electrical properties
12. Plastics - Effects of radiation
13. SIG Contract DA36-039-sc-5424, Final report.

Mechanical properties at room temperature of four cermets of tungsten carbide with cobalt binder, by Aldie E. Johnson, Jr. U. S. National Advisory Committee for Aeronautics. Dec 1954. 16p photos, diags, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116110

Room-temperature stress-strain curves are presented for compression, tension, and shear loadings on four compositions of tungsten carbide with cobalt binder. Values of modulus of elasticity, modulus of rigidity, Poisson's ratio in the elastic region, ultimate strength, density, and hardness for the four materials are tabulated. NACA TN 3309.

Methods of testing reinforced plastics, parts I and II, by F. T. Barwell. *Gt. Brit. Ministry of Supply. Aeronautical Research Council.* Apr 1948. 34p photos, drawings, diagrs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$2.25. PB 116061

An experimental comparison has been made between five types of tensile tests including novel types designed to enable axial loading conditions to be approached more readily than is the case with established methods. Cover date is 1954. S. O. code no. 23-2702. Contents: Part I: Measurement of tensile strength. - Part II: Measurement of interlaminar strength. - Appendix I. Modulus of elasticity. - Appendix II. Cross breaking test using German apparatus. ARC RM 2702.

ONR technical report II-IV. New York State College of Ceramics, Alfred, N. Y. Jan 1954. 52p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 116163

Contract Nonr-34100, NR 018-606. For Report no. I see Review of Modern Physics, vol. 25, p. 75, 1953. Contents: II. Magnetostriction and permeability of magnetite and related ferrites, by L. R. Bickford, Jr., J. Pappis and J. L. Stull. - III. Linearly varying current source for an electromagnetic, by John Levinson. - IV. Re-analysis of microwave resonance data for low temperature magnetite, by L. R. Bickford, Jr.

1. Magnetite - Magnetic properties 2. Magnetite - Crystal structure 3. Crystals, Magnetite - Magnetic properties 4. Magnetostriction - Measuring equipment - Design 5. Resonance, Ferromagnetic - Absorption 6. Electromagnets - Control systems - Design.

Ordnance Chemicals

Standard laboratory procedures for sensitivity, brisance and stability of explosives. Report no. 1, by A. J. Clear. U. S. Picatinny Arsenal, Dover, N. J. Feb 1950. 44p photos, drawings, diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116184

Detailed procedures for standard laboratory tests used for determining the sensitivity, brisance, and stability characteristics of high explosives, primer and pyrotechnic compositions, propellants and nitrocellulose, have been reviewed and revised for the purpose of bringing the methods up to date. Additional references and drawings have been included, and procedures for determining the brisance and sensitivity to impact and initiation of liquid explosives, as well as the 80°C surveillance test have been added. PATR 1401, Revision 1.

Analytical Chemistry

Analytical method for urea and an evaluation of VCI materials containing urea, by R. L. LeMar. U. S.

Arsenal, Rock Island, Ill. Oct 1954. 27p photo, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00.

PB 116225

A rapid, spectrophotometric method for the determination of urea has been improved and modified for use on vapor corrosion inhibitor materials. A reaction was indicated as occurring between sodium nitrite, urea and monoethanolamine benzoate, resulting in the formation of sodium benzoate. Ordnance project no. TB 5-1101C, Report no. 7. Dept. of the Army project no. 591-07-001. RIAL R 54-3372.

Chemical Engineering and Equipment

Design and operation of a carbon-resistor furnace. Final report under Contract no. AF 33(600)-5885, by E. C. Sesler, Jr., J. A. Slyh, and W. H. Duckworth. Battelle Memorial Institute, Columbus, O. May 1953. 35p photos, drawings (2 fold), diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116134

The design and operation of a carbon-resistor furnace and the control equipment necessary for its operation are described. Drawings, both of the component parts and assemblies, are included.

Miscellaneous Chemicals

Field tests on wood preservatives used for pressure treatment, by D. N. Smith. *Gt. Brit. Dept. of Scientific and Industrial Research. Forest Products Research Board.* 1954. 58p photo, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.65. PB 116058

S. O. code no. 47-68-32.

1. Wood - Preservatives - Uses - *Gt. Brit.* 2. Wood - Preservatives - Tests - *Gt. Brit.* 3. Creosote - Thermal properties - *Gt. Brit.* 4. DSIR FPR 32.

Fungistatic capacities of aromatic fluorine compounds in relation to cloth-rotting fungi, by Leo Roy Tebon. Illinois. State Natural History Survey. Section of Applied Botany and Plant Pathology. Order separate parts as described below from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C., giving PB number of each part ordered.

Part 3: Fluorinated anisoles, benzyls, benzoic acids, biphenyls, phenols, and toluenes. Nov 1952. 54p. \$1.75. PB 111487

Contract no. AF 33(038)-10897, RDO no. 611-15. For Parts 1-2, 4 see PB 115124-115125, 111488. Sixteen aromatic fluorine compounds were tested for fungistatic activity. One proved very exceptional, a dinitrofluorotoluene. It completely

inhibited all four test fungi at concentrations in agar no greater than 10 parts per million. It was tested further for cotton thread used on parachute webbing and was also quite effective. AAF TR 6518, Part 3.

Part 4: Fluorinated phenols, benzyl alcohol, and biphenyls. Jan 1954. 46p graphs, tables \$1.50.
PB 111488

Contract no. AF 33(038)-10897. For Parts 1-2 see PB 115124-115125. Breakdown studies of the tetrahydrate to the dihydrate were conducted up to temperatures of 310°F and under 10^{-5} microns of mercury to determine if failures in adherence of the tertiary zinc phosphates to steel surfaces could be correlated with loss of water of hydration. Further studies recommended. AAF TR 6518, Part 4.

Influence of asymmetrical force fields on some optical, chemical, mechanical and electrical properties. Reports 3-7 under Contract no. N6 onr 269, Task order 8, NR 032-264 and NR 032-265. Pennsylvania State College. School of Mineral Industries, State College, Pa. Jun 1949. 154f diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$6.25, Enlargement Print \$21.50. PB 116213

Contents: Report no. 3. Influence of surface ions on the rate of inversion of mercuric iodide, by W. A. Weyl and D. P. Enright. - Report no. 4. On the surface structure and surface properties of crystals and glasses, by W. A. Weyl. - Report no. 5. Discussion of flow and rupture of cubic crystals from an atomic point of view, by W. A. Weyl. - Report no. 6. Decomposition of complex anions in asymmetrical force fields (derivation of a theory of detonators), by W. A. Weyl. - Report no. 7. Dielectric properties of glass and their structural interpretation, by W. A. Weyl.

Mechanism of aqueous acid - catalyzed aliphatic olefin-t-carbinol interconversion, by Robert W. Taft, Jr., E. Lee Purlee, C. A. DeFazio, P. Riesz. Pennsylvania State University. School of Chemistry and Physics. Feb 1954. 17p graphs (part fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116176

Contract Nonr 656(03) Project NR 055-295.

1. Hydrocarbons, Aliphatic - Condensation products
2. Olefins - Reactions
3. Olefins - Hydration
4. Carbinols - Hydration equilibrium.

New approach to the chemistry of surfaces. Technical reports 14-22 under Contract no. N6onr-269, T. O. 8, NR 032-265. Pennsylvania State College. School of Mineral Resources, State College, Pa. Aug 1950. 187f diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$7.00, Enlargement Print \$25.25. PB 116215

Contents: Report no. 14. Role of ionic deformation in surface chemistry, by W. A. Weyl. - Report no. 15.

Decomposition of hydrogen peroxide by lead fluoride, by D. B. Enright, F. A. Marshall, and W. A. Weyl. - Report no. 16. Surface chemical reactions of silica, by A. I. Cramer, D. P. Enright, K. Forland, T. Forland, E. C. Marboe, P. A. Marshall, Jr., W. A. Weyl. - Report no. 17. Mechanism for the release of protons from silica gel containing "impurities," by Tormod Forland and W. A. Weyl. - Report no. 18. Oxidation mechanisms at the surface of silica gel during its dehydration, by Tormod Forland and W. A. Weyl. - Report no. 19. Atomic structure of water and some of its manifestations, by W. A. Weyl. - Report no. 20. Semiconductors and their catalytic activity, by W. A. Weyl. - Report no. 21. On the formation and the chemical reactions of nascent surfaces, by W. A. Weyl. - Report no. 22. Formulation of ammonia during the dehydration of silica gel in a nitrogen atmosphere, by A. I. Cramer and W. A. Weyl.

Wettability, a function of the polarizability of the surface ions, by L. R. Sonders, D. P. Enright, and W. A. Weyl. Pennsylvania State College. School of Mineral Industries, State College, Pa. Oct 1949. 26f tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Enlargement Print \$5.25. PB 116214

Wettability of crystals, glasses, and even of water itself can be temporarily decreased by bringing ions of high polarizability into their surfaces. Base exchange experiments are described where the hydrogen ions present in the surface layers of bentonite and of a soda-lime glass are replaced by different cations. Report no. 12 under Contract N6 onr 269, Task order 8, NR 032-265.

ELECTRICAL MACHINERY, EQUIPMENT AND SUPPLIES

Communication Equipment

Calculation of the attenuation of electric field strength, by H. J. Peake. Supplement. U. S. Naval Research Laboratory. Feb 1949. 4p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 112013s

Supplement to PB 112013.

1. NRL R3202 Supplement.

Summary of joint nomenclature system ("AN" system for communication-electronic equipment). Joint Communications - Electronics Committee. Jan 1953. 2p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.25. PB 111581

1. Communications - Equipment - Nomenclature.

Electronics

Aerodynamic and radar transmissivity properties of screen materials, by Kenneth N. Astil, Richard W. Trueswell, Michael W. Mitchell, George R. Forbes. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Research Services Division. Mechanical Engineering Section, and Antenna Laboratory, Cambridge, Mass. Sep 1954. 70p photos, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.25, Photocopy \$9.00. PB 116249

The aerodynamic properties of seventeen types of screen materials that could be used for reflectors of radar antennas were determined. Methods, procedures, and results are discussed in Part I. The radar transmissivity properties are discussed in Part II. AAF CRC TR 54-112.

Comparison of linear and circular polarization at X-band by means of a CW doppler radar operating over water, by D. G. Chase. U. S. Naval Research Laboratory. Nov 1954. 8p photos, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116186

A cw doppler radar system was developed incorporating a method of operating with either linear or circular polarization. During measurements, the antenna beam was directed from normal incidence to an angle 25 degrees away from normal. At these angles, results confirm theory that the echo in the circular polarization case will have the same amplitude as in the linear polarization case. It was also demonstrated that the power lost from the signal in hybrid junction duplexing may be substantially recovered by utilizing the properties of circular polarization as applied to duplexing. NRL R 4457.

Design and calibration of microwave antenna gain standards, by William T. Slayton. U. S. Naval Research Laboratory. Nov 1954. 39p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116133

A set of antenna gain-standard horns covering the microwave range from 0.77 cm to 31.5 cm has been designed and carefully calibrated. The horn fabrication is simple and can be duplicated accurately from the drawings supplied. A simple method of extending and improving the accuracy of Schelkunoff's gain curves is also described. NRL R 4433.

Diode coincidence gate for amplitude selection, by Charles Y. Johnson. U. S. Naval Research Laboratory. Sep 1954. 6p diags Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$5.00. PB 111543

A diode coincidence circuit has been developed to select instantaneously the smallest amplitude signal

from a group of input signals. The output signal of the circuit is equal to the smallest input signal plus a "crosstalk" signal. The crosstalk can be made small and decreases with increasing amplitude of the selected signal. The circuit is primarily designed to work at a high input level, i. e., signals greater than 1 volt, and performs best when large signals are used. It is capable of handling signals having rise and fall times of 1 μ sec. NRL R 4432.

Ferroelectrics of barium titanate type, a bibliography (articles appearing in open literature only, with abstracts), compiled by L. O. Anderson. U. S. Naval Ordnance Test Station, Inyokern, Calif. Apr 1952. 83p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$2.25. PB 111550

1. Barium titanate - Ferroelectricity - Bibliography
2. Dielectric materials - Bibliography
3. Ferromagnetic materials - Bibliography
4. NOTS 535
5. NAVORD 1965.

Folded antennas, by Charles W. Harrison, Jr. Harvard University. Cruft Laboratory. Mar 1954. 86p drawings, diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50. PB 116294

A folded antenna consists basically of several parallel close-spaced wires. Two or more conductors may be connected at the outer extremities and others may be left open-circuited. The purpose of this investigation is to develop formulas for the driving-point impedance of sundry folded wire structures. Contract N5ori-76, T. O. no. 1, NR-078-011. HU CL TR 193.

Gas regulator tubes, by Gilbert Edelcreek and Max Yarmovsky. Chatham Electronics Corporation, Livingston, N. J. Sep 1953. 70p drawings, diags, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.75. PB 111544

The processes and designs for a series of four glow discharge voltage regulator tubes were developed according to specifications set forth in Exhibit WCES-52. A laboratory evaluation with adequate data was made which shows the advantages and limitations of each tube type. Contract no. AF 33(616)-248. AAF WADC TR 53-514.

General study of rectangular waveguide (pressurized), by James L. Briggs and Joseph B. Brauer. U. S. Air Force. Air Research and Development Command. Rome Air Development Center, Griffiss Air Force Base, Rome, N. Y. Aug 1954. 38p photos, drawings, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116171

Techniques and materials concerned with the ability of a rectangular waveguide to withstand pressuriza-

tion are presented in this report. Primary emphasis is placed on bi-metallic waveguide structures and a formula for direct calculation of deformation of walls under pressurization for any rectangular waveguide structure. Consideration is given to waveguide deflections under pressurization, electrical effects produced by such deflections and fabrication methods for bi-metallic structures. AAF RADCN 54-10.

Glossary of dyadic Green's functions, by C. T. Tai. Stanford Research Institute, Stanford, Calif. Jul 1954. 27p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116204

A number of dyadic Green's functions defined in the exterior region of some simple geometrical bodies are compiled in this report. The bodies considered are the circular cylinder, the elliptical cylinder, the wedge, the flat ground, the sphere, and the cone. Except for the flat ground, all bodies are assumed to be perfectly conducting. Contract AF 19(604)-266. AAF CRC TN 54-177. SRI Proj 591, Technical report 46.

Microwave noise study. Quarterly reports no. 1 and 2, Feb 1, 1954-Aug 1, 1954 under Contract AF 19(604)-1158, by Winston M. Gottschalk and David Middleton. Raytheon Manufacturing Co. Research Division, Waltham, Mass. Aug 1954. 71p diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 116251

The present investigation is an extension and consolidation of the study of the noise properties of microwave oscillators and the technique of measuring the noise output of such tubes. The majority of the tubes investigated have been CW magnetrons with no modulation, although several reflex and two-cavity klystrons have been studied. A simple experiment yielded results which demonstrated clearly that the major effects could be described in terms of a sine-wave oscillator with angle modulation by noise. More careful measurements indicated that the correct model contains, in addition, amplitude modulation of the carrier by noise, some of which is correlated with that responsible for the angle modulation. Extension of work done under Contracts AF 19(122)-473 and AF 19(604)-636. AAF CRC TN 54-192.

Noise studies on CW klystrons. Period report no. 2, under Contract no. AF 19(604)-1080, by G. A. Espersen and R. A. LaPlante. Philips Laboratories, Irvington-on-Hudson, N. Y. Oct 1954. 6p drawing, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116250

Three PKX-4 klystrons have been completed during the report period and their characteristics are tabulated. The microphonic effects of the tube are less than the microphonic effects caused by elements of the measuring system so that no reliable noise measurements could be made. The design of the PKX-4 is discussed and the method of tuning is given. Case 34-98. AAF CRC TN 54-368.

On the perturbation theory of electromagnetic cavity resonators, by C. H. Papas. California Institute of Technology. Electrical Engineering Dept. Mar 1954. 17p diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 115744

In this note the Lagrangian function for the electromagnetic field of a cavity resonator is found. And from this Lagrangian is deduced a perturbation formula which includes Müller's celebrated result as a special case. The same perturbation formula is derived also from the Boltzmann-Ehrenfest adiabatic theorem in a most simple manner. Technical report no. 3. Nonr 220(14) NR 071-262.

On the theory of wave propagation in non-homogeneous media, by William R. MacLean. Polytechnic Institute of Brooklyn. Microwave Research Institute, Brooklyn, N. Y. Apr 1954. 27p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116185

Contract AF 19(604)-890.

1. Green's functions 2. Huyghens' principle (Sound propagation) 3. Waves, Electromagnetic - Propagation - Theory 4. AAF CRC TN 54-166 5. PIB 310 6. PIB R-376-54.

Practical transmission line network design for V.H.F. and U.H.F. filter applications, n.d. 127p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.25, Photocopy \$16.50.

PB 115942

The object of this paper is to show by very direct and straightforward methods how filters may be designed to operate at high and ultrahigh frequencies.

Standard method for determining multicoupler sensitivity loss, by Francis X. Urrico, Jr. U. S. Naval Research Laboratory. Sep 1954. 16p diags, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.50. PB 111541

From the information obtained in this investigation, the limitations and optimum performance of a multicoupler can be determined and comparison of existing multicoupler units will be simplified. A method has been developed to compare the sensitivity loss of the multicouplers when they are used in conjunction with a "standard" receiver. The performance of a multicoupler in any particular receiving system can be determined from the general equation for sensitivity loss. An experimental procedure, which includes the measurement of the multicoupler noise voltage, has also been developed to provide the data necessary in calculating sensitivity loss. NRL R 4415.

Study of R-F performance measurements. Final report on Contract no. V 36-039-sc-44482, by J. R. Whitford. Sperry Gyroscope Co., Inc., Great Neck,

N. Y. Apr 1951. 130p fold diags, fold graphs
Available from Library of Congress, Publication
Board Project, Washington 25, D. C. Microfilm
\$5.25, Photocopy \$16.50. PB 116073

Dept. of the Army project no. 3-27-01-120. Signal
Corps project no. 26-2051-23. Sperry report 5224-
1227.

1. Radar - Performance 2. Radar - Beacons
3. Radar - Testing equipment 4. Radar, Fire control
5. Radar equipment 6. SIG Contract W36-039-sc-
44482, Final report.

Synthesis. Final report under Contract Nonr-292(00),
Project no. NR-075-215, Apr 1, 1951-Jan 31, 1954,
by Ernst Weber. Polytechnic Institute of Brooklyn.
Microwave Research Institute. Feb 1954. 22p
Available from Library of Congress, Publication
Board Project, Washington 25, D. C. Microfilm
\$2.25, Photocopy \$4.00. PB 116102

Accomplishments relating to network analysis and
synthesis in the frequency spectrum of d-c to micro-
waves, applications of magnetic amplifiers, and syn-
thesis of non-linear circuits are described. Details
are presented including staff and special reports
issued. PIB 298. PIB R-364-54.

Techniques for converting from conventional design of
electronics to modular design of electronics, by
Lucien P. Tuckerman, William W. Murphy, Jr. and
Herbert H. Rosen. U. S. National Bureau of Stand-
ards. 1954. 25p photos, diags (1 fold), table
Available from Office of Technical Services, U. S.
Dept. of Commerce, Washington 25, D. C. \$2.00.
PB 111276

Vol. II of project formerly known as Project Tinker-
toy. For vols. 1, 3-5 see PB 111275, 111277-111278,
111315.

1. Electronic equipment - Design 2. Electronic
equipment - Production 3. Project Tinkertoy, vol. II.

Trouble-shooting in electronics equipment - a pro-
posed method. Special report on a portion of the
project "A study of methods for determining skill,
knowledge and ability requirements for maintenance
of newly developed equipment," prepared by Robert
B. Miller, John D. Folley, Philip R. Smith and John
C. Flanagan. American Institute for Research,
Pittsburgh, Pa. Mar 1953. 113p diags Available
from Library of Congress, Publication Board
Project, Washington 25, D. C. Microfilm \$5.00,
Photocopy \$15.25. PB 116207

Detailed step-by-step procedures based upon rational
and logical considerations are presented. This
"logical" method is compared with a second general
method which is based upon records of previous mal-
functions. Contract no. AF 33(038)-12921. Project
no. 507-008-0001.

Use of real gases in a shock tube, by Russell E. Duff,
supervised by Otto Laporte. Michigan. University.
Institute of Engineering Research, Ann Arbor, Mich.
Mar 1951. 45f photos, diags, graphs, tables

Available from Library of Congress, Publication
Board Project, Washington 25, D. C. Microfilm
\$2.75, Enlargement Print \$7.75. PB 116211

This investigation is concerned with the advantages
and disadvantages of using gases other than air in
the compression and expansion chambers of a shock
tube. Contract N6onr-232, T. O. IV. MU ERI Proj
M720-4.

Visual message presentation. Interim technical re-
port no. 1, Mar 1, 1954 through Aug 31, 1954, un-
der Contract no. AF 19(604)-1039, Item I, by S. H.
Chang, M. W. Essigmann, H. L. Stubbs, L. O.
Dolansky, L. G. Jones, J. Wires, M. L. Bovarnick.
Northeastern University. Electronics Research
Laboratory, Boston, Mass. Aug 1954. 89p photos,
diags, graphs, tables Available from Library of
Congress, Publication Board Project, Washington
25, D. C. Microfilm \$4.00, Photocopy \$11.50.
PB 116234

1. Speech - Analysis 2. Speech - Visual presenta-
tion 3. Speech - Intelligibility 4. Analyzers,
Speech - Design.

Generators, Motors, Transmission

Basic research in nonlinear mechanics as applied
to servomechanisms. Interim progress report no.
PR 16-5 under Contract no. AF 33(038)-21873, by
Leo G. Killian. Cook Electric Co. Cook Re-
search Laboratories, Chicago, Ill. Dec 1952. 36p
photos, diags, graphs Available from Library of
Congress, Publication Board Project, Washington
25, D. C. Microfilm \$2.50, Photocopy \$5.25.
PB 115953

Cook project P-393.

1. Detectors, Phase sensitive - Design 2. Ampli-
fiers - Design 3. Demodulators - Design 4. Servo-
mechanisms - Design 5. Servomechanisms -
Theory.

Development of miniaturized hermetically sealed
variable capacitors. Sprague Electric Co., North
Adams, Mass. Jun 1952. 59p drawings, diagr,
graphs, tables Available from Library of Con-
gress, Publication Board Project, Washington 25,
D. C. Microfilm \$3.00, Photocopy \$7.75.
PB 116252

The contract is directed to the development of small
hermetically sealed variable capacitors which may
be operated at high potentials over a broad range of
temperatures and atmospheric conditions. Reviews
theoretical and experimental work and presents con-
clusions. Department of the Army Project no. 3-
26-00-602. Signal Corps Project 2006. SIG Con-
tract W36-039-sc-38234, Final report.

100-kilocycle high-precision standard of frequency.
Bell Telephone Laboratories, Inc., New York.
Contract no. AF 30(604)-13. Continues research
under Contract AF 28(099)-204. Order separate

parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

First quarterly report, 1 Dec 1952 to 28 Feb 1953. Apr 1953. 91p photos, fold drawing, diags (part fold), graphs (part fold), tables Microfilm \$4.50, Photocopy \$12.75. PB 116119

This report gives detailed operation of the circuitry for frequency generation and control as now proposed. Progress in processing precision crystals is reported and proposed methods for temperature control are described. Report no. 101-A.

Second quarterly report, 1 Mar 1953 to 31 May 1953, edited by J. F. Wentz. Jul 1953. 70p photos, diags, graphs, tables Microfilm \$3.25, Photocopy \$9.00. PB 116120

New component circuitry is described and the results of tests on these circuits given. Minor changes in the crystal design are shown and improved tools for the crystal pilot shop are discussed. The status of the redesigned oven is outlined and tests needed to obtain data on the component parts are described. The plans for testing the overall oscillator are treated in a new section and the status of the testing apparatus is reviewed. Conclusions are itemized in the various sections. Report no. 101-B.

Third quarterly report, 1 Jun 1953 to 31 Aug 1953. Sep 1953. 57p drawings, diags, graphs, tables Microfilm \$3.00, Photocopy \$7.75. PB 116121

This report presents manufacturing details for first model production, new processes for crystal manufacture and details of measuring techniques with data obtained. Report no. 101-C. For 1st-2d reports see PB 116119-116120.

Power supplies, engineering reports, and data, by L. E. Gartner and S. S. Beers. Bendix Aviation Corp. Red Bank Division, Red Bank, N. J. Contract no. AF 33(038)-11219. Order separate reports described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each report ordered.

Phase I. Final engineering report. Jun 1950. 44p drawings, graphs, table Microfilm \$2.75, Photocopy \$6.50. PB 116116

The purpose of this development program is the design and fabrication of miniature power supplies of the rotating type suitable for operation with various pieces of airborne electronic equipment. The program has been divided into phases, the first of which consists of a theoretical analysis of the several factors which influence the performance of units of this type. Engineering report E.S.O. 442-I.

Phase II. Final engineering report. Oct 1950. 69p photos, diags, graphs, tables Microfilm \$3.50, Photocopy \$9.00. PB 116117

Phase II concerns an investigation of materials and methods suitable for the extremely high temperatures indicated by Phase I. Engineering report E.S.O. 442-II.

Phase III-1. Interim engineering report. Mar 1951. 130p drawings (part fold), graphs, tables Microfilm \$5.25, Photocopy \$16.50. PB 116118

Phase III-1 concerns the continuation in part of the materials' investigation of Phase II and also complete design data and calculated performance for the series of four power supplies. Engineering report E.S.O. 442-III-1. See PB 107413 for III-2.

Progress report under Contract N7onr 419, Task 6, by Z. Bay and N. T. Grisamore. George Washington University, Washington, D. C. Feb 1954. 17p diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116098

1. Counters, Pulse - Design 2. Circuits, Trigger - Design 3. Generators, Pulse - Design 4. Vacuum tubes, Photomultiplier - Tests.

Pulse synthesis by networks, by Donald Kirk. U. S. Naval Research Laboratory. Nov 1954. 19p photos, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116072

1. Transient electrical phenomena 2. Generators, Pulse - Design 3. Pulse circuits - Design 4. NRL R 4342.

Research in nonlinear mechanics as applied to servomechanisms, by Perry E. Kendall and Irving Bogner. Cook Electric Co., Chicago, Ill. Dec 1953. 148p photos, diags, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$3.75. PB 111584

The application of nonlinear mechanics to the field of servomechanisms and the development of certain specific applications is described. Contract AF 33-(038)-21673, Final report. AAF WADC TR 53-521.

VHF bridged-T crystal oscillator and measurement of its frequency stability, by Marshall James Field. Cornell University. School of Electrical Engineering, Ithaca, N. Y. Aug 1954. 72p diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 116205

The aim of the work reported in this thesis has been to produce an oscillator operating at about 80 megacycles per second with a frequency stability of one part in 10^7 for approximately four hours. The work done falls into two parts--that of the design and building of the oscillator itself, and that of measur-

ing the frequency and frequency stability of the oscillator output. Various aspects of these two problems are treated in the chapters of this report. Contract AF 19(604)-73. Scientific report no. 4. Research report EE 216. AAF CRC TN 54-254.

Wide-band pulse amplifier for high speed oscillography, by W. F. Weedman and C. B. Dobbie. U. S. Naval Research Laboratory. Sep 1954. 23p photos, diags, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.75. PB 111542

The design procedure for a wide-band push-pull distributed amplifier to drive the deflection plates of a cathode-ray tube is presented. A complete description including performance characteristics and photographs of pulse response is given. NRL R 4431.

Miscellaneous

Annual report, 1953, National Research Council. Division of Engineering and Industrial Research. Conference on Electrical Insulation. Mar 1954. 61p photo, diagr, graphs, tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$3.00. PB 115993

Summaries of technical papers presented at the twenty-second annual conference on research in dielectrics and electrical insulation. Reports of previous years are also available at \$3.00 each. Available are: 1949, 1950, 1951, and 1952. NRC 304.

Digest of literature on dielectrics, vol. XVII, 1953, edited by A. E. Middleton and H. M. Philofsky. National Research Council. Division of Engineering and Industrial Research. Conference on Electrical Insulation. Committee on Digest of Literature. Oct 1954. 191p Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$3.00. PB 116003

Reviews and bibliographies of research in dielectrics and dielectric phenomena, insulating materials, plastics, semi-conductors and related subjects. NRC 330

Some methods of improving the performance of twin-T feedback amplifiers, by T. C. Dixon and D. T. Phillips. U. S. Naval Research Laboratory. Nov 1954. 10p diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116248

It has previously been customary to design an amplifier to have a wide bandwidth without feedback, then apply negative feedback through a twin-T network to obtain selectivity. It is shown that an amplifier whose gain falls off at the rate of 6 db per octave each side of the desired frequency gives better performance. Selectivity can be enhanced by the addition of positive feedback. Two methods of obtaining positive feedback are discussed. NRL R 4444.

Test and certification of the flameproof enclosure of electrical apparatus. Revised. Gt. Brit. Ministry of Fuel and Power. Jul 1951. 28p diagr, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.30. PB 116056

Reprinted 1953. S. O. code no. 41-92-4-51.
1. Electrical equipment - Flame proof - Gt. Brit.
2. Electrical equipment - Insulation - Gt. Brit.
3. MFP TM 4.

FOOD AND KINDRED PRODUCTS

Application of electronic treatments to destruction of insects in packaged military rations and packaging materials, by Bernard E. Proctor, Ernest E. Lockhart, and Samuel A. Goldblith. Massachusetts Institute of Technology. Dept. of Food Technology. Jan 1954. 111p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.00, Photocopy \$15.25. PB 116230

An extensive investigation of the control of insect infestation in ration components by application of ionizing radiations and of the effects of high energy cathode rays on the functional properties of important packaging materials has been made. The most pertinent aspects of the problem were studied in detail and the results critically evaluated. An analysis and discussion of the factors to be considered in the development of specifications for a process are included. Final report for the period Jun 17, 1952 through Dec 31, 1953 under Contract DA-009-QM-19888.

Food acceptance testing methodology, a symposium sponsored by the Quartermaster Food and Container Institute for the Armed Forces, Quartermaster Research and Development Command, U. S. Army Quartermaster Corps, Palmer House, Chicago, 8-9 October 1953, edited by David R. Peryam, Francis J. Pilgrim and Martin S. Peterson. U. S. Quartermaster Food and Container Institute. Oct 1954. 122p graphs, tables Available from Quartermaster Food and Container Institute for the Armed Forces, 1819 W. Fershing Road, Chicago 9, Ill. PB 116136

Contents: I. Panel techniques: Purpose and scope of conference, by Dean Foster. - Variables affecting difference tests, by Carl Pfaffmann, Harold Schlosberg, and Janet Cornsweet. - A dilution method for the determination of relative flavor stability of egg solids, by Helen L. Hanson, Leo Kline and Hans Lineweaver. - Descriptive analysis of flavor, by L. B. Sjöström and Stanley E. Cairncross. - Practical applications of trained panel methodology to food evaluation problems, by L. C. Cartwright. - Ranking versus scoring in palatability tests using small trained panels, by Albert S. Parks. - Selection and training of panels, by Harold Schlosberg, Carl Pfaffmann, Janet Cornsweet, and Rosemary Pierrel. - II. Consumer preference techniques: Military importance of acceptance problems, by

R. Palmer Benedict. - Food preferences and menu planning: The criteria of acceptance, by Bernice W. Polemis. - Field testing of Armed Forces rations, by David R. Peryam. - Effect of bias on preference in the difference-preference test, by Howard G. Schutz and Joseph E. Bradley. - Influence of continued testing on preference ratings, by Joseph E. Bradley, Catherine T. Walliker and David R. Peryam. - Some new psychological methods, by L. L. Thurstone. - Psychophysics and the normality assumption: An experimental report, by Lyle V. Jones and L. L. Thurstone. - General discussion. - List of participants.

Nutrient requirements for domestic animals. National Research Council. Division of Biology and Agriculture. Committee on Animal Nutrition. Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. Order separate parts as described below giving PB number of each part ordered.

Number I: Nutrient requirements for poultry, prepared by the Subcommittee on Poultry Nutrition: H. R. Bird, Chairman, H. J. Almquist, W. W. Cravens, F. W. Hill, James McGinnis. Revised. Jan 1954. 31p photos, tables \$.50. PB 115991

Recommendations on the proper feed combinations, including tables of feed composition, suggested feed mixtures, and discussions of the symptoms of nutritional deficiencies. NRC 301.

Number II: Nutrient requirements for swine, prepared by the Subcommittee on Swine Nutrition: W. M. Beeson, Chairman, E. W. Crampton, T. J. Cunha, N. R. Ellis, R. W. Luecke. Revised. Aug 1953. 32p photos, tables \$.50. PB 115988

1. Swine - Feeding and nutrition 2. Animals - Feeding and nutrition 3. NRC 295.

Number VII: Nutrient requirements for foxes and minks, prepared by the Committee on Fur Bearer Nutrition: Lorin E. Harris, Chairman, C. A. Cabell, C. A. Elvehjem, J. K. Loosli, H. C. Schaefer. Nov 1953. 35p photos, tables \$.50. PB 115989

1. Animals - Feeding and nutrition 2. Foxes - Feeding and nutrition 3. Mink - Feeding and nutrition 4. NRC 296.

Number VIII: Nutrient requirements for dogs, prepared by the Subcommittee on Canine Nutrition: H. E. Robinson, Chairman, G. R. Cowgill, Agnes Fay Morgan, P. H. Phillips, R. H. Udall. Dec 1953. 35p tables \$.50. PB 115990

1. Animals - Feeding and nutrition 2. Dogs - Feeding and nutrition 3. NRC 300.

Problem of providing optimum fluoride intake for prevention of dental caries, prepared by the Subcommittee on Optimum Fluoride Levels: R. F. Sognnaes, Chairman, F. A. Arnold, Jr., H. C. Hodge, O. L. Kline. National Research Council. Division of Bio-

logy and Agriculture. Food and Nutrition Board. Committee on Dental Health. Nov 1953. 19p tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$.50. PB 115987

Conclusions are presented on the basis of sections covering studies of the magnitude of the caries problem, conventional approaches to prevention, the efficacy and safety of fluoridation of water and other possible vehicles. NRC 294.

Recommended dietary allowances. Revised. National Research Council. Division of Biology and Agriculture. Food and Nutrition Board. 1953. 39p tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$.50. PB 115992

Tables and discussion of recommended daily allowances for calories; protein, calcium and phosphorus; iron, copper, etc.; and the various vitamins. Bibliography. NRC 302.

Sodium-restricted diets, the rationale, complications, and practical aspects of their use, by C. S. Davidson, L. E. Clifton, P. A. Clifford, G. J. Gabuzda and Corinne Robinson. National Research Council. Division of Biology and Agriculture. Food and Nutrition Board. Jul 1954. 77p tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$1.00. PB 116000

Normal physiology of sodium metabolism, use of sodium-restricted diets in disease states, complications of sodium restriction, planning sodium-restricted diets, sources of sodium, analytical methods for sodium, salt substitutes. Tables, including sodium and potassium content of foods and sodium in public water supplies. NRC 325.

Studies on the nutritive value of bread and on the effect of variations in the extraction rate of flour on the growth of undernourished children, by E. M. Widdowson and R. A. McCance. Gt. Brit. Medical Research Council. 1954. 146p photos, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.90. PB 116281

S. O. code no. 45-8-87.

1. Flour, Enriched - Nutritive value - Gt. Brit. 2. Bread - Nutritive value - Gt. Brit. 3. Malnutrition - Gt. Brit. 4. Children - Nutrition - Gt. Brit. 5. Nutrition - Metabolism - Gt. Brit. 6. Teeth - Caries - Effect of diet - Gt. Brit. 7. Nutrition - Research - Gt. Brit. 8. Bones - Structure - Effect of diet - Gt. Brit. 9. MRC SR 287.

FUELS AND LUBRICANTS

Burning times of magnesium ribbons in various atmospheres, by Kenneth P. Coffin. U. S. National Advisory Committee for Aeronautics. Dec 1954.

37p photos, drawing, diags, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116113

Some details of the mechanism of the combustion of magnesium ribbons were investigated in mixture of oxygen (17 to 100 percent) and inert gases (A, N₂, He, A-H₂O mixtures). Photographs indicated vapor-phase reaction rather than surface reaction. Burning times were calculated for a vapor-phase process with diffusion and heat transfer. Experimental trends were closely predicted; actual numerical values agreed to well within an order of magnitude. NACA TN 3332.

Friction of possible solid lubricants with various crystal structures, by Marshall B. Peterson and Robert L. Johnson. U. S. Naval Advisory Committee for Aeronautics. Dec 1954. 32p photos, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116114

A number of solids with CdI₂, CdCl₂, and MoS₂ types of layer lattice were tested in a low-speed friction apparatus for lubrication effectiveness. Not all were effective lubricants. Some low-shear-strength solids that did not have a layer lattice were tested and gave surface protection. NACA TN 3334.

Investigation of staining test methods for evaluating soft film petrolatum type corrosion preventives, by Linden H. Wagner. U. S. Arsenal, Rock Island, Ill. Aug 1954. 58p photos, diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 116170

The fact that formulated corrosion preventives contain stain producing ingredients was corroborated in the process of developing a stain test which would be applicable to petrolatum type preservatives. Three methods devised for evaluating preservative oils were investigated for adaptability to petrolatum type compounds. Ordnance project no. TB5-6010A, Report no. 26. D. A. Project no. 593-21-055. RIAL R 54-2619.

Method for determining the solubility of nitrogen in oils under pressure, by Ronald L. Sass. U. S. Arsenal, Rock Island, Ill. Oct 1954. 11p photos, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116168

This report introduces the study of the influence of nitrogen in the oil system of a recoil mechanism. A method was evaluated for determining the amount of nitrogen present in a fluid at equilibrium at various temperatures and pressures. Ordnance project no. TB5-5010B, Report no. 1. D. A. Project 593-21-054. RIAL R 54-3529.

Potentiometric determination of mercaptan-sulphur in aviation turbine fuels, by F. G. Kifson. Canada.

National Aeronautical Establishment. Sep 1954. 18p diagr, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. Also available for exchange from Director, National Aeronautical Establishment, Montreal Road, Ottawa, Canada. PB 116147

Determinations were carried out on a number of fuel samples as well as on synthetic samples of n-butyl mercaptan and thiophenol. The proposed method was found to be more accurate than the A.S.T.M. method and within 2 percent of the amount of mercaptan-sulphur added. NAEC LR 113.

Prediction of flame velocities of hydrocarbon flames, by Gordon L. Dugger and Dorothy M. Simon. U. S. National Advisory Committee for Aeronautics. 1954. 12p graphs, tables Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C. \$15. PB 116174

The effects of four combustible-mixture variables on the laminar flame velocities of hydrocarbon-oxygen-nitrogen mixtures are predicted by semi-theoretical methods based on (1) Semenov equation (thermal mechanism), (2) Tanford-Pease equation (active-particle-diffusion mechanism), and (3) Manson equation (momentum-pressure-drop equation using active-particle concentrations). Empirical equations are summarized which give better predictions, but require more constants. Supersedes NACA TM E52J13. NACA 1158.

HIGHWAYS AND BRIDGES

Deleterious constituents of Indiana gravels, presented at the thirty-third annual meeting, January 12-15, 1954, by D. W. Lewis and Eduards Venters. Highway Research Board. 1954. 14p graphs, map, tables Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. \$30. PB 116246

1. Gravel - Analysis 2. HRB BUL 94 3. NRC 342.

Effect of water on bitumen-aggregate mixtures, compiled by Dorothy Bright. Highway Research Board. 1954. 51p tables Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. \$60. PB 116137

Appendix: Adhesion tests of bituminous materials. 1. Bituminous mixtures - Effect of water - Bibliography 2. Bituminous mixtures - Adhesion tests - Bibliography 3. Water - Effect on pavements - Bibliography 4. HRB B 17 5. NRC 332.

Highway-user taxation, presented at the thirty-third annual meeting, January 12-15, 1954. Highway Research Board. 1954. 53p graphs, maps, tables Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. \$75. PB 116188

Contents: Objectives and concepts of highway-user taxation, by Richard M. Zettel. - Estimate of user taxes paid by vehicles in different type and weight groups, by Edwin M. Cope, John T. Lynch and Clarence A. Steele. - Gasoline consumption, weight and mileage of commercial vehicles, by Robley Winfrey. NRC 340. HRB BUL 92.

Investigation of sawed joints in concrete pavements.

U. S. Army. Corps of Engineers. Ohio River Division Laboratories. Rigid Pavement Laboratory, Mariemont, Ohio. May 1954. 39p table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.00. PB 111536

The purpose of investigation was to determine whether the experience with sawing of contraction joints in concrete pavements is sufficiently satisfactory. Experiences at airfield projects covered in this survey indicate that it is a practicable and desirable method of constructing the joints. The procedure which will give best assurance of eliminating random cracking is to saw joints consecutively at the required spacing in the sequence of concrete placement as soon as concrete can be sawed without damage. Sealing of sawed joints with JFR sealers has not been completely satisfactory and improvements are necessary in the equipment methods used in sealing the joints. Rigid pavement investigation study of pavement joints.

State highway organization charts. Highway Research Board. Committee on Highway Organization and Administration. 1954. 61p diagrs Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. \$.75. PB 116127

Special report 20.

1. Road departments - Organization 2. HRB SR 20
3. NRC 352.

INSTRUMENTS

Apparatus for surface-area determinations and other adsorption studies on solids, by R. F. Vance and J. N. Pattison. Battelle Memorial Institute, Columbus, Ohio. Aug 1954. 20p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116263

This paper briefly summarizes the background and usefulness of adsorption studies for the determination of surface area, pore structure, and adsorptive behavior of solids. It also gives details of the construction, calibration, and operation of a versatile volumetric apparatus for this purpose, as well as the calculations involved in the determination of surface areas.

Bericht über ein amerikanisches bombensteuergerät (Report on an American bomb control mechanism). Deutsche Versuchsanstalt für Luftfahrt, E. V.

Institut für Elektrophysik. Oct 1944. 9f photos, drawing (Text in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Enlargement Print \$2.75. PB 113404

1. Bombs - Control apparatus - Germany
2. Micro ZWB UM 4382.

Construction and operation of broadband bolometer powermeters for 20 to 10,000 mc/sec. and 25 uw-5w, by Herbert J. Carlin and Eugene Torgow. Polytechnic Institute of Brooklyn. Microwave Research Institute, Brooklyn, N. Y. Sep 1948. 60p drawings (part fold), diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 116187

The construction of a series of microwave bolometer powermeters, which cover the frequency band 20 to 10,000 mc/sec. and a power range of 25 uw to 5 watts is described. In manufacture the devices are pre-tuned and this procedure, together with maintenance instructions is given in detail. The use of lossy coaxial attenuators to extend the power handling capacity of the bolometer powermeters is discussed. Construction of the bolometer elements, the bolometer casing, and installation of the element in the casing, and the adjustments of the completed bolometer are given in a step by step procedure. Typical curves illustrating the characteristics of the powermeters and attenuators are presented. Contract W33-038-ac-13848. PIB 126. PIB R 181-48.

Development of powermeters over the frequency range 20 Mc/sec to 10,000 mc/sec and 25 uw to 1,000 watts. Final report under Contract no. W-33-038-ac-13848, by Herbert J. Carlin. Polytechnic Institute of Brooklyn. Microwave Research Institute, Brooklyn, N. Y. Apr 1949. 107p drawings (1 fold), diagrs, graphs, tables (2 fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.75, Photocopy \$14.00. PB 116139

Included in this project was the development of ten separate bolometer powermeters covering various sections of the frequency band and power range, with suitable attenuators for range adjustment, a new type of d.c. bridge for use with the powermeters, and high power coaxial loads. Some pages will not reproduce well. Appendix A: Typical operating curves for power meters and attenuators. - Appendix B: Direct reading D-C bridge for microwave power measurements, by Herbert J. Carlin and Judd Blass, Dec 1947. (Report R-165-47, PIB-111). - Appendix C: Bolometric measurement of microwave power over broad frequency bands, by Herbert J. Carlin, Apr 1949. (Report R-200-49, PIB 144). - Appendix D: A broadband high power microwave attenuator, by Herbert J. Carlin, Apr 1949. (Report R-199-49, PIB-143). - Appendix E: Tests on high power coaxial loads for microwave powermeters, by Morton Tanenbaum, Apr 1949. (Report R-198-49, PIB-142).

Dichromatic radiation pyrometer. Final report on Contract Nonr 444(00), by William S. Tandler, Richard H. Tourin, Morris Grossman. Industrial Scientific Co., New York, N. Y. Feb 1954. 104p photos, drawings, diags (part fold), graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.75, Photocopy \$14.00. PB 116183

The basic principles of the dichromatic pyrometer were studied theoretically and experimentally, and an experimental instrument was developed and tested. The results obtained in the course of this work led to two main conclusions: 1. The instrument represents a practical approach to temperature measurement in jet engines and in similar applications. 2. Sufficient design data and laboratory experience have been accumulated to begin engineering work on a field instrument for use in engine test and development work. Report no. 233-1.

Fundamental studies on scintillation phosphors. Quarterly report no. 2 under Contract no. AF 18-(600)-352, Sep 1952-Dec 1, 1952, by L. Reiffel. Armour Research Foundation, Chicago, Ill. Jan 1953. 42p fold photo, fold drawings, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116075

Technical report no. 1. Project no. A033-0 (Formerly 90-1262A).
1. Afterglow - Measurement 2. Crystals, Sodium iodide - Phosphorescence 3. Instruments, Radiation detection - Design 4. Instruments, Measuring - Pressure - Design 5. ARF Proj A033-0, Report no. 2.

Instrument for the rapid and continuous determination of low concentrations of water vapor in gases, by Clarke C. Minter. U. S. Naval Research Laboratory. Oct 1954. 16p diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116321

A new thermal conductivity apparatus has been developed for the rapid and accurate determination of water vapor in air or other gases over a wide range of concentrations, even down as low as that corresponding to a dew point of -50°C . NRL R 4437.

Instrumentation development. Quarterly report no. 4 under Contract no. NI74s-10153. Reed Research, Inc., Washington, D. C. Feb 1954. 10p diags, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116076

Project RR-796.
1. Instruments, Measuring - Pressure - Design
2. Light - Sources - Electroluminescent.

Machine computation of residual matrices for factor analysis, by Maurice H. Friedman and Joe H. Ward, Jr. U. S. Air Force. Air Research and Development Command. Human Resources Research Cen-

ter. Personnel Research Laboratory, Lackland Air Force Base, Texas. Oct 1953. 9p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116247

1. Factor analysis 2. Matrix theory 3. Computers, Electronic - Operation 4. AAF HRRC RB 53-38.

Report of test on annunciators - four drop, by D. T. Scuderi. Edwards and Co., Inc., Norwalk, Conn. Jul 1943. 12p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116254

The samples were set up at this Laboratory in suitable test circuits where their performances were carefully observed for compliance with the specification. An inspection of the samples to determine compliance in the matter of materials, design, and workmanship, concluded the test. NRL B-2080.

Water treatment, prevention of scale in sea water distillation, by Charles H. Spaulding and Don C. Lindsten. U. S. Army. Corps of Engineers. Engineer Research and Development Laboratories, Fort Belvoir, Va. Apr 1953. 130p photos, drawings, diags, graphs, tables (part fold) Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$3.25. PB 111569

Project 8-75-05-002.

1. Sea water - Distillation 2. Distillation - Apparatus - Design 3. Distillation - Apparatus - Scale prevention 4. ERDL R 1287.

LEATHER AND LEATHER PRODUCTS

Development of water resistant leathers, by Nicholas D. Cheronis. U. S. Office of the Quartermaster General. Research and Development Branch. Apr 1954. 347p photos, diags, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$8.75. PB 111540

Bibliography and patents: p. 307-333.

1. Leather - Water resistance 2. Leather - Water proofing 3. Shoes - Waterproofing 4. QMC LSR 8.

LUMBER AND WOOD PRODUCTS

Non-destructive testing of wood laminates. Reports from Sep 28, 1953 to Feb 28, 1954 to Office of Naval Research, by S. V. Galgaitis and G. Gazo. Louisville. University. Institute of Industrial Research, Louisville, Ky. Feb 1954. 16p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116100

1. Wood, Laminated - Tests 2. Non-destructive tests 3. Resonance, Radiofrequency - Tests.

Use of forest produce in sea and river defence in England and Wales, by J. R. Aaron. Gt. Brit. Forestry Commission. 1954. 26p photos, map, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$40. PB 116284

S. O. code no. 71-12-29.

1. Breakwaters - Gt. Brit. 2. Forest products - Uses - Gt. Brit. 3. Timber - Uses - Gt. Brit. 4. FC FR 29.

MEDICAL RESEARCH AND PRACTICE

Anthropometry of flying personnel, 1950, by H. T. E. Hertzberg, G. S. Daniels, and E. Churchill. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Aero Medical Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio and Antioch College, Yellow Springs, Ohio. Sep 1954. 140p photos, drawings, map, graph, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$3.50. PB 111583

Contract AF 18(600)-30.

1. Personnel, Flying - Measurements 2. Anthropometry 3. AAF WADC TR 52-321.

Effect of acoustic environment upon speaker intelligibility, by Robert W. Peters. U. S. Naval School of Aviation Medicine, Naval Air Station, Pensacola, Fla., and Ohio State University Research Foundation, Columbus, Ohio. Aug 1954. 8p graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116233

Speakers read lists from multiple-choice intelligibility tests while simultaneously hearing one of six acoustic signals. The six types of interfering acoustic signals presented to the subjects were selected to represent types of material which would be in the listening environment of speakers in various military communication situations. Mean intelligibility values for the speakers reading under the different acoustic circumstances were determined from listener responses to the reading of the lists. Joint project report no. 26 under Contract N6onr 22525, Project no. NR 145-993. NMRI Proj NM 001 064.01.26.

Effect of high-pass and low-pass filtering of side-tone upon speaker intelligibility, by Robert W. Peters. U. S. Naval School of Aviation Medicine, Naval Air Station, Pensacola, Fla. and Ohio State University Research Foundation, Columbus, Ohio. Aug 1954. 8p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116232

Forty-eight speakers read multiple-choice intelligibility test lists under conditions of either low-pass or high-pass filtering of side-tone. The sound pressure level of the side-tone was kept constant for all band-pass conditions. The results indicate that speaker intelligibility improves significantly when the frequencies above 600 cps are attenuated in the side-tone circuit. Joint project report no. 25 under Contract N6onr 22525, Project NR 145-993. NMRI Proj NM 001 064.01.25.

Final report under Contract N6onr-249, T. O. 5, NR-183-333. Pennsylvania. University. School of Dentistry. Dept. of Microbiology. Jan 1954. 11p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116272

1. Respiratory tract - Microorganisms 2. Microorganisms - Isolation 3. Microbiology - Research.

Further studies in the relationship of bioelectric phenomena to intravascular thrombosis. Annual progress report under Contract Nonr 551(09) NR 112-330, by Philip N. Sawyer and Bernhard Deutsch. Pennsylvania. University. Schools of Medicine. Harrison Dept. of Surgical Research, Philadelphia, Pa. Jan 1954. 8p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116235

1. Blood vessels - Walls - Electrical properties 2. Thrombosis, Intravascular.

Health, medical and drug factors in highway safety: Proceedings of the second Highway Safety Research Correlation Conference, April 5-6, 1954, Washington, D. C. National Research Council. Committee on Highway Safety Research. Sep 1954. 215p graphs, tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$1.25. PB 116001

Papers devoted to the problem of highway safety as seen from practical traffic administration, police and engineering points of view; health and self-medication as traffic accident causes; diabetes, epilepsy, heart attacks, and convulsive therapy on an ambulatory basis as possible traffic accident causes; fatigue, low oxygen and combustion products as traffic accident causes; blood alcohol level and extent of traffic accident hazard; and a presentation of the recommendations developed by working groups and discussed by the Conference. NRC 328.

Nature of cytotoxic reactions mediated by antibody and complement, and related phenomena, by Manfred M. Mayer. Johns Hopkins University, Baltimore, Md. Jan 1954. 16p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116273

Annual progress report, Jan 1, 1953-Dec 31, 1953 under Contract Nonr-248(17) NR 121-104.

1. Antibodies - Hemolysis 2. Erythrocytes - Effects of radiation 3. Hemolysis - Theory 4. Tracers, Radioactive - Biological.

Rate of gaseous nitrogen elimination during rest and work in relation to the occurrence of decompression sickness at high altitude, by Bruno Balke. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Oct 1954. 7p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116237

Susceptibility to decompression sickness at high altitude was determined in human subjects after breathing ambient air or oxygen during rest and exercise at ground level. Nitrogen elimination from blood and tissue was measured during preoxygenation. In breathing oxygen the rate of denitrogenation increased as a result of higher circulation rates as indicated by higher work intensities. AAF SAM Proj no. 21-1201-0014, Report no. 6.

Respiratory physiology in aviation, by Walter M. Boothby. U. S. Air Force. School of Aviation Medicine, Randolph Air Force Base, Texas. Sep 1954. 193p photos, drawings, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$7.25, Photocopy \$25.25. PB 116240

Project no. 21-2301-0003. Cover-title: Handbook of respiratory physiology. Contents: Foreword. Training for the recognition of oxygen emergencies in high-altitude flying, by Charles A. Lindbergh. - 1. Pulmonary function: Historical, by C. G. Douglas. - 2. Pressure-volume diagram of the breathing mechanism, by Wallace O. Fenn. - 3. Sampling of alveolar gas, by Hermann Rahn. - 4. Volume and partial pressures of respiratory gases at altitude, by W. M. Boothby, W. R. I. ovelace, II, O. O. Benson, Jr., and A. F. Strehler. - 5. Respiratory functions of blood, by F.J.W. Roughton. - 6. Chemical and nervous control of respiration, by Hohwß Christenson. - 7. Use of oxygen equipment, by Loren D. Carlson. - 8. Physiological aspects of pressure cabins and rapid decompression, by Ulrich C. Luft. - 9. Respiratory features of acclimatization to altitude, by R. L. Riley, A. B. Otis, and C. S. Houston. - 10. Significance of high concentrations of carbon dioxide in aviation medicine, by Clayton S. White. AAF SAM Proj 21-2301-0003.

Studies on microbial resistance to drugs. Annual progress report on Contract Nonr-39500, NR 135 045, Jan 1, 1953 to Feb 1, 1954, by M. G. Sevag, Gow Lam, and Irving Davis. Pennsylvania. University, Philadelphia, Pa. Feb 1954. 11p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116181

1. Drugs - Effectiveness 2. Microbiology - Research.

Symposium on the laboratory propagation and detection of the agent of hepatitis, held under the joint

sponsorship of the Panel on the Sterilization of Blood and Plasma of the National Academy of Sciences, National Research Council and the Commission on Virus and Rickettsial Diseases of the Armed Forces Epidemiological Board, Bellevue Hospital, New York City, 31 Mar 1954. Sep 1954. 116p photos, diagr, graph, tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$1.00. PB 115999

This symposium was held in order to review and correlate all available information on attempts to propagate the hepatitis virus (IH and SH) in the laboratory in various media and animal hosts. Papers were presented on viruses causing hepatitis in certain species of animals, testing for immune bodies against the hepatitis agent, and describing the source, potency, and availability of clinical materials for laboratory testing. Bibliography and general discussion follow each presentation. NRC 322.

METALS AND METAL PRODUCTS

Correlation list of American and European composition of stainless steel, compiled by Netherlands Technical Services, The Hague, reviewed by Roy W. Tindula. U. S. Office of Technical Services. Oct 1954. 12p tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.50. PB 111549

1. Steel, Stainless - Analysis 2. Steel, Stainless - Manufacturers.

Corrosion of metals of construction by alternate exposure to liquid and gaseous fluorine, by Richard M. Gundzik and Charles E. Feiler. U. S. National Advisory Committee for Aeronautics. Dec 1954. 10p photos, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116053

The corrosion of 3S-0 and 52S-0 aluminum, AISI 347 and 321 stainless steels, "A" nickel, and low-leaded brass by alternate exposure to liquid and gaseous fluorine has been determined for periods of up to 3-1/2 months. Under the conditions of the experiments, the corrosion of these metals was found to be negligible. NACA TN 3333.

Development of procedures for the identification of minor phases in heat-resistant alloys by electron diffraction. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Contract no. AF 33(616)-23. Reports by L. O. Brockway and W. C. Bigelow. Order separate reports as described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each report ordered.

Quarterly progress report no. 1, period 15 Jan to 15 Apr 1952. Apr 1952. 19p photos, table Microfilm \$2.00, Photocopy \$2.75. PB 116140

The adaptation of electron diffraction methods to the identification of minor constituents in heat-resistant alloys is under investigation. Studies are being carried out to select suitable polishing, etching, and rinsing procedures for preparing specimens of 16-25-6, S816, Inconel-X and low-carbon N-155 alloys for electron diffraction studies. MU ERI Proj 2020, Report no. 1.

Progress report no. 2 for the period 15 Apr to 15 Jul 1952. Jul 1952. 19p photos, tables Microfilm \$2.00, Photocopy \$2.75. PB 116141

The work devoted primarily to 16-25-6 and S816 alloys. Studies have been made to develop polishing and etching procedures for use in preparing samples of each of these alloys for study by electron diffraction methods. MU ERI Proj 2020, Report no. 2.

Progress report no. 9 for the period 15 Jan to 15 Apr 1954. Apr 1954. 17p photos, graph, tables Microfilm \$2.00, Photocopy \$2.75. PB 116142

Electron diffraction and x-ray diffraction studies of specimens of Inconel-X alloy aged for periods up to 1000 hours at 1200^o, 1400^o, and 1600^oF have been made. Columbium carbonitride, titanium nitride and a complex M₂₃C₈-type carbide have been identified in the specimens aged at 1200^o and 1400^oF while only the columbium carbonitride and the titanium nitride were found in the specimens aged at 1600^oF. MU ERI Proj 2020, Report no. 9.

Dynamic creep and rupture properties of temperature resistant materials under tensile fatigue stress. Syracuse. University. Dept. of Materials Engineering, Syracuse, N. Y. Nov 1949. 42p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116167

Newly developed dynamic testing machines and measuring equipment for determining creep and rupture properties are described. Data on several temperature-resistant materials are presented within mean stress alternating stress coordinates to show the influence of dynamic stress on creep and time to rupture. The relationships between testing temperature and dynamic stress influence on creep and rupture are shown. The increased creep and rupture resistance during some of the dynamic tests is discussed in terms of possible metallurgical changes caused by cyclic stress. Cover date is Feb 1950. Contract W33-038-ac-15941 (17507). AAF TR 5930.

Fatigue properties of aluminum alloys at various direct stress ratios, by B. J. Lazan and A. A. Blatherwick. Minnesota. University, Minneapolis, Minn. Contract no. AF 33(038)-20840. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part I: Rolled alloys. Sep 1953. 87p photos, drawings, graphs, tables Microfilm \$4.00, Photocopy \$11.50. PB 116164

Newly developed equipment for axial stress fatigue testing in the tension-compression range is described. Fatigue data on 14S-T6, 24S-T4, and 75S-T6 aluminum alloys are presented. The extreme flatness of the stress range diagrams for severely notched specimens at long life is discussed. Unifless stress range diagrams are presented. Data on the reduction in fatigue strength caused by notches are diagrammed to clarify the significance of mean stress, alternating stress, stress ratio, and cycles to failure as factors in fatigue notch sensitivity. AAF WADC TR 52-307, Part I.

Part II: Extruded alloys. Dec 1952. 35p photos, drawings, graphs, tables Microfilm \$2.50, Photocopy \$5.25. PB 116165

Axial-stress fatigue tests were performed at various stress ratios on extruded aluminum alloys 14S-T6, 24S-T4, and 75S-T6 using one unnotched and one notched type of round specimen. The data are presented in the form of S-N curves and stress-range diagrams to analyze the effect of: (a) stress ratio, ranging from static tension to reversed axial stress, (b) stress magnitudes which cause failure in the range from 10³ to 10⁷ cycles, and (c) stress concentration resulting from a circumferential V-notch. The notch-sensitivity data are further analyzed by diagrams which display the importance of stress ratio, stress level, and life on fatigue strength reduction. The fatigue properties of the three extruded alloys are compared both with each other and with rolled aluminum alloys. AAF WADC TR 52-307, Part II.

Fundamentals of the transition temperature phenomenon in steel. Ninth progress report under Contract Nonr 266(07), 1 Oct 1953-31 Dec 1953, by J. O. Brittain and M. Gensamer. Columbia University. School of Mines, New York, N. Y. Feb 1954. 6p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116097

1. Steel - Transition temperature 2. Iron - Hydrogenation 3. Steel - Friction coefficients 4. Molybdenum - Friction coefficients.

Increased production, reduced costs through a better understanding of the machining process and control of materials, tools, machines. Vol. 2. Curtiss-Wright Corporation, Wood-Ridge, N. J. 1951. 198p photos, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.00. PB 111582

Contract no. AF 33(038)-9948. For vol. 1 see PB 104549. See also PB 106657.

1. Tools, Machine - Operation 2. Metals - Machinability 3. Steel - Machinability 4. Steel - Microstructure 5. Metals - Microstructure.

Influence of the carrier on the catalytic activity of adsorbed heavy metal ions, by Dorothy P. Enright, Evelyn C. Marboe and W. A. Weyl. Pennsylvania State College. School of Mineral Industries, State

College, Pa. Oct 1948. 12f Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Enlargement Print \$4.00. PB 116212

Experiments are described which demonstrate that heavy metal ions such as Hg^{2+} , Pb^{2+} , or Ag^+ have little or no effect on the decomposition of hydrogen peroxide in aqueous solution unless they are adsorbed on a rigid carrier. An explanation of the profound influence of the nature of the carrier on the catalytic behavior of these ions is presented on the basis of K. Fajans' theory of the polarization of ions. Report no. 1 under Contract N6onr 269, T. C. 8, NR 032-266.

Investigation of refractories suitable for melting titanium and its alloys. Report no. 1 under Contract no. AF 33(038)-23280, by L. E. Marchi and W. A. Scholes. Armour Research Foundation, Chicago, Ill. Jun 1951. 21p fold graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116175

The primary problem is the development of a complex fluoride or oxide-fluoride whose melting point lies as much above 1700°C as is feasible. ARF Proj 90-1004G, Report no. 1.

Investment precision casting, by Roy W. Tindula. U. S. Office of Technical Services. Oct 1954. 27p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.75. PB 111001r

Revision of PB 111001.
1. TAS 101 Revised.

Spectrochemical analysis of titanium metal and alloys. Interim report no. 3 under Contract no. DA-018-ORD-11511, by J. H. Enns. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Aug 1953. 36p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116209

The porous-cup-solution technique described previously in the Interim Technical Report No. 2 for the analysis of Fe and Cr in titanium alloys has been extended to include Al and Mn. Project M973. ORD TB 1-12045-2. For Reports no. 1-2 see PB 108884-108885. MU ERI Proj M973, Report no. 3.

METEOROLOGY AND CLIMATOLOGY

Atmospheric studies of large scale transfer fields over the North American continent, prepared by George S. Benton, edited by Jack Dornitz and Bernard E. Dethier. Johns Hopkins University. Dept. of Civil Engineering, Baltimore, Md. Sep 1954. 237p maps, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$8.50, Photocopy \$30.25. PB 116262

Final report, part 1 under Contract AF 19(122)-365. For Pt. 2 see PB 116356.
1. Atmosphere - Circulation 2. Atmosphere - Water content 3. Atmosphere - Turbulence 4. Evapotranspiration - Turbulence - Spectrographic 5. Eddy currents 6. AAF CRC TR 54-260.

Compilation and study of ice thicknesses in the northern hemisphere, 1952-1953, by Theodore Ryder. American Geographical Society, New York, N. Y. Jun 1954. 193p map, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$7.25, Photocopy \$25.25. PB 116259

Contract DA19-016-ENG-2313. Investigation of construction and maintenance of airdromes on ice, fiscal year 1954. Supplements A-B are Tabulations of ice thickness data, 1952-1953.
1. Ice - Measurement - Bibliography 2. Ice - Measurement - Tables.

Depth of snow cover in the northern hemisphere. U. S. Army. Corps of Engineers. New England Division. Arctic Construction and Frost Effects Laboratory, Boston, Mass. Jun 1954. 118p col. maps, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.00, Photocopy \$15.25. PB 116203

Investigation of construction and maintenance of airdromes on ice, fiscal year 1954. Color in maps will not reproduce.
1. Snow - Measurement.

Electrodynamics of the outer atmosphere, by J. W. Dungey. Pennsylvania State University. Ionosphere Research Laboratory, State College, Pa. Sep 1954. 55p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 116131

Contract no. AF 19(122)-44.
1. Atmosphere, Upper - Electrodynamics - Theory 2. Alfvén waves 3. Particles, Charged - Distribution 4. PSC IRL SR 69.

Empirical relations between the weather and the ocean mixed layer, by Robert A. Gilcrest, Glenn H. Jung, John C. Freeman, Jr. Texas. Agricultural and Mechanical College. Dept. of Oceanography, College Station, Texas. Apr 1954. 24p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116279

Contract N7onr-487, T. C. 3, Project NR 083-061. Technical report no. 8, Project 29. Ref 54-261.
1. Boundary layer, Sea - Air 2. Ocean surface - Effects of wind stress 3. Ocean surface - Momentum transfer 4. Sea water - Temperature.

Fluctuations of starlight. 3: Stellar scintillation and image motion, by Roger Hosfeld. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Electronics Research Directorate. R-F Components Laboratory, Cambridge, Mass. Aug 1954. 11p photos, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116161

Stellar scintillation and stellar image motion are shown by three types of observations to be essentially independent criteria of astronomical "seeing." In particular, it is demonstrated that scintillation is not produced in the immediate neighborhood of the telescope whereas image motion is strongly affected by local air disturbances. It appears therefore that stellar scintillation may be a useful probe for atmosphere studies. AAF CRC TR 54-108.

Forecasting upper-level winds. Part 2: Differential analysis in the troposphere. U. S. Air Force. Air Weather Service, Andrews Air Force Base, Washington, D. C. Aug 1954. 39p maps, diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116201

For Part 1 see PB 115662.

1. Atmosphere, Upper - Turbulence 2. Winds, Tropospheric - Forecasting 3. AAF AWS M 105-50/2.

Frequency and duration of low temperatures at Fort Churchill, Manitoba, Canada, by Fernand de Percin and Sigmund J. Falkowski. U. S. Army. Quartermaster Research and Development Command. Environmental Protection Division, Quartermaster Research & Development Center, Natick, Mass. Jul 1954. 15p map, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116125

Project reference: 7-83-03-008B.

1. Temperature - Measurement - Canada 2. QMC EP-2.

Investigation of atmospheric radio noise, by A. W. Sullivan. Florida. Engineering and Industrial Experiment Station. Dept. of Electrical Engineering, Gainesville, Fla. Contract no. AF 19(604)-876. Order separate reports as described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each report ordered.

Progress report no. 3, 1 Jan-31 Mar 1954. May 1954. 86p graphs Microfilm \$4.00, Photocopy \$11.50. PB 116122

For Reports no. 1-2, see PB 113559, PB 113764.

1. Noise, Atmospheric - Measurement 2. Radio - Noises 3. Radio telegraph - Noise 4. Radio teletype - Noise 5. Radio receivers - Noise 6. Communication systems - Noise reduction 7. Radio communication - Articulation.

Progress report no. 4, 1 Apr-30 Jun 1954. Aug 1954. 37p graphs Microfilm \$2.50, Photocopy \$5.25. PB 116123

1. Noise, Atmospheric - Measurement
2. Radio - Noises 3. Radio telegraph - Noise
4. Radio teletype - Noise 5. Communication systems - Noise reduction 6. Radio communication - Articulation 7. Meters, Sound - Design.

Investigation of electrical properties of the atmosphere. Appendix to final report under Contract no. AF 19(604)-251, by G. R. Wait and W. D. Parkinson. Carnegie Institution of Washington. Dept. of Terrestrial Magnetism. Jul 1953. 635p photos, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.00, Photocopy \$80.00. PB 112131s

Supplement to PB 112131.

Measurement of infrared transmission through clouds on Mt. Washington, using infrared receiving set AN/AAR-6, by Alexander F. Sadowski. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Aircraft Radiation Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Apr 1952. 56p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 116129

Measurements of transmission of narrow-band infrared radiation through clouds are described and an analysis of the data has been made. The data is presented by a method which is considered new to the study of infrared propagation through cloudy atmosphere. A statistical correlation of the transmission of infrared through heavy fog with the total cross sectional area of water droplets is determined. AAF WADC TR 52-174.

Micrometeorology of the surface layer of the atmosphere, the flux of momentum, heat, and water vapor. Final report under Contract AF 19(604)-289, by C. W. Thornthwaite and M. H. Halstead. Johns Hopkins University. Laboratory of Climatology, Seabrook, N. J. 1954. 132p drawings, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.75, Photocopy \$17.75. PB 116231

Instruments and measuring procedures and the results from all observation sites are discussed. A physical model of the turbulent transfer process which permits prediction of the relation of the turbulent exchange coefficients for momentum, heat, and water vapor is presented. Continuation of Contract no. W28-099-ac-378. Includes quotations from reports on this contract. Contents: 1. Introduction, by C. W. Thornthwaite. - 2. Measurement of air temperature profiles, by Donald J. Portman. - 3. Measurement of humidity profiles, by C. W.

Thornthwaite and Owen Beenhouwer. - 4. Development of anemometers for observing wind gradients, by C. W. Thornthwaite. - 5. Measurement of wind profiles, by Maurice H. Halstead. - 6. Measurement of surface drag, by Maurice H. Halstead and R. I. Ono. - 7. Measurement of radiation, by Donald J. Portman. - 8. Measurement of temperature and heat transfer in the soil, by Donald J. Portman. - 9. Measurement of soil moisture tension, by Henry Hacia. - 10. Mobile meteorological station, by William J. Superior. - 11. Measured and computed transpiration in 1947-1953, by John R. Mather. - 12. Microclimatic net, by Douglas B. Carter. - 13. Determination of the soil heat transfer at O'Neill, Nebraska, by Donald J. Portman. - 14. Fluxes of momentum, heat, and water vapor in micrometeorology, by Maurice H. Halstead. - Appendix I: Heat budget computations, O'Neill, Neb., Aug and Sep 1953.

Modification of air masses over the Gulf of Mexico. Final report under contract no. AF 19(604)-169, by Guy A. Franceschini. Texas. Agricultural and Mechanical College. Dept. of Oceanography, College Station, Texas. Oct 1954. 5p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116267

A & M Project 44 - Reference 54-61F.

1. Atmosphere - Circulation 2. Recorders, Hydrographic - Uses 3. Trajectories, Water droplet - Calculation 4. AAF CRC TR 54-256.

New standard atmosphere: The WADC 1952 model atmosphere, by D. T. Williams, J. C. Bell, and W. F. Nash. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Aircraft Laboratory, Wright-Patterson Air Force Base, Dayton, O. and Battelle Memorial Institute, Columbus, O. Mar 1954. 54p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.50. PB 111585

1. Atmosphere, Upper - Models 2. Atmosphere, Upper - Density - Determination 3. Atmosphere, Upper - Pressure tables 4. Sound - Speed - Effect of pressure 5. AAF WADC TR 54-215.

Snow studies on the Juneau ice field, by Edward R. LaChapelle. American Geographical Society. Dept. of Exploration and Field Research, New York, N. Y. Mar 1954. 81p photos, drawings, map, graphs (part fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50. PB 116208

J.I.R.P. Report no. 9.

1. Snow - Measurement 2. Snow - Measuring equipment - Design.

Total transmission of the atmosphere in the near-infrared, by Harold Yates. U. S. Naval Research Laboratory. Sep 1951. 25p graphs, tables Available from Library of Congress, Publication Board

Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116130

No new experimental data are presented. The results are presented in two forms: 1) curves from which the transmission of all the radiation between 0.7 and 12 microns can be read as a function of any given set of atmospheric conditions and black-body source temperature (up to 6000°K) and 2) tables from which curves of the above nature can be manufactured for any desired wavelength region within the limits of 0.7 and 12 microns. NRL R 3858.

MINERALS AND MINERAL PRODUCTS

Crystal chemistry of defective structures. Technical reports no. 24-31 under Contract N6onr-269, Task order 8, NR 032-265. Pennsylvania State College. School of Mineral Industries, State College, Pa. Jan 1951. 131f diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.75, Photocopy \$19.00. PB 116217

Contents: Report no. 24. Effect of foreign atoms on the electric properties of crystals, by W. A. Weyl. - Report no. 25. Influence of impurities on the electrical conductivity of rutile, by G. H. Johnson and W. A. Weyl. - Report no. 26. Application of the substitution method to crystals forming P-type semiconductors, by W. Capps and W. A. Weyl. - Report no. 27. Change of a P-type semiconductor into a N-type semiconductor by vapor treatment, by W. Capps and W. A. Weyl. - Report no. 28. Chemical approach to the rectifying properties of metal-semiconductor interfaces, by T. Forland and W. A. Weyl. - Report no. 29. On the origin of the thermoelectric potential between semiconductors of different impurity levels and semiconductors and metals, by T. Forland and W. A. Weyl. - Report no. 30. On the electronic conductivity of glasses, by W. A. Weyl. - Report no. 31. Migration of silver atoms through glass at room temperature, by G. Rindone and W. A. Weyl.

Hydrolysis of ethyl orthosilicate as a means for determining fluorine ions, by D. P. Enright, F. A. Marshall, and W. A. Weyl. Pennsylvania State College. School of Mineral Industries, State College, Pa. 1951? 15f graph, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Enlargement Print \$4.00. PB 116218

Technical report no. 32 under Contract N6onr-269, NR 032-265.

1. Ions - Exchange 2. Silicic acid - Esters - Decomposition 3. Fluorine ions - Determination.

Low temperature viscosity measurements of glasses containing non-noble gas ions. Technical reports nos. 33-35 under Contract N6onr-269, Task order 8, NR 032-264 and NR 032-265. Pennsylvania State

College. School of Mineral Industries, State College, Pa. Jun 1951. 47f graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Enlargement Print \$7.75. PB 116219

Contents: Preface: Low temperature viscosity of glass, by W. A. Weyl. - Report no. 33. Effects of oxide constituents on the low temperature viscosity of silicate and phosphate glasses, by T. A. Kupinski. - Report no. 34. Further effects of oxide constituents on the low temperature viscosity of glass, by Lewis C. Hoffman. - Report no. 35. Study of the effect of some noble and non-noble gas-type ions on the low temperature viscosity of silicate glasses, by Ram L. Thakur.

Report of the Committee on the Measurement of Geologic Time, 1952-1953. National Research Council. 1954. 191p graphs, tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$1.50. PB 115998

Recent work in the determination of isotope ratios, the chemical composition of certain minerals, the accurate measurement of feeble radioactivity, and similar research bearing on the problem of dating rocks and other natural materials. Annotated bibliography. John Putnam Marble, Chairman. Supplementary reports. Exhibit A. Annotated bibliography of articles related to the measurement of geologic time, compiled by J. P. Marble. - Exhibit B. Abstracts of papers dealing with geologic time and related matters, presented before the 1953 meeting of the American Geophysical Union. - Exhibit C. Recent work on natural variations in isotope ratios, compiled by J. P. Marble. - Exhibit D. Recent analyses of Brazilian radioactive minerals. - Exhibit E. Status of work on determination of geologic age at the Geological Survey of Canada, June 1953, with other notes from Canada, by S. C. Robinson and Sydney Abbey. - Exhibit F. Translations of various foreign language papers: Radioactive researches on rocks in Japan, III, and Radium contents of volcanic rocks in Japan, by Tetsuji Asayama (From Jap. Jour. Astron. Geophys., vol. 14 (1936) p. 19-26; vol. 18 (1941) p. 143-148). - Determination of the geological age of two stone meteorites by the argon method, by E. K. Gerling and T. G. Pavlova. (From Doklady Akademii Nauk SSSR, 1951, vol. 77, no. 1, p. 85-86). - Attempt to apply the argon method to the determination of the age of minerals, by E. K. Gerling, G. M. Ermolin, N. V. Baranovskaya, and N. E. Titov (From Doklady Akademii Nauk SSSR, vol. 86, no. 3, p. 593-596 (1952)). - Isotopic composition of leads and the age of the earth, by A. P. Vinogradov, I. K. Zadorojni'i and S. I. Ykov, translated by John Putnam Marble. NRC 319.

Technical reports 40-50 under Contract N6onr-269, NR 032-264 and NR 032-265. Pennsylvania State College. School of Mineral Industries, State College, Pa. Apr 1952. 53f graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Enlargement Print \$9.00. PB 116220

Contents: Report no. 40. Change in friction between the particles of dry powders on heating, by A. C. Marshall and F. A. Marshall, Jr. - Report no. 41. Differential thermal analyses of some metal hydroxides, by Dorothy P. Enright. - Report no. 42. Absorption of water by cesium disilicate glass, by Dorothy P. Enright. - Report no. 43. Lead fluoride and "solvent" for silicates, by Dorothy P. Enright and P. A. Marshall, Jr. - Report no. 44. Effect of some non-noble gas-type ions on the low temperature viscosity of silicate glasses, by Dorothy P. Enright. - Report no. 45. Experimental study of silicate liquid immiscibility, by M. D. Karkhanavala and W. A. Weyl. - Report no. 46. Chemical properties of some oxide surfaces, by Dorothy P. Enright. - Report no. 47. Electrical potentials between platinum and some other metals in fused salts, by Annabel C. Marshall. - Report no. 48. Electrical potentials observed during melting and crystallization of salts, by Annabel C. Marshall. - Report no. 49. Influence of the environment on the probability of electron transfer, by M. D. Karkhanavala. - Report no. 50. pH change of a quartz suspension in water during stirring, by Dorothy P. Enright and W. A. Weyl.

PERSONNEL APTITUDE TESTING AND JOB TRAINING

Development of methodology for fleet follow-up study of service school graduates. Final report under research project N7onr-39422, by Norman Friedman and Terrence M. Allen. Purdue University. Purdue Research Foundation, Lafayette, Ind. Feb 1954. 64p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.25, Photocopy \$9.00. PB 116088

1. Electricians - Training 2. Personnel, Radar - Training 3. Job analysis.

Personnel resources in the social sciences and humanities, a survey of the characteristics and economic status of professional workers in 14 fields of specialization, by Cora E. Taylor. U. S. Bureau of Labor Statistics. 1954. 146p graphs, tables Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C. \$.70. PB 116189

1. Scientists 2. Salaries 3. Occupations 4. Sociologists 5. BLS B 1169.

Proficiency of Q-24 radar mechanics. U. S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Armament Systems Personnel Research Laboratory, Lowry Air Force Base, Colo. Contract no. AF 33(038)-14562. Project no. 7709, Task order 77151. Order separate parts as described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part II: The performance trouble-shooting test, by Phillip J. Rulon, Charles R. Langmuir, Robert F. Schweiker, Robert G. Demaree, Norman A. Crowder and William L. Sawrey. Nov 1954. 37p photos, diagrs, tables Microfilm \$2.50, Photocopy \$5.25. PB 116124

For Part I, see PB 115922.

1. Q-24 (Radar) 2. Mechanics, Radar - Training tests 3. Personnel, Maintenance - Ability tests 4. Educational Research Corporation, Cambridge, Mass. 5. Illinois. University, Urbana, Ill. 6. AAF PTRC TR 54-51.

Part III: The tab test, a group test of trouble-shooting proficiency, by Francis G. Cornell, Dora E. Damrin, Joseph L. Saupe, and Norman A. Crowder. Nov 1954. 33p diagrs, tables Microfilm \$2.50, Photocopy \$5.25. PB 116158

1. Mechanics, Radar - Training tests 2. Personnel, Maintenance - Ability tests 3. Q-24 (Radar) 4. AAF PTRC TR 54-52.

Part IV: An analysis of checking responses in trouble shooting on tab test problems, by Dora E. Damrin and Joseph L. Saupe. Nov 1954. 18p tables Microfilm \$2.00, Photocopy \$2.75. PB 116159

1. Mechanics, Radar - Training tests 2. Personnel, Maintenance - Ability tests 3. Q-24 (Radar) 4. AAF PTRC TR 54-53.

Research on the development of shipboard performance measures, by Clark L. Wilson, Robert R. Mackie, Donald N. Buckner. Management and Marketing Research Corporation, Los Angeles, Calif. Contract N8onr 70001. Order separate parts as described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Final report, part II: Use of a performance rating scale in the measurement of shipboard performance of enlisted naval personnel. Feb 1954. 88p tables Microfilm \$4.00, Photocopy \$11.50. PB 116085

For Part 1, see PB 108490.

1. Personnel, Naval - Shipboard performance - Tests 2. Personnel, Naval - Performance - Rating scales 3. Personnel, Submarine - Performance 4. Psychological Research Center, Los Angeles, Calif.

Final report, part III: Use of performance check lists in the measurement of shipboard performance of enlisted naval personnel. Feb 1954. 72p tables Microfilm \$3.75, Photocopy \$10.25. PB 116086

1. Personnel, Naval - Shipboard performance - Tests 2. Personnel, Naval - Performance - Rating scales 3. Personnel, Submarine - Performance 4. Psychological Research Center, Los Angeles, Calif.

Final report, part IV: Comparison between rated and tested ability to do certain job tasks. Feb 1954. 42p tables Microfilm \$2.75, Photocopy \$6.50. PB 116087

1. Personnel, Naval - Shipboard performance - Tests 2. Personnel, Naval - Performance - Rating scales 3. Personnel, Naval - Classification 4. Personnel, Submarine - Performance 5. Job analysis 6. Psychological Research Center, Los Angeles, Calif.

Studies of manual dexterity: I. Methodological studies, by Warren H. Teicher, John L. Kobrick, E. Ralph Dusek. U. S. Army. Quartermaster Research and Development Command. Environmental Protection Division, Quartermaster Research & Development Center, Natick, Mass. Nov 1954. 42p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116126

This paper reports a methodological study on the problem of providing functionally adequate handgear. In addition to specifying interim procedures for the evaluation of newly developed items, it also can serve to orient research and development technologists since it provides a rational approach to the solution of handgear problems. Project reference: 7-95-20-003C. QMC EP-3.

Survey of personnel and training research in government, business and industry, by Clifford P. Hahn. U. S. Air Force. Air Research and Development Command. Human Resources Research Center. Technical Training Research Laboratory, Chanute Air Force Base, Ill. Jul 1953. 18p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116206

A survey was made of nonmilitary organizations to find militarily applicable practices and procedures which were generally unknown to military psychologists. The topics investigated were selection and classification, training programs, evaluation of employee performance, job evaluation, safety programs, and morale. The military implications of the findings are discussed along with recommendations for future research. Contract no. AF 33-(038)-24682. Project 507-011-0001. AAF HRRC TR 53-22.

PHYSICS

General

Asymptotic expansions of solutions of $(\nabla^2 + k^2)u = 0$, by F. G. Friedlander and Joseph B. Keller. New York University. Institute of Mathematical Sciences. Division of Electromagnetic Research. Sep 1954. 12p Available from Library of Con-

gress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 116261

A method for constructing asymptotic expansions of solutions of the reduced wave equation $(\nabla^2 + k^2)u = 0$ is derived. The method yields expansions containing exponential decay factors and fractional powers of k , and the possible powers of k in such expansions are determined. The expansions contain a number of undetermined quantities which can be adjusted to yield expansions of solutions of particular problems. In the Appendix a theorem on the asymptotic expansions of solutions of general linear equations is derived. Contract no. AF-19(122)-42. NYU RR EM-67. AAF CRC TN 54-353.

Audio frequency power measurements. Gt. Brit. National Physical Laboratory. 1954. 20p drawing, diags Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$3.0. PB 116283

S. O. code no. 48-120-8.

1. Audio frequency - Measurements - Gt. Brit.
2. NPL NAS 8.

Fourier transformers, conformal mapping, entire functions, and asymptotic solutions of ordinary differential equations, by R. W. McKelvey, Anna Chandapillai, R. E. Langer, Jacob Korevaar, A. C. Schaeffer. Wisconsin. University, Madison, Wis. Feb 1954. 4p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116093

Contract N7onr-28507, Task order 7.

1. Equations, Differential
2. Fourier analysis
3. Mathematical equations and solutions.

Investigation of particle size by differential settling. Progress report no. 5 under Contract no. AF 19-(122)-164, covering period from Dec 1, 1950 to Feb 28, 1951. Columbia University. Central Aerosol Laboratories, New York, N. Y. Feb 1951. 39p drawing, diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116291

A forward angle scattering camera was constructed to photograph a confined aerosol stream of about 0.1 mm or smaller in thickness, with all aerosol particles within the depth of field of the lens. A particulate count can be made readily from the photograph for all particle sizes with a lower limit of about 0.1 micron in radius. The applicability of the camera to size-frequency distribution study is being currently investigated. A new method of calculating particle size distribution of aerosol from settling data is presented in Part B. Contents: Part A: A forward angle scattering camera for the determination of particulate concentration of aerosols, by Victor K. La Mer and P. K. Lee. - Part B: Investigation of particle size by differential settling, by Joseph Benedict and Guy G. Goyer.

Investigation of wedges in transonic flow, by Robert W. Truitt. Virginia. Engineering Experiment Station, Blacksburg, Va. Feb 1954. 157p diagr, graphs Available from Virginia Engineering Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va. PB 116105

Contract no. AF 18(600)-641. Project no. R-352-30-8. Technical report OSR-TR-54-5.

1. Flow, Transonic - Theory
2. Wedges - Drag coefficient
3. Wedges - Pressure distribution
4. Flow, Compressible - Theory
5. Mach number - Effect.

Membrane permeability and electrical potential, by Ransom B. Parlin and Henry Eyring. Utah. University. Institute for the Study of Rate Processes, Salt Lake City, Utah. Feb 1954. 18p graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116104

Technical report no. XII. Contract N7-onr-45103, Project NR 051-192.

1. Membrane theory
2. Respirators - Permeability
3. Molecules - Diffusion coefficients.

On ballistically closed regions, by William James Firey. Stanford University. Applied Mathematics and Statistics Laboratory, Stanford, Calif. Feb 1954. 69p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.25, Photocopy \$9.00. PB 116103

The report commences with an introduction to the problem from a somewhat more applied standpoint. The remainder of the first chapter is concerned with explanations of notation and terminology and closes with a result about certain entire functions of real, bounded, linear transformations. The second chapter is devoted to a discussion of the solvability of boundary-value problems. The third chapter commences with a succession of lemmas which furnish necessary conditions upon the set and the transformation. Following this, in the fourth chapter, the problem in an n -dimensional Euclidean space is considered. Technical report no. 18. Contract Nonr-225 (11) (NR-041-086).

On the analysis of linear and nonlinear dynamical systems from transient-response data, by Marvin Shinbrot. U. S. National Advisory Committee for Aeronautics. Dec 1954. 62p graphs, tables (10 fold) Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116006

1. Equations of motion
2. Mathematical equations and solutions
3. Laplace functions
4. Fourier analysis
5. Equations, Linear
6. Stability, Dynamic - Mathematical analysis
7. NACA TN 3288.

On the propagation of sound in a turbulent fluid, by Robert H. Kraichnan. Columbia University. Dept. of Electrical Engineering. Acoustics Laboratory.

Mar 1954. 27p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00.
PB 116288

In Part 1, eikonal and continuity equations are derived for a sound wave propagating through a fluid in which there is shear motion of low Mach number and scale large compared to the sound wave length. It is shown that the acoustic ray paths are identical with the trajectories of the particles if the magnetic field is proportional to the vorticity. In Part 2, the attenuation and fluctuation in intensity of a sound beam scattered in a turbulent medium are expressed in terms of correlation products of the turbulent flow. In Part 3, the differential cross section for scattering of sound by turbulence is developed in a form suited to treatment of anisotropic turbulence. A simple anisotropic distribution involving symmetry about a preferred vorticity axis is discussed. Technical report no. 4 under Contract Nonr 266(23) NR 384-204. Project CU 4-54-Onr 266(23)-EE.

On the small-disturbance iteration method for the flow of a compressible fluid with application to a parabolic cylinder, by Carl Kaplan. U. S. National Advisory Committee for Aeronautics. Jan 1955. 36p diags, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116276

The Prandtl-Busemann small-disturbance method is applied to a parabolic cylinder and compared with the Janzen-Rayleigh or M_{∞}^2 -expansion solution for the same shape. This solution is examined from the point of view of thin-airfoil theory. The series development of the fluid speed at the surface in powers of the ratio of the radius of curvature of the vertex and the abscissa measured from the vertex agrees with the results of second-order thin-airfoil theory. NACA TN 3318.

Plastic stress-strain relations based on infinitely many plane loading surfaces, by J. Lyell Sanders, Jr. Brown University. Graduate Division of Applied Mathematics, Providence, R. I. Mar 1954. 59p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 114808

This paper is concerned with the development of a theory of plastic stress-strain relations for work hardening materials based on infinitely many plane loading surfaces. Contract N7onr-85801, T. C. 1, NR-041-032. GDAM A11-106. GDAM TR 106.

Potential flow through radial flow turbomachine rotors, by A. J. Acosta. California Institute of Technology. Hydrodynamics Laboratory, Pasadena, Calif. Feb 1954. 55p diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 116084

The exact theory of incompressible potential flow through pump impellers with logarithmic spiral (constant angle) blades is extended to include radial

or conical turbomachines with small variations in vane angle and passage breadth. Approximate formulas are obtained and charts given for smooth entry and performance characteristics of pump or turbine configurations when the solidity is somewhat greater than unity and when the major blade deviations are confined to the inlet regions. Contract N6onr-244, Task order II (NR 062-010). CIT HL E-19.4.

Power of statistical tests, by E. S. Keeping. Alberta University, Edmonton, Canada. Dec 1953. 96p diags, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$2.50. PB 111588

The concept of power for statistical tests of hypotheses, and various ideas connected with it, are described and illustrated. The power is given for a number of the common statistical tests, and tables are supplied which facilitate decisions on the sample sizes necessary for detecting differences between means, variances, proportions defective, etc. with prescribed power. Contract no. AF 33(616)-321. AAF WADC TR 54-9.

Selection of a distribution function to minimize an expectation subject to side conditions, by Herman Chernoff and Stanley Reiter. Stanford University. Applied Mathematics and Statistics Laboratory, Stanford, Calif. Mar 1954. 36p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116099

Contract N6onr-25140 (NR-342-022). Technical report no. 23.

1. Random functions 2. Random distribution - Theory 3. Mathematics - Statistical theory.

Some tests based on the first r order observations drawn from an exponential distribution, by Benjamin Epstein and Milton Sobel. Stanford University. Dept. of Statistics, Stanford, Calif. and Wayne University. Dept. of Mathematics, Detroit, Mich. Mar 1952. 54p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 116480

Stanford University technical report no. 6. Wayne University technical report no. 1. Contracts N6onr-25126 (Stanford University) and Nonr-451(00), NR-042-017 (Wayne University).

1. Fatigue, Structural - Tests 2. Statistical methods 3. Sampling devices.

Studies of thermal conductivity of liquids. Part I, supplement: A literature survey of the thermal conductivity of liquids, by Byron C. Sakiadis and Jesse Coates. Louisiana. Engineering Experiment Station, Baton Rouge, La. 1954. 28p tables Available from College of Engineering, Louisiana State University and Agricultural and Mechanical College, Baton Rouge 3, La. \$.50. PB 116253

1. Liquids - Thermal conductivity - Bibliography 2. L EES B 48.

Theoretical and experimental investigation of heat transfer by laminar natural convection between parallel plates, by A. F. Lietzke. U. S. National Advisory Committee for Aeronautics. Dec 1954. 23p diagr, graphs Available from National Advisory Committee for Aeronautics; 1512 "H" St., N. W., Washington 25, D. C. PB 116052

Parallel walls (one heated uniformly and the other cooled uniformly) were simulated by an annulus with an inner-to-outer diameter ratio near 1. The theoretical results are presented in equations for the velocity and temperature profiles and the ratio of actual temperature drop across the fluid to temperature drop for pure conduction. Good agreement was obtained between theory and experiment for axial temperature gradients above 40° F/ft. NACA TN 3328.

Nuclear

Gamma ray sources and techniques for gamma ray radiography, by J. J. Hirschfield, D. T. O'Connor and D. Polansky. U. S. Naval Ordnance Laboratory, White Oak, Md. Feb 1953. 85p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50. PB 116146

A general review of radioisotopes used as radiation sources for industrial radiography is given along with production methods, measurement units, standards and nomenclature commonly associated with their use. The specific characteristics of commercially available radiation sources are discussed. Complete information for the purpose of obtaining optimum radiographs for various object thicknesses and materials is provided. Information is likewise provided for the safe handling, storage and shipping of radioisotopes of various energies. NAVORD 2666.

K-meson decay scheme, by S. B. Treiman. Princeton University. Palmer Physical Laboratory and Naval Ordnance Laboratory. Cosmic Ray Group. Feb 1954. 11p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116077

Technical report no. 12 under Contract N6onr-270-II. 1. Atomic power - Research 2. Mesotrons - Decay schemes 3. Protons - Energy measurements.

Mass differences, a compilation of experimental atomic mass differences found from beta decay, reaction energies, microwave data, alpha decay, and mass doublets. National Research Council Committee on Nuclear Science. Oct 1954. 148p diagrs, tables Available from National Research Council, Publication Office, 2101 Constitution Ave., N. W., Washington 25, D. C. \$1.50. PB 116227

A reprint of five articles from the Reviews of Modern Physics (Volume 26, No. 4, 1954): "Table of Total Beta-Disintegration Energies", R. W. King, an extensive tabulation of data and references; "Nuclear

Disintegration Energies", D. M. Van Patter and Ward Whaling, a systematic review of currently available experimental data; "Determination of Atomic Masses by Microwave Spectroscopy", S. Geschwind, G. R. Gunther-Mohr, and C. H. Townes, presenting theory, brief discussion of experimental techniques and tabulations and a discussion of mass measurements; "Table of Alpha-Disintegration Energies of the Heavy Elements", Frank Asaro and I. Perlman, listing total alpha-decay energies with indication of means used for determinations; and "Mass Spectroscopic Atomic Mass Differences", H. E. Duckworth, B. G. Hogg, and E. M. Pennington, tables of data obtained by the doublet method. NRC 336.

Mass spectroscopy, by Mark G. Inghram and Richard J. Hayden. National Research Council. Committee on Nuclear Science. Subcommittee on Instruments and Techniques. 1954. 55p diagrs, graphs, tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington, D. C. \$2.00. PB 115996

A review through mid-1952 of the theory and practice of mass analyzers. Includes a wide variety of mass analysis techniques, including microwave absorption and nuclear induction, confined to ionic mass analyzers with electrical or photographic ion detection. The theory of ion mass analysis is fully developed and the practical aspects of construction and operation are discussed, with reference to the literature regarding electronic circuitry. Bibliography of over 200 references. Nuclear science series. Report no. 14. NRC 311. NRC NSS 14.

Progress report, 32nd, for the period Dec 1, 1953 to Feb 28, 1954. Massachusetts Institute of Technology. Laboratory for Nuclear Science. Feb 1954. 73p drawing, diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 116177

Contracts AT(30-1)-905 and N5ori-07806.
1. Atomic power - Research 2. Nuclear chemistry - Research 3. Particles - Scattering 4. Cosmic radiation 5. Synchrotrons 6. Cyclotrons.

Theory of nuclear reactions, by J. M. Blatt and V. F. Weisskopf. Massachusetts Institute of Technology. Laboratory for Nuclear Science and Engineering. May 1950. 225p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$8.25, Photocopy \$29.00. PB 116200

This report contains a preliminary draft of two chapters on nuclear reactions of a book on Theoretical Nuclear Physics by J. Blatt and V. F. Weisskopf which will appear in 1951. Some of the figures belonging to Part II are supposed to be illustrations contained in The Physical Review and The Review of Modern Physics. These figures are not reproduced. Their list and the corresponding references are found at the end of Part II. Contents: Part I:

Nuclear reactions, general theory. - Part II: Nuclear reactions, application of the theory to experiments. MIT LNS TR 42.

PSYCHOLOGY

Basic studies on individual and group behavior. Annual technical report, 16 Feb 1953 through 15 Feb 1954, under Contract N8onr-66216. Minnesota, University. Feb 1954. 14p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116095

1. Group behavior 2. Psychological research.

Factors producing defensive behavior within groups. Annual technical report under Contract Nonr-1147(03), NR 170-226, by J. R. Gibb. Colorado, University. Dept. of Psychology. Human Relations Laboratory, Boulder, Colo. Feb 1954. 9p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116092

1. Group behavior 2. Psychology, Applied.

Groups, leadership and men, research in human relations. Reports on research sponsored by the Human Relations and Morale Branch of the Office of Naval Research, 1945-1950, edited by Harold Guetzkow. Carnegie Institute of Technology, Pittsburgh, Pa. 1951. 300p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$37.75. PB 116278

Papers from U. S. Navy's conference of its Human Relations Advisory Panel and research contractors at Dearborn, Mich., Sep 1950. Contents: Five years of social science research: Retrospect and prospect, by John G. Darley. - Determining syntality dimension as a basis for morale and leadership measurement, by Raymond B. Cattell. - Informal communications in small groups, by Leon Festinger. - Group productivity, by John R. P. French, Jr. - Social psychological study of the decision-making conference, by D. G. Marquis, Harold Guetzkow, and R. W. Heyns. - Overview of the human relations program, by Daniel Katz. - Analysis of supervisory practices and components of morale, by Robert L. Kahn. - Foremen and steward, representatives of management and the union, by Eugene Jacobson. - Experimental study in an industrial organization, by Nancy C. Morse. - Development and future plans of the human relations program, by Angus Campbell. - Columbia University research in contemporary cultures, by Margaret Mead. - Studies in naval leadership. Part I, by Carroll L. Shartle. Part II, by Ralph M. Stogdill. - Some research on leadership in small groups, by Launor F. Carter. - Leadership identification and acceptance, by Fillmore H. Sanford. - Effects of group pressure upon the modification and distortion of judgements, by S. E. Asch. - Measuring

motivation in phantasy: The achievement motive, by David G. McClelland. - Verbal behavior in relation to reasoning and values, by Charles N. Cofer. - Predicting who learns factual information from the mass media, by Charles E. Swanson. - Social and psychological factors in the rehabilitation of the tuberculous, by Daniel H. Harris. - Investigation of naval neuropsychiatric screening procedures, by William A. Hunt. - Overview of the conference and its controversies, by John G. Darley. - Making military application of human relations research, by J. W. Macmillan and H. E. Page. - Appendix: Suggested guide for the preparation of research proposals. An explanation of some terms for the general reader. Personnel roster of Office of Naval Research and panel.

Leadership acts. Annual summary report for the period 1 Sep 1953 to 15 Feb 1954 under Contract N6ori-17, T. O. III, NR-171-123, by John K. Hemphill and Pauline N. Pepinsky. Ohio State University Research Foundation, Columbus, Ohio. Feb 1954. 11p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116091

1. Leadership 2. Group behavior 3. ARF Proj 268, Report no. 2.

Motivational factors in productivity. Annual technical report under Contract no. Nonr-233(09), by Robert Tannenbaum. California, University. Institute of Industrial Relations. Human Relations Research Group. Feb 1954. 27p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116068

1. Psychology, Applied 2. Leadership.

Preliminary investigations of speed and load as dimensions of psychomotor tasks, by Robert C. Wagner, Paul M. Fitts, and Merrill E. Noble. U. S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Skill Components Research Laboratory, Lackland Air Force Base, Texas. Oct 1954. 23p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116266

1. Psychomotor tests 2. Personnel, Flying - Tests 3. AAF PTRC TR 54-45.

Research in cohesive and disruptive tendencies in coalition-type groups. Technical report no. 1: Perceived control and interdependence as related to member attitudes toward a coalition-type group, by Ben Willerman and Richard Emerson. Minnesota, University, Minneapolis, Minn. n.d. 13p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116083

Contract N8 onr-66216. Date of publication is 1950 or later.

1. Psychology, Social
2. Group behavior
3. Sociology.

Social perception and group effectiveness. Annual status report under Contract N6ori-07135, Project NR 170-106, by Fred E. Fiedler. Illinois. University. Dept. of Psychology. Group Effectiveness Research Laboratory. Feb 1954. 14p tables
Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116090

1. Group behavior
2. Psychological tests
3. Similarity - Theory.

Symposium on psychology of learning basic to military training problems. U. S. Research and Development Board. Committee on Human Resources. Panel on Training and Training Devices. May 1953. 189p photos, diags, graphs, table
Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$7.00, Photocopy \$24.00. PB 116166

Contents: Theories of human learning and problems of training, by Ernest R. Hilgard. - Models for learning theory, by W. K. Estes. - Motor skills learning, by Don Lewis. - Learning for performance in groups, by staff of Systems Laboratory, Rand Corporation. - Role of motivation in learning, by Neal E. Miller. - Motivational factors in verbal learning, by I. E. Farber. - Perceptual learning in relation to training, by James J. Gibson and Eleanor J. Gibson. - Human problem-solving, by Harry F. Harlow. - Resume of symposium, by Kenneth W. Spence. RDB HR-HTD 201/1.

RUBBER AND RUBBER PRODUCTS

Evaluation of polymers for use as ammunition box gaskets, by Z. T. Ossefort. U. S. Arsenal, Rock Island, Ill. Jul 1952. 33p photos, graph, tables
Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115301

Project no. TB4-521C, Report no. 2.

1. Gaskets, Synthetic rubber - Tests
2. Ammunition - Boxes - Gaskets
3. Rubber, Synthetic - Tests
4. RIAL R 52-1973.

Proceedings of the Navy Conference on Elastomer Research and Development. U. S. Office of Naval Research. Order separate parts as described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

First meeting, 1 & 2 Nov 1949, Washington, D. C. 1949? 456p photos, diags, tables Microfilm \$9.25, Photocopy \$57.75. PB 116149

Includes Reports on facilities and potentialities at Navy elastomer laboratories, p. 51-442.

1. Rubber, Synthetic - Conferences
2. Rubber, Synthetic - Research
3. Laboratories, Naval research
4. Conference on Elastomer Research and Development, 1st, 1949
5. NAVEXOS P-732.

Second meeting, 15 Feb 1950, Washington, D. C. 1950? 109p photos, drawings, graphs, tables Microfilm \$4.75, Photocopy \$14.00. PB 116150

Contents: Significance of cold compression set of elastomer vulcanizates, by Ross E. Morris, Joseph W. Hollister, Arthur E. Barrett. - Stress-relaxation testing of rubber materials at elevated temperatures, by C. K. Chatten. - Some aromatic aldehydeamines as accelerators in GR-S, by William B. Shetterly. - Utilization of infrared spectrographic techniques in the study of ozone deterioration of elastomers, by A. R. Allison. - Office of Rubber Reserve research and development program (Feb 1950), by O. W. Burke, Jr. and A. L. Rodde. - Evaluation of surface-applied rubber preservatives in their application to aircraft usage, by Irving Kahn. - Vulcanization of liquid polysulfide rubber as related to the development of Navy formula 112, by W. B. Lew. - Novel methods of evaluation and application of polymer-type deck-caulking compounds, by Albert W. Cizek, Jr. - End-sealing of CP type cables, by F. L. Downs. - Synthetic rubber composition for low-frequency impact energy absorption, by V. C. McCall. - Evaluation of polybutadienes and butadiene-styrene copolymers for low-temperature gasket service, by Ross E. Morris and Joseph W. Hollister. - Evaluation of nitrile rubbers for high-temperature gasket service, by Ross E. Morris, Joseph Hollister, Paul A. Mallard. - Instrumentation in low-temperature testing of rubber products, by J. Z. Lichtman. - Application of X-ray diffraction methods to the identification of natural and synthetic rubbers, by S. Goldspiel and F. Bernstein. NAVEXOS P-732.

Third meeting, 5 Feb 1952, Washington, D. C. 1952? 186p photos, diags, graphs, tables Microfilm \$7.50, Photocopy \$24.00. PB 116151

Contents: Welcoming address. - Conference objectives. - Navy elastomer needs. - Navy elastomer research and development programs. - Navy elastomer laboratories. - Program of the Office of Naval Research. - Technical papers: Laminates of fluorocarbons, rubbers, and metals, by F. L. Kilbourne. - Protective clothing from butyl rubber, by R. E. Morris. - Testing cracked rubber with X-rays, by J. R. Britt. - Methods of testing elastomers at low temperatures, by J. Z. Lichtman. NAVEXOS P-1031.

Synthetic rubbers from carbonfluorine compounds. Minnesota Mining and Manufacturing Co., St. Paul, Minn. Contract AF 33(038)-515. Order separate parts as described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part 1, by W. H. Pearlson and N. W. Taylor.
Oct 1952. 120p graph, tables Microfilm \$5.00,
Photocopy \$15.25. PB 116221

New polymeric compositions of matter have been synthesized and screened with respect to their potentialities as suitable elastomers for use under extreme conditions of temperature in contact with various fuels and oils. Sec. I is report for contract period 15 May 1949 to 15 May 1950; sec. II is for period 15 May 1950 to 15 May 1951. AAF WADC TR 52-197.

Part 2, by A. M. Borders. Aug 1952. 115p graphs, tables Microfilm \$5.00, Photocopy \$15.25. PB 116222

New classes of materials include polymers of unsaturated and perfluoroalkyl esters, fluorine-containing alkoxyalkyl acrylates, and vinyl 1,1-dihydroperfluoroalkyl ethers, and copolymers of perfluoroacrylonitrile, and of perfluorobutadiene. Polymers and copolymers of 1,1-dihydroperfluoroalkyl acrylates continue to exhibit the best balance of low temperature flexibility and resistance to aromatic hydrocarbon fluids. Although reinforcement of the fluoroacrylate homopolymers has not been possible, their butadiene copolymers have been reinforced to vulcanizates with tensile strengths in excess of 2000 psi. Third annual report, covering period 15 May 1951 to 15 May 1952. AAF WADC TR 52-197, Part 2.

Part 3, by F. A. Bovey. Sep 1953. 205p Microfilm \$7.75, Photocopy \$26.50. PB 116223

The object of the work is the development of elastomeric materials which are resistant to the fuels, lubricants, and hydraulic fluids used in military aircraft and which are serviceable over the widest possible temperature range. Perfluorobutadiene copolymers and fluoroacrylates were of primary interest. Fourth annual report. AAF WADC TR 52-197, Part 3.

STRUCTURAL ENGINEERING

Distribution of concentrated loads by laminated timber slabs, by Whitney C. Huntington, William A. Oliver, Melvin W. Jackson, William T. Cox. Illinois. Engineering Experiment Station, Urbana, Ill. Apr 1954. 66p photos, drawings, graphs, tables Available from Engineering Experiment Station, University of Illinois, Urbana, Ill. \$1.00. PB 116268

Results of an investigation of 119 laminated timber slabs constructed of laminations 2 in. x 4 in., 2 in. x 6 in., and 3 in. x 6 in., and tested on spans of 3, 4½, and 6 ft. Variables considered were the type of fasteners (nails, bolts, or dowels), and their location in the lamination, the span length, the number of laminations in the slab, the material used (yellow pine, redwood, or Douglas fir), the number of laminations to which the load was applied, and the effect of repeated loads. The principal portion of the in-

vestigation was concentrated upon the type and arrangement of fasteners. University of Illinois. Bulletin vol. 51, no. 63. ILU EES B 424.

Effectiveness of underlayment nails, by E. George Stern. Virginia Polytechnic Institute. Wood Research Laboratory, Blacksburg, Va. Dec 1954. 8p photos, graph, tables Available from Virginia Polytechnic Institute, Blacksburg, Va. PB 116224

1. Nails, Flooring 2. VPI WRL 18.

Frog up or frog down. Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, England. Nov 1954. 4p diags Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.10. PB 116226

1. Bricklaying - Gt. Brit. 2. DSIR BRD 71.

Inelastic behavior of ductile members under dead loading, by M. E. Clark, H. T. Corten, O. M. Sidbottom. Illinois. Engineering Experiment Station, Urbana, Ill. Oct 1954. 47p photos, drawings, diags, graphs, table Available from Engineering Experiment Station, University of Illinois, Urbana, Ill. \$1.00. PB 116270

The purpose of this investigation was to present the experimental data for conventional short-time and for long-time dead-load tests of various ductile members, to compare theoretical and experimental results, and to attempt to explain differences observed between the two types of tests. University of Illinois. Bulletin vol. 52, no. 16. ILU EES B 426.

Outdoor-air supply and ventilation of furnace closet used with a warm-air heating system, by Robert W. Roose, Norman A. Buckley, Seiichi Konzo. Illinois. Engineering Experiment Station, Urbana, Ill. Dec 1954. 47p photo, drawings, diags, graphs, table Available from Engineering Experiment Station, University of Illinois, Urbana, Ill. \$.70. PB 116271

University of Illinois. Bulletin vol. 52, no. 30.
1. Furnaces - Ventilation 2. Houses - Heating - Research 3. Heating equipment, Domestic 4. ILU EES B 427.

TEXTILES AND TEXTILE PRODUCTS

Symposium on parachute textiles, edited by Joyce C. McGrath. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Materials Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Jul 1954. 220p photos, diags, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$5.50. PB 111563

Papers prepared for presentation at the Air Force-Navy-Industry Symposium on Parachute Textiles,

21-22 Sep 1953. Contents: Resumé of parachute requirements, by W. A. Corry. - Problems of parachute design and their relation to textiles, by W. P. Shepardson. - Porosity, translucency, and deformability of nylon parachute fabrics, by A. Baker. - Textiles for parachutes in aircraft deceleration and missile recovery, by R. W. MacCarthy. - Textiles used in free air facility parachute test program, by D. L. Arenson. - Effects of temperature and humidity on parachute textiles, by M. Coplan. - Effects of porosity on design and performance characteristics of parachutes, by Helmut G. Heinrich. - Air permeability of parachute fabrics, by H. W. S. Lavier. - Materials for parachutes of the future, by W. D. Brown. - Effect of yarn and fabric structure on air permeability, by W. Hamburger. - Effect of incorporating design data into new fabrics, by H. J. Bickford. - Energy absorption in suspension lines, by E. A. Grimalouski. - Braided suspension lines, by F. W. Fraim. - Parachute harness webbings, by Joshua Miller. - Development of improved strength webbings, by G. R. Turner. - Development of high tensile strength webbings, by Russell J. Neff. - Frictional forces and lubrication of textile fabrics at high sliding velocities, by Vasilis Lavrakas. AAF WADC TR 54-49.

TRANSPORTATION EQUIPMENT

Aeronautics

Aircraft

Charts for estimating performance of high-performance helicopters, by Alfred Gessow and Robert J. Tapscott. U. S. National Advisory Committee for Aeronautics. Jan 1955. 36p diagr, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116277

1. Helicopters - Performance 2. Helicopters - Stalling 3. Helicopters - Rotors - Drag 4. Helicopters - Rotors - Thrust 5. Wings, Rotating - Theory 6. NACA TN 3323.

Development of cast aircraft components. Final engineering report under Contract no. AF 33(038)-18900, Change order no. 4. Alloy Engineering and Casting Co., Champaign, Ill. May 1953. 236p photos, drawings (part fold), graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$8.50, Photocopy \$30.25. PB 116169

"Casting potentials project".

1. Casting - Methods 2. Aluminum castings - Design 3. Steel castings - Design 4. Aircraft - Components - Design 5. Aircraft - Components - Manufacture 6. Landing gear - Manufacture.

Electrical analogies for stiffened shells with flexible rings, by R. H. MacNeal. U. S. National Advisory

Committee for Aeronautics. Dec 1954. 35p drawings, diagrs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116108

1. Circuits, Electric - Analogies 2. Shells (Aircraft) - Design 3. Airplanes - Skin - Stresses 4. NACA TN 3280.

Gust experience of a helicopter and an airplane in formation flight, by Almer D. Crim. U. S. National Advisory Committee for Aeronautics. Dec 1954. 12p photos, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116156

1. Airplanes - Flight tests 2. Helicopters - Flight tests 3. Gust loads 4. NACA TN 3354.

Investigation of a wing-propeller configuration employing large-chord plain flaps and large-diameter propellers for low-speed flight and vertical take-off, by Richard E. Kuhn and John W. Draper. U. S. National Advisory Committee for Aeronautics. Dec 1954. 94p photos, drawings, diagr, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116109

1. Airplanes - Take-off 2. Lifting mechanisms - Tests 3. Angle of attack - Effect on life coefficient 4. Wings - Wind tunnel tests 5. Flaps, Aircraft - Wind tunnel tests 6. Stability, Longitudinal - Static tests 7. NACA TN 3307.

Instruments

Five-channel chronograph system for detonation-wave propagation measurements, by Kenneth E. Kissell, Loren E. Bollinger, Robert G. Dunn. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Aeronautical Research Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Mar 1953. 17p photos, drawing, diagrs, graph, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116202

Suitable apparatus to determine the propagation velocity of shock waves through stationary gaseous mixtures has been designed and is now under test. Six ionization-detector probes are spaced two feet apart on a long, steel tube. An ionized gas layer associated with the moving shock wave is used to momentarily short-circuit a set of contacts on the probe. These pulses actuate a 100-kc chronograph system. Wave propagation velocities up to 9000 ft/sec have been measured. AAF WADC TR 54-84.

Frequency response of the ordinary rotor blade, the Hiller servo-blade and the Young-Bell stabiliser, by G. J. Sissingh. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1950. 19p

diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.25. PB 116065

Cover date is 1954. S. O. code no. 23-2860.

1. Rotor blades - Oscillation - Gt. Brit.
2. Helicopters - Rotors - Oscillation - Gt. Brit.
3. Gyro stabilizers - Vibration - Gt. Brit.
4. Equations of motion - Gt. Brit.
5. Stabilizers, Aircraft - Controls - Gt. Brit.
6. Hiller servo-blade - Gt. Brit.
7. Young-Bell stabiliser - Gt. Brit.
8. Stability, Longitudinal - Theory - Gt. Brit.
9. ARC RM 2860
10. RAE TN 2367.

The M.A.E.E. recording accelerometer, by D. M. Ridland and R. Parker. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Sep 1952. 15p photos, drawings, diagr, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.50. PB 116285

Cover date is 1954. Report no. F/Res/226. S. O. code no. 93-9007-77.

1. Accelerometers, Recording - Design - Gt. Brit.
2. Seaplanes - Hulls - Impact pressures - Gt. Brit.
3. Seaplanes - Hulls - Landing shock - Gt. Brit.
4. ARC CP 177.

Operating characteristics of an acceleration restrictor as determined by means of a simulator, by Arthur Assadourian. U. S. National Advisory Committee for Aeronautics. Dec 1954. 20p photos, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116153

1. Airplanes - Acceleration - Restrictive devices
2. Simulators, Flight - Operation
3. Airplanes - Maneuverability
4. Airplanes - Controls, Automatic
5. Controls, Longitudinal - Operation
6. NACA TN 3319.

Use of a hot-wire anemometer in shock-tube investigations, by Darshan Singh Dosaanjh. U. S. National Advisory Committee for Aeronautics. Dec 1954. 100p photos, drawings, diagrs, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116107

1. Anemometers, Hot wire - Uses
2. Anemometers, Hot wire - Design
3. Shock tubes - Tests
4. NACA TN 3163.

Windspeed profile, windshear, and gusts for design of guidance systems for vertical rising air vehicles, by Norman Sissenwine. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate. Special Projects Laboratory, Cambridge, Mass. Nov 1954. 63p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.25, Photocopy \$9.00. PB 116132

The reasons for considering wind speed, wind shear and gustiness (turbulence) in the design of guidance systems for vertical rising air vehicles are indicated. Application of a calculated risk, based upon a current practice of using a biased sample of data, is explained in connection with consideration of these meteorological data. AAF GRD SG 57.

Engines and Propellers

Assessment of the relative performance of the bypass engine and the orthodox double compound jet engine, by E. A. Bridle. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jul 1948. 12p graphs, table Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.90. PB 116287

Cover date is 1954. S. O. code no. 23-2862.

1. Jet engines - Performance - Gt. Brit.
2. Jet engines - Thrust - Gt. Brit.
3. ARC RM 2862.

Preliminary experiments on cavitation by propellers, by Evelyn C. Marboe, W. Capps, and W. A. Weyl. Pennsylvania State College. School of Mineral Industries, State College, Pa. Oct 1952. 23f photos, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Enlargement Print \$5.25. PB 116216

Study of cavitation of water by a fast-rotating propeller using an apparatus which is essentially a small model of the Eggbeater test set-up employed by the Ordnance Research Laboratory. Technical report no. 23 under Contract no. N6onr-269, Task order 8, NR 032-265.

Training and Training Devices

Attempt to manipulate incentive-motivation in a continuous tracking task, by Clyde C. Noble. U. S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Skill Components Research Laboratory, Lackland Air Force Base, Texas. Oct 1954. 9p graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116265

1. Tracking - Operator response
2. Personnel, Flying - Tests
3. Psychomotor tests
4. AAF PTRC TR 54-43.

Training effectiveness of a stereoscopic range-finder trainer, by Norman Willard, Jr., Charles A. Bancroft, John G. Reddan. George Washington University. Human Resources Research Office, Washington, D. C. Oct 1954. 22p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116128

Task RADEV: Evaluation of device OROPT-TI.
1. Rangefinders, Stereoscopic - Tests 2. Trainers,
Stereoscopic - Tests 3. Training devices - Evaluation
4. OROPT-TI (Range finder) 5. GWU HRRO
TR 12.

Airports and Airways

Survey of background and aircraft noise in communi-
ties near airports, by K. N. Stevens. U. S. National
Advisory Committee for Aeronautics. Dec 1954.
36p graphs, tables Available from National Advi-
sory Committee for Aeronautics, 1512 "H" St.,
N. W., Washington 25, D. C. PB 116115

1. Airports - Noise - Reduction 2. Noise, Back-
ground - Reduction 3. Airplanes - Noise - Reduc-
tion 4. Bolt, Beranek and Newman, Inc., Cambridge,
Mass. 5. NACA TN 3379.

Aerodynamics

Aerodynamic forces and loadings on symmetrical
circular-arc airfoils with plain leading-edge and
plain trailing-edge flaps, by Jones F. Cahill,
William J. Underwood, Robert J. Nuber and Gail
A. Cheesman. U. S. National Advisory Committee
for Aeronautics. 1953. 30p photos, diagrs, graphs,
tables Available from Superintendent of Documents,
Government Printing Office, Washington 25, D. C.
\$.35. PB 116173

1. Wind tunnels, Two dimensional - Tests 2. Air-
foils, Circular-arc - Wind tunnel tests 3. Mach
number - Effect 4. Reynolds number - Effect
5. Wing flaps - Leading edges 6. Wings - Loading
7. NACA 1146.

Analytical determination of the mechanism of an air-
plane spin recovery with different applied yawing
moments by use of rotary-balance data, by Sanger
M. Burk, Jr. U. S. National Advisory Committee
for Aeronautics. Dec 1954. 43p diagrs, drawing,
graphs Available from National Advisory Commit-
tee for Aeronautics, 1512 "H" St., N. W., Washing-
ton 25, D. C. PB 116154

1. Airplanes - Spinning - Recovery 2. Gyro stabili-
zers - Mathematical analysis 3. Airplanes - Balance
- Controls 4. Euler equations 5. Yawing moments -
Calculation 6. NACA TN 3321.

Analytical estimation of the effect of transpiration
cooling on the heat-transfer and skin-friction
characteristics of a compressible turbulent bound-
ary layer, by Morris W. Rubesin. U. S. National
Advisory Committee for Aeronautics. Dec 1954.
56p graphs, tables Available from National Advi-
sory Committee for Aeronautics, 1512 "H" St.,
N. W., Washington 25, D. C. PB 116007

1. Boundary layer, Turbulent - Heat transference -
Theory 2. Boundary layer, Turbulent - Skin friction

coefficients 3. Heat - Transference - Aerodynamics
4. Heat - Transference - Theory 5. Flow, Turbulent
- Theory 6. NACA TN 3341.

Approximate effect of leading-edge thickness, inci-
dence angle, and inlet Mach number on inlet
losses for high-solidity cascades of low camber-
ed blades, by Linwood C. Wright. U. S. National
Advisory Committee for Aeronautics. Dec 1954.
38p diagrs, graphs Available from National Advi-
sory Committee for Aeronautics, 1512 "H" St.,
N. W., Washington 25, D. C. PB 116112

1. Air flow - Pressure loss 2. Flow, Subsonic -
Theory 3. Propeller blades - Thickness 4. Cas-
cades (Aerodynamics) - Theory 5. Cascades
(Aerodynamics) - Tests 6. Mach number - Effect
7. Compressors, Axial - Blades - Flow - Calcula-
tion 8. NACA TN 3327.

Beitrag zur theorie des spornradflatterns (Contri-
bution to the theory of tail-wheel shimmy), by M.
Meizer. Dec 1954. 37p drawings, diagrs, graphs,
tables Available from National Advisory Commit-
tee for Aeronautics, 1512 "H" St., N. W., Wash-
ington 25, D. C. PB 116057

Effects of wheel loading, rolling velocity, rearward
position of the wheel with respect to the swivel axis,
tire elasticity, and torsional flexibility of the fuse-
lage are investigated both experimentally and theo-
retically. A major theoretical conclusion is that
the motion of a landing gear moving in a straight
line without fuselage elasticity is stable for a suf-
ficiently large rearward position of the wheel be-
hind the swivel axis, and this conclusion is well
verified quantitatively by the experimental data.
Translated by Mary L. Mahler from Bericht der
Focke-Wulf Flugzeugbau G.m.b.H., Bremen. Ver-
suchsabteilung. Technische Berichte, vol. 7, no. 2,
1940. NACA TM 1380.

Boundary-layer transition at Mach 3.12 with and
without single roughness elements, by Paul F.
Brinich. U. S. National Advisory Committee for
Aeronautics. Dec 1954. 41p drawings, graphs,
tables Available from National Advisory Com-
mittee for Aeronautics, 1512 "H" St., N. W.,
Washington 25, D. C. PB 116051

1. Airplanes - Models - Wind tunnel tests 2. Bound-
ary layer - Transition point - Photographic analysis
3. Mach number - Effect 4. Reynolds number -
Effect 5. Bodies of revolution - Surface roughness
6. NACA TN 3267.

Design considerations for wings having minimum
drag due to lift, by Warren A. Tucker. U. S. Na-
tional Advisory Committee for Aeronautics. Dec
1954. 26p graphs Available from National Advi-
sory Committee for Aeronautics, 1512 "H" St.,
N. W., Washington 25, D. C. PB 116152

1. Wings - Camber 2. Wings - Drag - Theory
3. Wings, Twisted - Design 4. Wings, Twisted -
Lift - Theory 5. NACA TN 3317.

Experiments on the flow into a swept leading-edge intake at zero forward speed with notes on the wider uses of a slotted intake, by J. Seddon and W.J.G. Trebble. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jan 1951. 18p diags, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.25. PB 115967

Cover date is 1954. S. O. code no. 23-2909.
1. Intakes, Air - Slotted - Design - Gt. Brit. 2. Intakes, Air - Slotted - Flow - Gt. Brit. 3. Intakes, Air - Wind tunnel tests - Gt. Brit. 4. ARC RM 2909.

Influence of thickness/chord ratio on supersonic derivatives for oscillating aerofoils, by W. P. Jones. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Sep 1947. 17p diags, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.25. PB 116060

Cover date is 1954. S. O. code no. 23-2679.
1. Airfoils - Oscillations - Theory - Gt. Brit.
2. Damping derivatives - Gt. Brit. 3. Airfoils - Pressure distribution - Theory - Gt. Brit. 4. Airfoils - Thickness - Effect - Gt. Brit. 5. Busemann's second-order-approximation theory - Gt. Brit. 6. ARC RM 2679.

Note on the boundary layer and stalling characteristics of aerofoils, by D. D. Carrow. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Oct 1950. 20p diags, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.50. PB 116059

Cover date is 1954. S. O. code no. 23-9007-74.
1. Airfoils - Boundary layer - Gt. Brit. 2. Airplanes - Stalling - Gt. Brit. 3. Reynolds number - Effect - Gt. Brit. 4. Boundary layer - Transition point - Gt. Brit. 5. ARC CP 174.

Note on the dynamic stability of aircraft at high-subsonic speeds when considering unsteady flow, by W.J.G. Pinsker. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1950. 28p diags, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.70. PB 116067

Cover date is 1954. S. O. code no. 23-2904.
1. Aircraft - Stability, Dynamic - Theory - Gt. Brit. 2. Mach number - Effect - Gt. Brit. 3. Flow, Compressible - Gt. Brit. 4. RAE TN Aero 2378 5. ARC RM 2904.

Semiannual progress report, 1 Jan 1954 to 30 Jun 1954. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Research Services Division, Cambridge, Mass. Jun 1954. 37p photos, diags, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116162

1. Aeronautical research.

Shocks in helical flows through annular cascades of stator blades, by Robert Wasserman and Arthur W. Goldstein. U. S. National Advisory Committee for Aeronautics. Dec 1954. 27p diags, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116155

1. Compressors, Axial - Blades - Flow - Calculation
2. Helix - Mathematical analysis
3. Cascades (Aerodynamics) - Theory
4. Flow, Supersonic - Theory
5. Diffusers, Supersonic - Flow patterns
6. Shock waves - Pressure
7. NACA TN 3329.

Stress concentrations at a cut-out in a swept wing, by E. H. Mansfield. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jul 1951. 21p diags, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.40. PB 116063

Cover date is 1954. S. O. code no. 23-2823. See also ARC RM 2754 and ARC RM 2758 (PB 112487).
1. Wings, Swept - Stress analysis - Gt. Brit.
2. Wings, Swept - Deformation - Theory - Gt. Brit.
3. Stiffeners, Longitudinal - Stress distribution - Gt. Brit. 4. ARC RM 2823 5. RAE TN Struc 114.

System for measuring the dynamic lateral stability derivatives in high-speed wind tunnels, by Henry C. Lessing, Thomas B. Fryer and Merrill H. Mead. U. S. National Advisory Committee for Aeronautics. Dec 1954. 42p photo, drawings, diagr, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116055

1. Wind tunnels, High speed - Stability measurements
2. Stability, Directional - Dynamic tests
3. Stability, Lateral - Measurements
4. Damping derivatives - Stability - Measurement
5. NACA TN 3348.

Theoretical and experimental investigation of aerodynamic-heating and isothermal heat-transfer parameters on a hemispherical nose with laminar boundary layer at supersonic Mach numbers, by Howard A. Stine and Kent Wanlass. U. S. National Advisory Committee for Aeronautics. Dec 1954. 48p photo, drawings, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116054

1. Bodies of revolution - Pressure - Effect on heat transfer
2. Boundary layer, Laminar - Temperature
3. Heat - Transference - Theory
4. Flow, Supersonic - Theory
5. Wind tunnels, Supersonic - Tests
6. Heating, Aerodynamic - Theory
7. Noses (Aircraft) - Wind tunnel tests
8. Reynolds number - Effect
9. Mach number - Effect
10. NACA TN 3344.

Theoretical calculations of the distribution of aerodynamic loading on a delta wing, by H. C. Garner. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1949. 33p diagr, graphs,

tables Available from British Information Services,
30 Rockefeller Plaza, New York 20, N. Y. \$2.00.
PB 116062

Cover date is 1954. S. O. code no. 23-2819.
1. Wings, Triangular - Loading - Calculations - Gt. Brit.
2. Wings, Triangular - Velocity distribution - Theory - Gt. Brit.
3. Loads, Aerodynamic - Theory - Gt. Brit.
4. ARC RM 2819.

Theoretical interference velocity on the axis of a two-dimensional wind tunnel with slotted walls, by R. C. Tomlinson. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Aug 1950. 15p drawing, diagr, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.50. PB 116286

Cover date is 1954. S. O. code no. 23-9007-181.
1. Flow, Incompressible - Theory - Gt. Brit.
2. Wind tunnels, Two dimensional - Interference - Gt. Brit.
3. Wind tunnels, Two dimensional - Walls - Effects - Gt. Brit.
4. Interference, Aerodynamic - Theory - Gt. Brit.
5. ARC CP 181.

Théorie générale des mouvements coniques et ses applications à l'aérodynamique supersonique (General theory of conical flows and its application to supersonic aerodynamics), by Paul Germain. Jan 1955. 340p diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116275

The report deals with a method of studying the equation of cylindrical waves which reduces problems of a hyperbolic equation to problems of harmonic functions. The study has been applied toward setting up the fundamental principles, to developing their investigation up to calculation of the pressures on the visualized obstacles, and to showing how the initial field of "conical flows" was considerably enlarged by a procedure of integral superposition. Translated from Office National d'Etudes et de Recherches Aéronautiques, Pub. no. 34, 1949. Preface by M. J. Peres. NACA TM 1354.

Rockets and Jet Propulsion

Design, construction and testing of a 6" resojet motor, by William Schubert. U. S. Naval Engineering Experiment Station, Annapolis, Md. Sep 1944. 21p drawings, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116258

The object of this work was to design, construct, and test a practical resojet motor operating on the principle of the intermittent-firing of an atmospheric air-fuel mixture in a chamber to produce a high velocity, rearwardly-directed jet of the exhaust gases. This high-velocity jet produces forward thrust on the motor by direct jet reaction. Project TED no. EES 3401. NAV EES B-5350 AS(a).

Flight trials of a rocket-propelled transonic research model: The R.A.E.-Vickers rocket model, parts I to IV, by the staff of the Supersonics Division, Flight Section, Royal Aircraft Establishment. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1950. 63p photos, drawings, diagrs, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$4.15. PB 116064

Cover date is 1954. S. O. code no. 23-2835. Contents: Part I: Historical, by J. Swan. - Part II: Test vehicle and experimental technique, by J. Swan. - Part III: Analysis of the flight of vehicle A3, by C.H.E. Warren and C. Kell. - Part IV: Discussion of the experiment, by J. Swan and C.H.E. Warren. - Appendix I: Description and development of the test vehicle, by E. Simpson and J. Swan. - Appendix II: Telemetering equipment, by F. H. Irvine. - Appendix III: Scilly Isles ground station, by C. Kell and P. R. Wyke. - Appendix IV: Parent aircraft and release procedure, by G. B. Lochée-Bayne. ARC RM 2835. RAE TN Aero 2357.

Heat and blast effects of current-type jet aircraft on airfield pavements. U. S. Waterways Experiment Station, Vicksburg, Miss. Oct 1954. 82p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50. PB 116172

Supersedes an "Interim report on heat and blast effects on pavements," Dec 1952.
1. Airports - Pavements - Blast effects
2. Airports - Pavements - Heat effects
3. Aircraft, Jet propelled - Effect on airfield pavements
4. WES TM 3-394.

Progress report A2 on U.S.A.F. Contract AF 19-(122)-55, period Sep-Dec 1949, by W. G. Dow and N. W. Spencer. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Jan 1950. 34p photos, diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115937

Project M824.
1. Rockets, Upper air - Equipment
2. Rockets, Upper air - Firing
3. Aerobee no. 3 (Rocket)
4. Atmosphere, Upper - Temperature - Measurement.
5. MU ERI Proj M 824, Report A2.

Rocket research at NRL, by William M. Leak. U.S. Naval Research Laboratory. Nov 1954. 28p photos, diagrs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116228

This report reviews the major efforts and accomplishments of NRL in this phase of its basic research program. It includes brief descriptions and illustrative material on the instrumentation designed and provided by this Laboratory. Also included

is a summary of data (so far analyzed) which presents the most significant findings yet obtained by NRL on the ultraviolet spectrum, the ionosphere, the earth's magnetic field, upper-atmospheric composition, density, pressure, and temperature. NRL R 4441.

Some measurements of noise from three solid-fuel rocket engines, by Leslie W. Lassiter and Robert H. Heitkotter. U. S. National Advisory Committee for Aeronautics. Dec 1954. 21p drawings, diags, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116111

1. Rocket motors - Noise - Measurements 2. Noise, Exhaust - Measurements 3. NACA TN 3316.

Valveless pulse jet investigation, by Joseph G. Logan, Jr. Cornell Aeronautical Laboratory, Inc., Buffalo, N. Y. Contract N6ori-119, T. O. 1, NR 220-041. Project Squid. Order separate parts as described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Part 1: Tests of small scale models. May 1949. 31p photos, drawings, graphs, tables Microfilm \$2.50, Photocopy \$5.25. PB 116256

These experiments were undertaken to determine if thrust and specific impulse values were appreciably affected by changes in fuel, methods of fuel injection and duct geometry. The tests appear to confirm the expectation that high specific impulse values are obtainable with valveless engines. Mean values of approximately 220 seconds were obtained in the tests. The experiments indicate, also, that an optimum configuration exists for each particular fuel and method of fuel injection. CAL TM 27. CAL DD 420-A-27.

Summary report. Oct 1951. 27p diags, graphs, tables Microfilm \$2.25, Photocopy \$4.00. PB 116257

The investigations conducted at Cornell Aeronautical Laboratory with valveless pulsejet engines from October 1948 to September 1951 and the whirling arm tests of 6-inch valveless pulsejets conducted at the Chesapeake Bay Annex of the Naval Research Laboratory between January 1951 and September 1951 are described. CAL TM 42. CAL DD 420-A-37.

Marine Transportation

Deep-sea radio telemetering oceanographic buoy, by Henry Stommel, Robert G. Walden, Donald Parson, Jr., and Sloat F. Hodgson. Woods Hole Oceanographic Institution, Woods Hole, Mass. Mar 1954. 27p drawings, diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116290

The present report is confined to a description of the buoys, and a discussion of their performance, to date, when launched into the ocean. Technical report under Contract Nonr-769(00) NR-083-069. Unpublished manuscript. WHOI Ref 54-61.

Marine microbiology. Semi-annual progress report no. 6, 1 Jul to 31 Dec 1953, under Contract N6onr-275(18), Project NR 135-020, by Claude E. ZoBell. California. University. Scripps Institution of Oceanography. Jan 1954. 23p drawings, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115850

1. Microorganisms - Effects of pressure 2. Microorganisms - Metabolism 3. Nitrates - Reduction - Effect of pressure 4. Instruments, Measuring - Temperature - Design 5. Pressure vessels - Design 6. Urea-urease system - Effect of pressure 7. UC SIO 54-1.

Marine wood-boring organisms. Annual progress report for period 1 Jan-31 Dec 1953 under Contract Nonr 233(13) NR 163-084, by Robert J. Menzies and Martin W. Johnson. California. University. Scripps Institution of Oceanography. Jan 1954. 26p graphs (1 fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116182

1. Marine borers - Research 2. UC SIO Ref 54-5.

Modification of wave height due to bottom friction, percolation, and refraction, by C. L. Bretschneider and R. C. Reid. Texas. Agricultural and Mechanical College. Dept. of Oceanography. Oct 1954. 41p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. Limited supply available free from Beach Erosion Board, Office of the Chief of Engineers, Little Falls Road, at MacArthur Blvd., Washington, 25, D. C. PB 115916

Contract DA-49-055-eng-18.

1. Waves, Ocean - Attenuation - Theory 2. Waves, Ocean - Surface elevation 3. Waves, Ocean - Mathematical analysis 4. ENG BEB TM 45.

Oceanographic instrumentation, a conference held at Rancho Santa Fe, California, 21-23 June 1952, edited by John D. Isaacs and Columbus O'D. Iselin. National Research Council. Division of Physical Sciences and U. S. Office of Naval Research. Geophysics Branch. 1952? 243p photos, drawing, map, diags, graphs, tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$1.25. PB 115995

Contents: I. Considerations of oceanic instrumentation, by John D. Isaacs. - II. Measurements of the oceanic circulation in temperate and tropical lati-

tudes, by William S. von Arx. - III. Biological instruments, by Elbert H. Ahlstrom. - IV. Oceanographic instruments for measuring temperature, by Allyn C. Vine. - V. Geophysical measurements, by Russell W. Raitt. - VI. Sea-ice problems, by Clifford A. Barnes. - VII. Acoustic instrumentation as a tool in oceanography, by J. B. Hersey. - VIII. Considerations in the construction of oceanographic vessels, by William V. Kielhorn. - IX. Wave measurements, by Frank E. Snodgrass. - X. Chemical measurements, by Dayton E. Carritt. - XI. Methods of exploring the ocean floor, by Robert S. Dietz. - XII. Air-sea boundary processes, by Walter H. Munk. NRC 309.

Oceanographic model of Puget Sound, by Clifford A. Barnes, John H. Lincoln, and Maurice Rattray, Jr. Washington. University. Dept. of Oceanography, Seattle, Wash. Jan 1954. 31p photos, maps, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115789

Technical report no. 19 under Contract N8onr-520/III, Project NR 083 012.
1. Models, Hydraulic - Puget Sound 2. Currents, Ocean - Puget Sound 3. Sea water - Salinity - Puget Sound 4. Tides - Puget Sound 5. WU OR 54-3.

Oceanographic survey of the central and eastern parts of Long Island Sound. Progress report for the period 1 Jan to 31 Dec 1953 on Contract NR 163 118, by Gordon A. Riley. Yale University. Gingham Oceanographic Laboratory. Jan 1954. 28p map, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115846

Appendix A: Water exchange in Long Island Sound. - Appendix B: Transparency.
1. Oceanography - Long Island Sound 2. Sea water - Transparency - Long Island Sound 3. Sea water - Salinity - Long Island Sound 4. Marine life - Long Island Sound 5. Plankton - Long Island Sound 6. Zoology - Ecology - Long Island Sound.

Physical and chemical data for Puget Sound and approaches, by Clifford A. Barnes and Eugene E. Collias. Washington. University. Dept. of Oceanography, Seattle, Wash. Contract N8onr-520/III, Project NR 083 012. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Feb 1949-Feb 1952. Mar 1954. 52p maps, tables
Microfilm \$3.00, Photocopy \$7.75. PB 116280

Technical report no. 28.
1. Sea water - Temperature 2. Sea water - Chlorinity 3. Sea water - Chemical analysis 4. Sea water - Physical analysis 5. WU OR Ref 54-12.

Mar-Aug 1952. Feb 1954. 47p maps, tables
Microfilm \$2.75, Photocopy \$6.50. PB 116034

Technical report no. 24.
1. Sea water - Salinity - Puget Sound 2. Sea water - Temperature - Puget Sound 3. Sea water - Chemical analysis - Puget Sound 4. WU OR 54-8.

Present status and future development of oceanography, with an appendix: Educational opportunities for oceanographers in the United States and Canada, by Richard H. Fleming. Washington. University. Dept. of Oceanography, Seattle, Wash. Jan 1954. 32p tables (1 fold) Available from University of Washington, Dept. of Oceanography, Seattle 5, Wash. PB 115790

Technical report no. 20 under Contract N8onr-520/III, Project NR 083 012. Paper presented at Eighth Pacific Science Congress, Quezon City, P. I., Nov 1953.
1. Oceanography 2. Education - Oceanography 3. WU OR 54-4.

Principles and applications of underwater sound. U. S. National Defense Research Committee. 1946. 299p photos, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$37.75. PB 116199

Summary technical report division 6, NDRC, vol. 7. Contents: Part I: Basic principles of underwater sound. - Part II: Echo ranging. - Part III: Listening. NDRC 6, vol. 7.

Ripple tank studies of depth determination by wave velocity method from timed vertical photographs, by Ning Chien. California. University. Institute of Engineering Research. Wave Research Laboratory, Berkeley, Calif. Sep 1953. 14p photo, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115849

Contract Nonr 222(17).
1. Waves, Ocean - Depth - Determination 2. Waves, Ocean - Photographic analysis 3. Waves, Ocean - Velocity 4. UC IER Series 74, Issue 5.

Shaping and terracing of the Mediterranean, by Erwin Raisz. Virginia. University. Virginia Geographical Institute, Charlottesville, Va. Jan 1954. 60p maps, diags, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115852

Technical report no. 1. Contract Nonr-474(03) Project NR 088 047.
1. Mediterranean Sea 2. Geology - Mediterranean Sea.

Shore protection planning and design. U. S. Beach Erosion Board. Jun 1954. 407p photos, drawings, diags, maps, graphs, tables Available from

Superintendent of Documents, Government Printing Office, Washington 25, D. C. \$2.25. PB 115845

Supersedes Special issue no. 2, Bulletin of the Beach Erosion Board, March 1953.

1. Seawalls - Design
2. Breakwaters - Design
3. Waves, Ocean - Forecasting
4. Beaches - Erosion - Prevention
5. ENG BEB TR 4.

Some results of the Florida current study, 15 May 1953 to 15 Nov 1953, by Ilma Helo, Frank Chew, and Lansing P. Wagner. Miami. University. Marine Laboratory, Coral Gables, Fla. Feb 1954. 103p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.75, Photocopy \$14.00. PB 115985

Technical report 54-7. Contract Nonr-0840(01): Tropical oceanography.

1. Currents, Ocean - Florida
2. Currents, Ocean - Velocity - Measurement
3. Tides - Velocity - Measurement
4. Bjerknes' equation (Oscillation).

Some ripple tank studies on wave refraction, by Ning Chien. California. University. Institute of Engineering Research. Wave Research Laboratory, Berkeley, Calif. Nov 1953. 14p photo, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115848

Contract Nonr 222(17).

1. Waves, Ocean - Refraction phenomena
2. Snell's law (Wave refraction)
3. UC IER Series 3, Issue 358.

Sonic scattering layer studies. Report I under Contract Nonr-1135(01) Project NR 165-195, by Elizabeth M. Kampa and Brian P. Boden. Bermuda Biological Station, St. George's West, Bermuda. Feb 1954. 30p photos, drawing, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116096

1. Photometers, Underwater - Design
2. Recorders, Depth - Design
3. Light - Scattering - Measurement
4. Illumination, Underwater - Measurement.

Standard roughness for river models, by W. D. Baines. National Research Council of Canada. Division of Mechanical Engineering. Hydraulics Laboratory. Oct 1954. 11p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. Also available for exchange from National Research Council, Montreal Road, Ottawa, Canada. PB 116190

The properties of 1/2-in. wide flat strips are studied and data on them re-analyzed. A systematic plot for all data has been obtained in terms of relative roughness, height and strip spacing. The use of these data in river model work is briefly reviewed. NRCC MH-48.

Statistical analysis of ocean waves, by R. R. Putz. California. University. Institute of Engineering Research. Wave Research Laboratory, Berkeley, Calif. Jan 1954. 17p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115786

Contract NR-083-008. Presented at the 1953 Pacific section meeting of the American Society of Limnology and Oceanography, Santa Barbara, 17 Jun 1953.

1. Waves, Ocean - Mathematical analysis
2. Waves, Ocean - Depth - Determination
3. Waves, Ocean - Pressure
4. UC IER Series 3, Issue 360.

Suggestion for the correction of salinity data obtained with the S-T-D instrument, by Arthur R. Miller. Woods Hole Oceanographic Institution, Woods Hole, Mass. Mar 1954. 9p diagr, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 116289

The purpose is to demonstrate a type of correction which varies according to temperature and salinity. Unpublished manuscript. Technical report under Contract N6onr-27701 (NR-083-004). WHOI Ref 54-17.

Synthetic ocean water, by T. P. May and C. E. Black. U. S. Naval Research Laboratory. Aug 1946. 41p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116255

A bibliography of publications dealing with the inorganic chemical composition of ocean water is presented. By a review of this literature several generalizations about the chemistry of ocean water are noted. These facts are used as a standard to compare several existing formulas for synthetic substitutes now in widespread use. A new formula is proposed, giving exact reproduction of ion concentrations which are existent in natural ocean water. NRL Problem P-114. NRL P-2909.

Towing-tank tests on a large six-engine flying boat seaplane, to specification 10/46 (Princess). Part II: Porpoising stability, spray, and air drag tests, with improved step fairing, afterbody design and aerodynamic modifications, by A. G. Smith, D. F. Wright and T. B. Owen. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Nov 1950. 32p photos, drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.90. PB 115965

For Part I see PB 109390. Cover date is 1954. S. O. code no. 23-2834.

1. Princess (Seaplane) - Gt. Brit.
2. Seaplanes - Porpoising - Gt. Brit.
3. Seaplanes - Hydrodynamics - Gt. Brit.
4. Seaplanes - Models - Tests - Gt. Brit.
5. Seaplanes - Design - Gt. Brit.
6. ARC RM 2834.

Water and air performance of seaplane hulls as affected by fairing and fineness ratio, by A. G. Smith and J. E. Allen. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Aug 1950. 27p drawings, diagrs, graphs, tables. Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.70. PB 116066

Cover date is 1954. M.A.E.E. Report F/Res/219, received 13th January 1951. S. O. code no. 23-2896.
1. Seaplanes - Drag - Gt. Brit. 2. Seaplanes - Hulls - Length-beam ratio - Gt. Brit. 3. Seaplanes - Hydrodynamics - Gt. Brit. 4. ARC RM 2896.

Wave contours in the wake of a 10-degree dead-rise planing surface, by B. V. Korvin-Kroukovsky, Daniel Savitsky, William F. Lehman. Stevens Institute of Technology. Experimental Towing Tank, Hoboken, N. J. Nov 1948. 52p diagrs, graphs, table Available from Publications Dept., Institute of the Aeronautical Sciences, Inc., 2 E. 64th St., New York 21, N. Y. \$1.60. Member price \$1.20. PB 115273

Preprint no. 170. E.T.T. project no. CC839. ONR project no. NR 062-012.
1. Planing surfaces - Hydrodynamics 2. Waves in water - Measurement 3. SIT ETT 344.

Wave contours in the wake of a 20-degree dead-rise planing surface, by B. V. Korvin-Kroukovsky, Daniel Savitsky, William F. Lehman. Stevens Institute of Technology. Experimental Towing Tank, Hoboken, N. J. Jun 1948. 53p photos, diagrs, graphs Available from Publications Dept., Institute of the Aeronautical Sciences, Inc., 2 E. 64th St., New York 21, N. Y. \$1.60. Member price \$1.20. PB 115272

Preprint no. 168. E.T.T. project no. CC839. ONR project no. NR 062-012.
1. Planing surfaces - Hydrodynamics 2. Photography, Underwater 3. Waves in water - Measurement 4. SIT ETT 337.

Wave, longshore current and beach profile records for Santa Margarita River Beach, Oceanside, California, 1949, by R. L. Wiegel, D. A. Patrick, H. L. Kimberley. California. University. Institute of Engineering Research. Wave Research Laboratory, Berkeley, Calif. Nov 1953. 17p photos, map, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.75, Photocopy \$2.50. PB 112775

1. Waves, Ocean - Measurement 2. Currents, Ocean 3. Profiles, Beach 4. Sands, Beach - Analysis 5. Beaches - Meteorological factors 6. UC IER series 3, issue 357.

Wind mixing currents, by John C. Freeman, Jr. Texas. Agricultural and Mechanical College. Dept. of Oceanography, College Station, Texas. Oct 1953. 20p diagrs, graphs Available from Library of Congress, Publication Board Project,

Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 114380

Contract N7 onr 487, T. O. 3, Project NR 083-061. Technical report no. 6. Texas A & M Research Foundation project 29.

1. Currents, Ocean - Velocity - Measurement
2. Ocean surface - Momentum transfer 3. Waves, Ocean - Velocity 4. Atmosphere - Temperature - Effect on heat transference.

WATER SUPPLY, SANITATION AND PUBLIC HEALTH

Effect of body feed on the filtration of water through diatomite, by Harold E. Babbitt and E. Robert Baumann. Illinois. Engineering Experiment Station, Urbana, Ill. Jul 1954. 38p photos, drawings, diagrs, graphs, tables Available from Engineering Experiment Station, University of Illinois, Urbana, Ill. \$.80. PB 116269

The results of more than 500 filtration tests employing diatomite are reported in this bulletin. Special emphasis is given to the effects of body feed on economy of operation. A convenient field procedure for the purpose of determining the filtering quality of water supplies is introduced. The relationship between the amount of body feed required to secure most economical use of diatomite and the quality of raw water, in the special case involving water coagulated by ferric chloride and limestone, is shown graphically. University of Illinois. Bulletin vol. 51, no. 81. ILU EES B 425.

MISCELLANEOUS

Abelian groups and partitions, by James Singer. Brooklyn College, Brooklyn, N. Y. Nov 1953. 36p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116094

1. Partition coefficients 2. Mathematical equations and solutions.

Coastal geography conference, Feb 18, 1954, sponsored by the Geography Branch, Office of Naval Research, and the NRC Committee on Geography. 1954. 74p photos, maps, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 116030

Contents: Objectives and methods of photo interpretation research on the Mediterranean Basin, by Charles V. Crittenden. - Photo interpretation of coastal zones of Dalmatia, by Geza Teleki. - Correlation of shoreline type with offshore conditions in the Gulf of Mexico, by W. Armstrong Price. - Southeastern Louisiana marshlands, by Robert C. Treadwell. - Correlation of cultural remains with the physical setting, by William G. McIntire. - Coastal marshes of Louisiana, by Richard J. Russell.

Mangrove swamp of the Pacific littoral of Colombia, by Robert C. West. - Coastal dunes, by H. T. U. Smith. - Preliminary investigation of shifting beach profiles, by Henry C. Stetson. - Classification and identification of coastal zones of the world, by William C. Putnam.

Departments of geological science in educational institutions of the U. S. and Canada, 1954-55, compiled by Beryl A. Spencer. American Geological Institute. Sep 1954. 163p Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$1.50. PB 116002

Information on staff, courses and degree requirements for over 200 departments of geological science; includes departments not offering a major in geology. Latest revision of earlier reports covering same material. Shepard W. Lowman, Editor. Report no. 11. Fourth annual edition. NRC 329.

Directory of geologists and exploration geophysicists in member societies of the American Geological Institute. American Geological Institute, Washington, D. C. Apr 1954. 414p Available from Publications Office, NAS-NRC, 2101 Constitution Ave., N. W., Washington 25, D. C. \$2.50. PB 115994

This directory was compiled from addressograph lists furnished the Institute by member societies in August 1953, in connection with the National Scientific Register of Scientific and Technical Trained Personnel. NRC 308.

Factors affecting industrial location in Kansas, by John P. Clifton. Kansas. Engineering Experiment Station, Manhattan, Kansas. Mar 1954. 13p table Available from Engineering Experiment Station, Kansas State College, Manhattan, Kansas. PB 114058

Circular no. 6.

1. Industries - Location 2. K EES C 6.

Life history of blue and lesser snow geese on Southampton Island, by Frederick Graham Cooch. Cornell University. Dept. of Conservation, Ithaca, N. Y. Feb 1954. 49p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115984

Report presented to the Arctic Institute of North America and the Office of Naval Research in accordance with ONR subcontracts 75 and 98.

1. Geese 2. *Chen carulescens* 3. *Chen hyperboreus*.

Norwegian-Soviet boundary, a study in political geography, by Trevor Lloyd. Dartmouth College.

Dept. of Geography, Hanover, N. H. Feb 1954. 57p photos, maps, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75.

PB 116089

Technical report under Contract ONR 438-03-01.
1. Boundaries, Geographical - Norway - Russia
2. Geopolitics.

Present needs for research on the use and care of natural resources, prepared for the Ford Foundation. National Research Council. Division of Biology and Agriculture. Committee on Use and Care of Natural Resources. 1953. 37p Available from National Research Council, 2101 Constitution Ave., N. W., Washington 25, D. C. \$.50. PB 115986

Papers discussing the needs for research on the conservation, improved management and utilization of our natural resources. Research priorities are suggested, and recommendations made as to methods by which the various problems discussed may be solved. NRC 288.

Subject classification of technical reports, prepared by Technical Information Branch, Technical Data Division. U. S. Bureau of Aeronautics. Jul 1953. 520p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$65.25. PB 116157

1. Subject headings - Aeronautics 2. NAVAER TD-4.

Swimming pools, construction and maintenance, by Carl H. Moulton. U. S. Office of Technical Services. Oct 1954. 13p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.50. PB 111539

1. Swimming pools - Design 2. Swimming pools - Sanitation 3. Water - Analysis - Equipment
4. Water - Purification 5. TAS 107 6. OTS IR 13871.

Unified soil classification system, vol. 1. U. S. Waterways Experiment Station, Vicksburg, Miss. Mar 1953. 49p fold diagr, graphs, fold table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115555

Describes and explains the system so that identification of soil types will be on a common basis. Applies to airfields, embankments, foundations, and other engineering features. Vol. 2 is Appendix A (PB 115555s); Vol. 3 is Appendix B (PB 115555s2). WES TM 3-357, Vol. 1.

SELECTED LIST OF ATOMIC ENERGY REPORTS OF INTEREST TO INDUSTRY

The following Atomic Energy Reports are listed here because of their interest and usefulness to general industry.

Reports may be purchased in accordance with instructions on the inside front cover of U. S. GOVERNMENT RESEARCH REPORTS. As PB number are not indicated, order by series and number. These reports may also be consulted at any AEC Depository Library. A list of these libraries may be obtained from the U. S. Department of Commerce, Office of Technical Services, Washington 25, D. C.

Reproduction in whole or part of any report listed herein is encouraged by the U. S. Atomic Energy Commission, subject to the approval of authors or originating sites. General inquiries from the industrial press about AEC-developed information should be directed to the Industrial Information Branch, Atomic Energy Commission, Washington 25, D. C.

Biology and Medicine

A summary of findings of the ecological survey of White Oak Creek, Roane County, Tennessee, 1950-1953, prepared by Louis A. Krumholz. Fish and Game Branch, Division of Forestry Relations, Tennessee Valley Authority, Norris, Tennessee. October 1954. Contract No. AT(40-1)-221. 54p. \$45. (ORO-132)

Agricultural research program. Semi-annual progress report for January 1, 1954 to June 30, 1954. University of Tennessee, Knoxville, Tennessee. December 1954. Contract No. AT-40-1-GEN-242. 91p. Microfilm \$4.50, Photocopy \$12.75. (ORO-133)

Chemistry and Chemical Engineering

Utilization of gross fission products. Summary report for period 1 February 1952 - 30 June 1954. American Meat Institute Foundation, University of Chicago. February 1, 1952. Contract No. AT(11-1)-227. 54p. Microfilm \$3.00, Photocopy \$7.75. (AECU-2951)

A study of the explosive properties of uranium-zirconium alloys, by Robert P. Larsen, Roberta S. Shor, Harold M. Feder and D. Stanley Flikkema. Argonne National Laboratory. July 1954. Contract W-31-109-eng-36. 22p. Microfilm \$2.25, Photocopy \$4.00. (ANL-5135)

Corrosion of metals in high temperature water at 500 F and 600 F, by S. C. Datsko. Argonne National Laboratory. October 4, 1954. Subcontract No. 31-109-38-188. 207p. Microfilm \$7.75, Photocopy \$26.50. (ANL-5354)

The heat capacity of uranium tetrafluoride from 5 to 300°K, by D. W. Osborne, E. F. Westrum, Jr., H. R. Lohr. Argonne National Laboratory. November 1954. Contract W-31-109-eng-38. 11p. Microfilm \$2.90, Photocopy \$2.75. (ANL-5365)

Progress report on fission products utilization. VII. Status report on the gamma ray initiated polymerization of N-vinylpyrrolidone, by D. S. Ballantine and B. Manowitz. Brookhaven National Laboratory. October 1954. 9p. Microfilm \$1.50, Photocopy \$1.50. (BNL-317 (T-53))

Flooding characteristics of a pulse extraction column, by G. H. Beyer and R. B. Edwards. Ames Laboratory. December 10, 1954. Contract W-7405-eng-82. 28p. Microfilm \$2.25, Photocopy \$4.00. (ISC-553)

Operating characteristics of a centrifugal extractor, by G. H. Beyer and F. M. Jacobsen. Ames Laboratory. November 26, 1954. Contract W-7405-eng-82. 40p. Microfilm \$2.50, Photocopy \$5.25. (ISC-548)

The solubility of hydrogen and tritium in palladium black, by R. L. Favreau, R. E. Patterson, D. Randall, and O. N. Salmon. Knolls Atomic Power Laboratory. April 15, 1954. Contract No. W-31-109-eng-52. 21p. \$25. (KAPL-1036)

Corrosion of reactor structural materials in high-temperature water. II. Static corrosion behavior at 600 to 680°F, by R. Fowler, D. L. Douglas, and F. C. Zyzyes. Knolls Atomic Power Laboratory. December 1, 1954. Contract No. W-31-109 Eng-52. 55p. Microfilm \$3.00, Photocopy \$7.75. (KAPL-1248)

Fluorometric determination of uranium in sulfuric acid, by Karl S. Bergstresser. Los Alamos Scientific Laboratory, Univ. of Calif. July 1954. Contract W-7405-ENG.36. 22p. Microfilm \$2.25, Photocopy \$4.00. (LA-1706)

Collected radiochemical procedures, by D. P. Ames and others. Los Alamos Scientific Laboratory, Univ. of Calif. September 10, 1954. Contract W-7405-ENG.36. 228p. Microfilm \$8.25, Photocopy \$29.00. (LA-1721)

The preparation of a primary standard of tritium water, by John Farr and Dwayne T. Vier. Los Alamos Scientific Laboratory, Univ. of Calif. August 24, 1954. Contract W-7405-ENG.36. 6p. Microfilm \$1.50, Photocopy \$1.50. (LA-1734)

Argon treatment of liquid scintillators to eliminate oxygen quenching, by F. Newton Hayes and others. Los Alamos Scientific Laboratory, Univ. of Calif. October 1954. Contract W-7405-ENG.36. 6p. Microfilm \$1.50, Photocopy \$1.50. (LA-1837)

Spectrochemical analysis of bismuth. Information report, by D. J. Hunt and G. Pish. Mound Lab. August 19, 1953. Contract No. AT-33-1-GEN-53. 20p. \$25. (MLM-891)

The use of sequential factorial designs in the establishment of optimum conditions for a decontamination process, by M. K. Barnett, P. M. Hamilton, and F. C. Mead, Jr. Mound Laboratory. Contract No. AT-33-1-GEN-53. 21p. Microfilm \$2.25, Photocopy \$4.00. (MLM-921)

The inhibition of corrosion by the pertechnetate ion, by G. H. Cardledge. Oak Ridge National Laboratory. January 18, 1955. Contract No. W-7405-eng-26. 41p. Microfilm \$2.75, Photocopy \$6.50. (ORNL-1833)

Retention of uranium during oxidative ashing of selected naturally occurring carbonaceous substances, by Frank Cuttitta and Edward Brittin. U.S. Geological Survey. September 1954. 8p. (TEI-461)

Bibliography of syntheses with carbon isotopes, compiled by Judd C. Nevenzel, Richard F. Riley, David R. Howton, and Gunther Steinberg. Atomic Energy Project. School of Medicine. Univ. of Calif. December 6, 1954. Contract No. AT-04-1-GEN-12. 175p. \$1.05. (UCLA-316)

Separation of iron, cobalt, zinc and phosphorus on synthetic resin, by Harold L. Helwig, James K. Ashikawa, and Elmer R. Smith. Radiation Lab., Univ. of Calif., Berkeley. July 19, 1954. Contract W-7405-eng-48. 11p. \$.20. (UCRL-2655)

Capacity factors in the performance of perforated plate columns, by Charles d'Ancona Hunt. Radiation Lab., Univ. of Calif., Berkeley. October 1954. Contract No. 7405-eng-48. 151p. Microfilm \$6.25, Photocopy \$20.25. (UCRL 2696)

Electromagnetic concentration of the stable isotopes of zinc, by L. O. Love, W. A. Bell, and H. J. Buttram. Oak Ridge National Laboratory, Y-12 Area. November 9, 1950. Contract No. W-7405-eng-26. 17p. \$.25. (Y-693)

Engineering

Eddy current type diameter gauge for corrosion measurements, by William B. Doe. Argonne National Laboratory. September 1954. Contract W-31-109-eng-38. 16p. Microfilm \$2.00, Photocopy \$2.75. (ANL-5227)

Free convection in fluids having a volume heat source. Theoretical laminar flow analyses for pipe and parallel plate systems, by D. C. Hamilton H. F. Poppendiek, R. F. Redmond, and L. D. Palmer. Reactor Experiment Engineering Division, Oak Ridge National Laboratory. December 3, 1954. Contract No. W-7405-eng-26. 39p. \$.35. (ORNL-1769)

Geology and Mineralogy

Drilling in the North Point No. 6 and Horn Channels, White Canyon, San Juan County, Utah, by Dana R. Kelley. Exploration Division. Grand Junction Operations Office. June 1954. Contract No. AT-(30-1)-1361. 33p. \$.35. (RME-63)

Reconnaissance of uranium occurrences at Wray Mesa, San Juan County, Utah and Montrose County, Colorado, by Gordon K. Zareski. Exploration Division. Grand Junction Operations Office. October 5, 1954. 15p. \$.20. (RME-69(Pt. 1))

Reconnaissance of the lower Chinle along the Colorado River between the Moab and Dewey Bridges,

Grand County, Utah, by K. J. Rogers. Exploration Division. Grand Junction Operations Office. October 4, 1954. 17p. \$.25. (RME-70)

Preliminary report on uranium occurrence in the Austin Area, Lander County, Nevada, by Byron J. Sharp and Donald L. Hetland. Salt Lake Exploration Branch. Division of Raw Materials. May 1954. 16p. \$.20. (RME-2010)

Fracture studies in the Zuni and Lucero Uplifts, New Mexico, Part I. Annual report for June 15, 1952 to April 1, 1953, by Walter H. Bucher. Columbia University. June 1953. Contract No. AT(30-1)-1195. 12p. \$.20. (RME-3042)

Studies relating to the origin and distribution of uranium deposits on the Colorado Plateau. Annual report for July 1, 1952 to March 31, 1953, by John W. Gruner, Lynn Gardiner and Deane K. Smith, Jr. Division of Raw Materials, Washington, D. C. April 1, 1953. Contract No. AT-30-1-610. 58p. \$.55. (RME-3044)

Summary of investigations in the Marysvale, Utah Area. Annual report for June 30, 1952 to April 1, 1953, by Paul F. Kerr and others. Department of Geology, Columbia University. April 1953. Contract No. AT(30-1)-702. 99p. \$.70. (RME-3046)

Mineral associations in the uranium deposits of the Colorado Plateau and adjacent regions. Interim report, by John W. Gruner, Lynn Gardiner, and Deane K. Smith, Jr. University of Minnesota. August 1, 1954. Contract No. AT(30-1)-610. 46p. Microfilm \$2.75, Photocopy \$6.50. (RME-3092)

Further studies relating to the origin and distribution of uranium deposits on the Colorado Plateau. Annual report for April 1, 1953 to March 31, 1954, by John W. Gruner, Abraham Rosenzweig, and Deane K. Smith, Jr. University of Minnesota. April 1, 1954. Contract No. AT(30-1)-610. 37p. \$.35. (RME-3094)

Ninth progress report for period April 1 to October 1, 1954, by John W. Gruner and Deane K. Smith, Jr. University of Minnesota. October 1, 1954. Contract No. AT(30-1)-610. 10p. Microfilm \$1.50, Photocopy \$1.50. (RME-3103)

Investigation of subsurface isorad methods, Temple Mountain, San Rafael District, Utah, by David N. Hinckley. Division of Raw Materials, AEC. September 2, 1952. 42p. Microfilm \$2.75, Photocopy \$6.50. (RME-4019)

Analytical procedure for the determination of thorium, by R. Kronstadt and Allan R. Eberle. Bureau of Mines, Bluemont, Va. January 1952. 9p. \$.10. (RMO-838)

Reconnaissance for radioactive materials in North-eastern United States during 1952, by Francis A. McKeown and Harry Klemic. June 1953. 70p. Microfilm \$3.25, Photocopy \$9.00. (TEI-317-A)

Reconnaissance for uranium in the Powder River Basin, Wyoming, by David F. Davidson. May 1953. 36p. Microfilm \$2.50, Photocopy \$5.25. (TEM-677)

Reconnaissance for uranium in the Indiana coal field, by John L. Snider. United States Geologic Survey. August 1952. 26p. \$.25. (TEM-784)

Health and Safety

Studies on flash burns: The influence of exposure time and irradiance on the thermal protective qualities of two fabric assemblies, by George Mixer, Jr. and Herman E. Pearse. The University of Rochester. November 16, 1954. Contract W-7401-eng-49. 29p. Microfilm \$2.25, Photocopy \$4.00. (UR-355)

The effects of a maintained body burden of polonium in the rat. II. Plan of long term experiment; distribution, excretion and retention data, by J. N. Stannard and R. C. Baxter. The University of Rochester. January 4, 1955. Contract W-7401-eng-49. 34p. Microfilm \$2.50, Photocopy \$5.25. (UR-376)

Instrumentation

A microsecond shutter for use in separating neutrons of various speeds, by F. G. P. Seidl. Brookhaven National Laboratory. July 1954. 62p. Microfilm \$3.25, Photocopy \$9.00. (BNL-278(T-46))

A survey meter for uranium and plutonium, by A. H. Dexter. E. I. du Pont de Nemours & Co. November 1954. Contract AT(07-2)-1. 20p. Microfilm \$2.00, Photocopy \$2.75. (DP-62)

Dual channel pulse analyser and count-rate meter for gamma spectrometer monitor, by R. S. Paul and M. R. Wood. Hanford Works. June 17, 1954. Contract W-31-109-Eng-52. 20p. \$.25. (HW-32166)

Alpha floor monitor, by Mark H. Tattan. Los Alamos Scientific Laboratory, Univ. of Calif. August 2, 1954. Contract W-7405-ENG.36. 24p. Microfilm \$2.25, Photocopy \$4.00. (LA-1713)

Improvements in method and equipment for drawing quartz fibers. Information report, by R. G. Oil. Mound Laboratory. January 29, 1952. Contract No. AT-33-1-GEN-53. 23p. \$.25. (MLM-656)

Measurement of the distribution of thin layers of alpha-emitting materials. Information report, by A. W. Wolring, R. G. Oil, and T. E. Eyles. Mound Laboratory. February 16, 1953. Contract No. AT-33-1-GEN-53. 19p. Microfilm \$2.00, Photocopy \$2.75. (MLM-818)

An inexpensive, wide range gamma ray Geiger survey meter, by H. D. LeVine and H. J. DiGiovanni. Instruments Branch, Health and Safety Division, New York Operations Office. January 4, 1951. 72p. \$.30. (NYO-1538)

Mixed beta-gamma exposures in film badge dosimetry, by Leonard R. Solon. New York Operations Office, AEC. December 1953. 7p. \$.20. (NYO-4565)

Production of high speed liquid jets by means of a propellant, by Brian Dunne, Jr., Herbert Gass, and

Benedict Cassen. School of Medicine, University of California, West Los Angeles, Calif. January 10, 1954. Contract No. AT-04-1-GEN-12. 11p. \$.20. (UCLA-275)

Initial development of a semi-conductor fast neutron dosimeter, by Benedict Cassen, Thomas Crough, and Herbert Gass. Atomic Energy Project, Univ. of Calif., Los Angeles. October 15, 1954. Contract AT-04-1-GEN-12. 15p. \$.20. (UCLA-309)

Metallurgy and Ceramics

Development and operation of a high temperature quenching furnace, by G. B. Eyerly, W. A. Lambertson, and J. H. Handwerk. Argonne National Lab. April 1952. Contract W-31-109-eng-38. 15p. Microfilm \$2.00, Photocopy \$2.75. (ANL-4863)

Screening tests on metals and alloys in contact with sodium hydroxide at 1000 and 1500 F, by C. M. Craighead, L. A. Smith, and R. I. Jaffee. Battelle Memorial Institute, Columbus, Ohio. November 6, 1951. Contract No. W-7405-eng-92. 36p. \$.35. (BMI-706)

Thermal diffusivities and conductivities of greensalt, greensalt-magnesium blends, dolomite, and slag, by K. O. Beatty, Jr. National Lead Company of Ohio. July 1, 1954. Contract No. AT(30-1)-1156. 21p. Microfilm \$2.25, Photocopy \$4.00. (FMPC-471)

Cathodic vacuum etching of uranium, by T. K. Bierlein. Hanford Atomic Products Operation, Richland, Washington. August 11, 1954. Contract No. W-31-109-eng-52. 14p. Microfilm \$2.00, Photocopy \$2.75. (HW-32676)

Solubility of the rare earth oxalates and complex ion formation in oxalate solution II. Neodymium and cerium (III), by Carl E. Crouthamel and Don S. Martin, Jr. Iowa State College. July 25, 1950. Contract No. W-7405-eng-82. 16p. \$.10. (ISC-88)

A study of the reaction of thorium with some pure refractory compounds, by G. R. Pulliam and E. S. Fitzsimmons. Ames Laboratory. December 10, 1954. Contract W-7405-eng-82. 16p. Microfilm \$2.00, Photocopy \$2.75. (ISC-550)

High temperature laboratory furnaces, by D. R. Wilder. Ames Laboratory. December 1, 1954. Contract W-7405-eng-82. 23p. Microfilm \$2.25, Photocopy \$4.00. (ISC-551)

The effect of neutron flux on the mechanical properties of aluminum alloys, by R. V. Steele and W. P. Wallace. Livermore Research Lab., Calif. Research and Development Co. May 1954. Contract AT(11-1)-74. 21p. \$.25. (LRL-145)

Circulation of lead-bismuth eutectic at intermediate temperatures, by R. Cygan. Atomic Energy Research Dept., North American Aviation, Inc., Downey, California. October 1, 1953. Contract No. AT-11-1-GEN-8. 22p. \$.25. (NAA-SR-253)

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