

*U. S. Government*  
**RESEARCH  
 REPORTS**

February 18, 1955  
 Vol. 23, No. 2

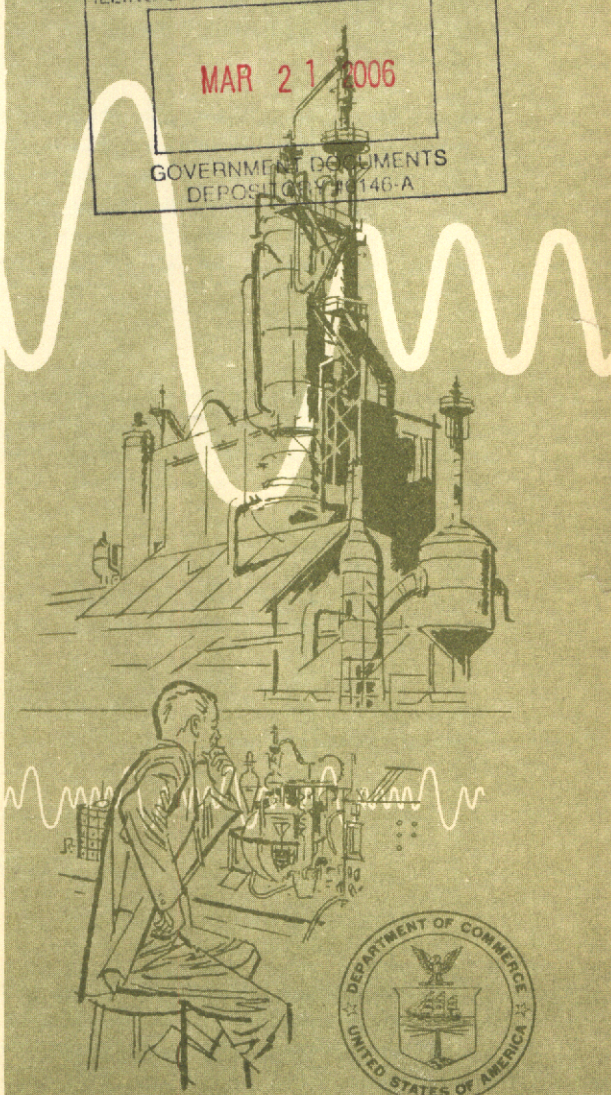
. . . . A monthly listing of  
 Government research reports  
 available to industry . . . .

*Contents*



Chemicals and Allied Products.....	37
Electrical Machinery.....	39
Communication Equipment.....	39
Electronics.....	40
Generators, Motors, Transmission.....	45
Miscellaneous.....	47
Food and Kindred Products.....	47
Fuels and Lubricants.....	47
Highways and Bridges.....	48
Instruments.....	48
Leather and Leather Products.....	49
Machinery.....	49
Medical Research and Practice.....	50
Metals and Metal Products.....	53
Meteorology and Climatology.....	55
Minerals and Mineral Products.....	57
Personnel Aptitude Testing.....	58
Photographic and Optical Goods.....	49
Physics.....	59
Physiology.....	62
Psychology.....	62
Structural Engineering.....	63
Transportation Equipment.....	63
Aeronautics.....	63
Aircraft.....	63
Instruments.....	64
Engines and Propellers.....	65
Training and Training Devices.....	65
Airports and Airways; Aerodynamics.....	65
Rockets and Jet Propulsion.....	67
Marine Transportation.....	67
Miscellaneous.....	68
Nuclear Reports of Interest to Industry.....	69

GALVIN LIBRARY  
 ILLINOIS INSTITUTE OF TECHNOLOGY  
 MAR 21 2006  
 GOVERNMENT DOCUMENTS  
 DEPOSIT OFFICE 146-A



**U. S. DEPARTMENT OF COMMERCE**  
 Office of Technical Services

## IMPORTANT NOTICE

Effective with the October 1954 issue, the name of this publication has been changed from **BIBLIOGRAPHY OF TECHNICAL REPORTS** to **U. S. GOVERNMENT RESEARCH REPORTS**. The new title more accurately describes the function of this periodical—the monthly listing of from 300 to 400 technical reports from Government-sponsored research made available by OTS to industry and the general public. Volume and issue numbers will continue in the sequence established by the discontinued BTR.

## HOW TO ORDER REPORTS.

- **Order by PB number.**
- **Orders for reports available from OTS** should be addressed to the U. S. Department of Commerce, Washington 25, D. C. Check or money order must accompany order and be made payable to "OTS, Department of Commerce." For convenience use order blank A.
- **Orders for reports in microfilm or photocopy form** should be addressed to Library of Congress, Publication Board Project, Washington 25, D. C. Check or money order must accompany order and be made payable to "Photoduplication Service, Library of Congress." Indicate for each item which type of reproduction is desired. For convenience use order blank B.
- **Orders for publications available from other sources** should be addressed to the organization indicated. Do not use order blanks A or B and do not send orders to OTS or the Library of Congress.
- **Foreign purchasers**, other than those in Canada, Cuba, and Mexico, should include an additional amount for postage according to the following scales:
  - Printed and photocopied reports—approximately 4 pages per ounce.
  - Microfilm—approximately 50 frames (one frame per page) per ounce.Rates vary for different countries. It is the purchaser's responsibility to compute postage.

## THE PB REPORTS

The Office of Technical Services is responsible, under Public Law 776, 81st Congress, for aiding in the collection and dissemination of technical reports of benefit to American science and industry. The PB reports listed have been received from civil and military agencies of the United States Government and from cooperating foreign governments. (PB is the abbreviation for Publication Board, which was established to select and publicize these reports.)

Except to the extent indicated by acknowledgment of authorship, the Office does not edit PB reports, nor does it accept responsibility for information and opinions contained in them. If copyrighted material appears, permission for use should be requested of the copyright owners. Any security restrictions that may have applied to these reports have been removed. Patents may cover the subject matter of any report; the reader is advised to make suitable patent searches before developing applications based on the reports.

PB reports of special interest to smaller business firms are abstracted in the monthly **TECHNICAL REPORTS NEWSLETTER**, published by OTS and available from the Superintendent of Documents, Washington 25, D. C., at \$1 a year domestic, \$1.50 foreign; individual copy 10 cents.

## U. S. GOVERNMENT RESEARCH REPORTS

*Issued monthly by the  
Office of Technical Services*

U. S. DEPARTMENT OF COMMERCE  
Sinclair Weeks, Secretary

Annual subscription \$6 domestic, \$9 foreign. Single copy 60 cents. Make remittance payable to Superintendent of Documents and mail either to your nearest Department of Commerce field office or to the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. Address changes should be sent direct to the Superintendent of Documents.

Contents are not copyrighted and may be reprinted freely. Mention of source will be appreciated.

Published with approval of the Director, Bureau of the Budget, Sept. 29, 1952.

Form TS-37  
(1-28-55)

# ORDER BLANK A

For printed stock only

For Use by OTS		
Quantity		Amount
	Enclosed	\$
	To be mailed later	
	Subscriptions	
	Refund	
Date of this order		

**TO: U. S. Department of Commerce, Office of Technical Services, Washington 25, D. C.**

Ship order to (Name, street address, city, zone, State)

Quantity desired	PB number and title of publication	Unit price	Total price
	Subscription to U. S. Government Research Reports.	\$6.00	
	Subscription to Technical Reports Newsletter.	1.00	
	PB 111355 Selected industrial films: Electronics and electrical equipment.	1.00	
	PB 111447 Fire extinguishants for Arctic use.	.50	
	PB 111468 Electrical and electronic apparatus.	4.00	
	PB 111474 Tool life versus feed rate when shaping titanium with high-speed tools.	1.25	
	PB 111522 High vacuum cold cathode discharge.	1.25	
	PB 111526 Microwave electrical characteristics of radome materials.	.75	
	PB 111528 Circuit minimization.	1.50	
	PB 111532 Causes of cracking in high-strength weld metals.	1.25	
	PB 111533 Research and development of methods of vapor deposited coatings for titanium and titanium alloys, Contract DA-30-069-ORD-215.	.75	
	PB 111534 Research and development of methods of vapor deposited coatings for titanium and titanium alloys, Contract DA-30-069-ORD-860.	.75	
	PB 111535 Service shoe upper leather.	1.00	
	PB 111561 Military control specifications for electron tubes.	1.00	
	PB 111562 Development of helicopter blade tip lighting.	.50	

**DO NOT USE THIS SPACE FOR ORDERING REPORTS AVAILABLE FROM LIBRARY OF CONGRESS OR OTHER SOURCES**

**PREPAYMENT IS REQUIRED.** Check or money order accompanying this order should be made payable to OTS, Department of Commerce

Quantity Desired	Number and Title of Publication	Unit Price	Total Price

**NOTICE: PREPAYMENT IS REQUIRED.** Check or money order accompanying this order should be made payable to OTS, Department of Commerce.

Form TS-38  
(1-28-55)

# ORDER BLANK **(B)**

For use by Library of Congress

For microfilm and photocopy reports only

TO: Library of Congress, Photoduplication Service,  
Publication Board Project, Washington 25, D. C.

Ship order to (*Name, street address, city, zone, State*)

Date of this order

Microfilm requires special reading equipment. It cannot be read with the naked eye.

Quantity desired	PB number and title of publication	Check whether microfilm or photocopy		Unit price	Total price
		Microfilm	Photocopy		
<b>Do not use this blank for ordering printed stock from OTS</b>					

**PREPAYMENT IS REQUIRED.** Check or money order accompanying this order should be made payable to the Photoduplication Service, Library of Congress



**CHEMICALS AND ALLIED PRODUCTS****Drugs and Pharmaceuticals**

Effect of chlorpromazine on emesis after radiation, by Herman I. Chinn and George L. Sheldon. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1954. 4p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115805

Chlorpromazine-10-(alpha dimethylaminopropyl)-2-chlorophenothiazine hydrochloride in doses of 10 mg./kg. injected subcutaneously protected dogs against vomiting after 800 r x-radiation. Injections of 5 mg./kg. were ineffective as were 10 mg./kg. prepared from a solution allowed to stand for 2 hours at room temperature before injection. Cysteinamine (200 mg. intravenously) gave little or no protection when given before, during, or after radiation. Increased survival time was noted with both chlorpromazine and cysteinamine. The mechanism of protection is discussed. AAF SAM Proj 21-1208-0009, Report no. 3.

Final report under Contract Nonr 767(00), Project NR 124-232, by David R. Schwarz. Schwarz Laboratories, Inc., Mt. Vernon, N. Y. Jan 1954. 53p diagr, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115899

The primary object of this project has been the preparation, on a pilot plant scale, of resolved amino acids in both L and D forms, having superior optical purity. A list of the amino acids resolved and their analytical constants will be found in Section V.

Free and total amino acid content of fat-free cerumen, by W. C. Bauer, C. Carruthers, and B. H. Senturia. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Apr 1954. 5p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115808

The distribution of free amino acids in "normal" fat-free cerumen was investigated by the method of paper partition chromatography. "Normal" cerumen was defatted by refluxing with a mixture of alcohol and ether (3 to 1 by volume). Extraction of the fat-free cerumen with 95 percent alcohol produced satisfactory chromatograms free of interfering substances. Contract no. AF 33(038)28643. AAF SAM Proj 21-1601-0006, Report no. 3.

Studies on bacteriological sterilization using the new germicidal agent "Movidyn", by Harold V. Ellingson, David E. Singer, and Roland B. Mitchell. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Mar 1954. 16p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115807

A colloidal silver preparation "Movidyn" has been reported to be an effective water sterilizing agent, having the ability to confer a residual bactericidal effect upon containers. Two samples of Movidyn demonstrated apparent bactericidal effects against a number of organisms. Residual effects of Movidyn in treated glass containers were observed, but contact times of at least two hours were required; the residual effects were transient (7-12 days). Military usefulness of Movidyn is limited by the long contact time required, and by the absence of a quick index of effectiveness. AAF SAM Proj 21-1401-0006 Report no. 1.

## Agricultural Chemicals

Use of town's wastes in agriculture, a study by the Natural Resources (Technical) Committee. Gt. Brit. Privy Council Office. Natural Resources (Technical) Committee. Jun 1954. 29p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$4.00.  
PB 115181

S. O. code no. 47-183. S. Zuckerman, Chairman.  
1. Waste - Utilization - Gt. Brit. 2. Sewage - Disposal - Gt. Brit. 3. Fertilizers - Gt. Brit.

## Plastics and Plasticizers

Progress report, Nov 1, 1953 to Jan 31, 1954 under Contract Nonr-1129(00), Project no. 036-012. Polytechnic Institute of Brooklyn. Institute of Polymer Research. Feb 1954. 39p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25.  
PB 115877

1. Polymers - Research 2. Polyvinyl acetate - Adsorption 3. Polyvinyl acetate - Hydrolysis 4. Polyvinyl acetate - Reacetylation 5. Polyvinyl acetate - Molecular weight 6. Polyvinyl acetate - Structure 7. Polyvinyl alcohol - Oxidation.

## Inorganic Chemicals

Screening of cations as a basic principle of inorganic chemistry, by W. A. Weyl. Pennsylvania State College. School of Mineral Industries, State College, Pa. Jul 1952. 76p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25.  
PB 115263

Contract N6onr 269, Task order 8, NR 032-264 and NR 032-265.

1. Chemistry, Inorganic 2. Ions - Interactions 3. Protons - Screening 4. Water - Properties 5. PSC SMI TR 52.

## Ordinance Chemicals

Reactivation of spent desiccants (in bags). Interim report under Project 4-91-06-002, started 22 Feb 1952, completed 7 May 1954, by Kenneth D. Brunelli. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Sep 1954. 23p diags, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00.  
PB 115883

The object of the work described in this report was to investigate and evaluate general procedures for reactivating spent desiccants, the general equipment required for reactivating, and practicable tests to determine the quality of reactivated material. CC CRL IR 371.

## Analytical Chemistry

Survey of the Hammett acidity function, by R. E. Benkeser. Purdue University. Dept. of Chemistry, Lafayette, Ind. 1953. 32p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$5.25.  
PB 115958

This review is concerned with the quantitative measurement of strong acids such as perchloric acid, sulfuric acid etc., in terms of an acidity function H. Includes all the literature pertaining to the acidity function as listed in C.A., up to 47, 6188 (1953); it also includes a cross-check, for the year 1953, of the J. Am. Chem. Soc. up to the Dec. 5 issue, and the J. Chem. Soc., up to the Sept. issue. Contract N7onr-39424, Project NR 356 331. Technical report no. 1.

## Chemical Engineering and Equipment

Industrial mobilization planning study. Phase II: Phosgene, CG plant. Ralph M. Parsons Co., Los Angeles, Calif. and U. S. Arsenal, Edgewood, Md. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Vol. I: 1950 design. Dec 1950. 666p drawings (1 fold), diags, tables (part fold) Microfilm \$9.25, Photocopy \$84.00.  
PB 116241

Contract no. DA-18-108-CML-552. Accompanied by drawings (PB 116241s) and reports of operation of CG plant no. 7, Jul 14, 1941-Sep 15, 1942 (PB 116241s2 and s3).

1. Phosgene - Production - Plant design  
2. Phosgene - Production - Equipment 3. Phosgene - Production.

Vol. II: Drawings. Jul 1950-Jan 1951. 83 drawings Photocopy \$63.00.  
PB 116241s

Drawings to accompany PB 116241. For list of drawings see Part III of PB 116241.

Vol. III: (CG) plant no. 7. Operation, July 14-Sep 23, 1941, by F. G. DeAngelis. 1941. 189p photos, fold drawings Microfilm \$7.00, Photocopy \$24.00.  
PB 116241s2

Supplement to PB 116241.

Vol. IV: (CG) plant no. 7. Operation, Nov 5, 1941 to Sep 15, 1942, by F. G. DeAngelis. Sep 1942. 186p photos, drawings (part fold), graphs (part fold), tables Microfilm \$7.00, Photocopy \$24.00.  
PB 116241s3

Supplement to PB 116241.

## Miscellaneous Chemicals

Acid hydrolysis of ethyl dichloroacetate in acetone-water solvent, by P. Madhavan Nair and Edward S.



Amis. Arkansas. University. Dept. of Chemistry, Fayetteville, Ark. Jan 1954. 14p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115884

Technical report no. 7. Contract Nonr-03700, Project NR 057-233.

1. Ethyl dichloroacetate - Hydrolysis 2. Solvents - Effect on reaction rate 3. Acetone - Reaction with ethyl dichloroacetate.

Addition of 2-chloro-1,2-dibromo-1,1,2-trifluoroethane to olefins, by Paul Tarrant and Earl G. Gillman. Florida. University. Dept. of Chemistry, Gainesville, Fla. Jan 1954. 25p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115882

Contract Nonr-1017(00).

1. Olefins - Additives 2. Olefins - Reaction products 3. Ethane, 2-Chloro-1,2-dibromo-1,1,2-trifluoro.

Fire extinguishants for Arctic use, by A. F. Armington, A. W. Bertschy, H. E. Moran, and R. L. Tuve. U. S. Naval Research Laboratory. Apr 1954. 12p photos, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.50. PB 111447

1. Fire extinguishers, Low temperature 2. Fire fighting equipment - Arctic regions 3. Anti-frozes 4. NRL R 4353.

Fundamental studies on the synthesis of hydrazine by the photolysis of ammonia at 1849Å and by the decomposition of ammonia with mercury-6(3P<sub>1</sub>) atoms, by C. C. McDonald and H. E. Gunning. Illinois Institute of Technology. Dept. of Chemistry, Chicago, Ill. Jan 1954. 134p diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.75, Photocopy \$17.75. PB 115927

Studies on hydrazine synthesis. Technical report no. 3 under Contract N7onr-32912, Project NR 096 162. Thesis by C. C. McDonald.

1. Hydrazine - Synthesis 2. Ammonia - Photolysis 3. Ammonia - Photolysis - Apparatus 4. Ammonia - Decomposition.

Heats of adsorption of polar molecules on carbon surfaces. I: Sulfur dioxide, by R. A. Beebe and R. M. Dell. Amherst College. Dept. of Chemistry, Amherst, Mass. Dec 1953. 25p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115854

Isotherms and heats of adsorption have been measured for the polar gas sulfur dioxide at 0°C on representative members of a series of carbon blacks graphitized at successively higher tempera-

tures up to 2700°C. Technical report no. 4 under Contract N8-onr-66902, Project NR-358-151.

Lower oxidation states in liquid ammonia. Final report under Contract Nonr-21900, NR 052 247, Feb 1, 1951 to Jan 31, 1954, by H. A. Laitinen. A. D. McElroy and K. B. Oldham. Illinois. University, Dept. of Chemistry. Jan 1954. 47p diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115926

1. Ammonia, Liquid - Oxidation 2. Chloramine - Preparation 3. Chloramine - Decomposition.

Research on kinetics of synthesis of hydrazine, by Jack D. Bush. Midwest Research Institute, Kansas City, Mo. Apr 1954. 14p diagr, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116106

Conditions which might lead to 50% conversion of input nitrous oxide to hydrazine were described. The specifications which a diesel engine reactor would have to meet were listed. The cost of production of hydrazine by use of such a device was estimated at about \$0.60 per pound. Since the production cost by the Raschig process is about \$0.30 per pound, development of a diesel engine reactor cannot be justified by simple economics. The importance of the fact that this process requires no chlorine cannot be estimated. Contract AF 33(616)-2043. AAF WADC TR 54-271.

System K<sub>2</sub>O-FeO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>, by Edwin Roedder. Utah. University, Salt Lake City, Utah. Jan 1953. 5p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115878

Final report under Contract Nonr 195(00).

1. Potassium oxide - System K<sub>2</sub>O-FeO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>  
2. Iron oxide - System K<sub>2</sub>O-FeO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>  
3. Silicon oxide - System K<sub>2</sub>O-FeO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>  
4. Alumina - System K<sub>2</sub>O-FeO-Al<sub>2</sub>O<sub>3</sub>-SiO<sub>2</sub>  
5. Potassium compounds - Equilibrium diagrams.

Utilization of peanut hulls as activated char, by Frank C. Vilbrandt and Stephen M. Gano. Virginia. Engineering Experiment Station, Blacksburg, Va. Sep 1954. 11p tables Available from Engineering Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va. \$.25. PB 115945

1. Peanut hulls - Utilization 2. V EES B 95.

ELECTRICAL MACHINERY,  
EQUIPMENT AND SUPPLIES

Communication Equipment

Application of linear graphs to communication problems, by Arthur E. Laemmel. Polytechnic Institute

of Brooklyn. Microwave Research Institute. Dec 1953. 19p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 115876

Linear graphs which represent transitions between different memory-states are used to describe the electronic apparatus which performs the transformations (codes) between 2 time series of discrete symbols. A discussion is presented on the use of such graphs in systematically classifying codes, combining different blocks of apparatus, and examining the synchronism of decoding apparatus. Illustrative graphs are included. Contract NOnr-839(05), Project no. 075-216. PIB 287. PIB R 353-53.

Evaluation of radio set AN/FRN-5, by Charles C. Ingalls. U. S. Air Force. Air Research and Development Command. Rome Air Development Center. 3151st Electronics Group, Griffiss Air Force Base, Rome, N. Y. Mar 1951. 37p photo, diags, graphs (1 fold), map, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25.

PB 115861

1. AN/FRN-5 (Radio) 2. Radio transmitters - Performance 3. Radio - Monitoring 4. Radio interference 5. AAF TR 6234.

## Electronics

Analysis of the overstation behavior of aircraft ADF systems, by H. H. Ward. Stanford Research Institute, Stanford, Calif. Jun 1954. 73p photos, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25.

PB 114993

Contract no. AF 19(604)-266.

1. Radio direction finders - Errors 2. Radio direction finders - Tests 3. Antennas - Electric field 4. SRI Proj 591, Technical report 40.

Applicability of megacycle frequency oscillator circuits to reaction rate measurement, by Phillip J. Elving. Michigan. University. Dept. of Chemistry, Ann Arbor, Mich. Jan 1954. 31p diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25.

PB 116026

The basis for the application of megacycle frequency oscillators to the measurement of rapid reaction rates is described. Their applicability to ionizable systems in aqueous solution is stressed. The specific application of an oscillator circuit to following the rapid alkaline hydrolysis of esters is described in some detail to illustrate the methodology involved in studying ionic reactions. Based on work done under Contract no. N6onr-26915, Project no. NR 055-211 at Pennsylvania State University and Contract no. N6onr-23225, Project no. NR 051-318 at University of Michigan.

Application of Sommerfeld's complex order wave functions to antenna theory, by C. H. Papas. California Institute of Technology. Electrical Engineering Dept. Jan 1954. 13p diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 115874

In the past wave functions of integral order have been used quite advantageously in the solution of certain antenna and boundary-value problems. However, in some instances these wave functions are completely alien to the problem and introduce difficulties which can be resolved, but only at the expense of logical simplicity. To place in evidence the usefulness and "naturalness" of complex order wave functions for the solution of certain problems, the input admittance of a boss antenna with the aid of these functions is theoretically examined. The technical report no. 2. Contract NOnr 220(14) NR 071-262.

Cavity to waveguide coupling by large irises, by Irving Maltzer. California. University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Jun 1951. 37p photos, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25.

PB 116038

Tight coupling between a resonant cavity and a wave guide necessitates the use of large irises. The procedure for treating the coupling problem for a large iris analytically is extremely difficult, even though the field distributions in the cavity and the wave guide are both known. The problem becomes increasingly difficult for a cavity of arbitrary cross section in which the field distribution cannot be determined analytically. An experimental procedure is given for representing the loading effect of an iris on a cavity of arbitrary cross section in terms of the voltage ratio of an ideal transformer connected between the cavity and the wave guide. The experimental work described was performed at 300 megacycles. Contracts W33-038ac-16649 and W19-122ac-38. UC IER Series 1, Issue no. 43.

Circuit minimization: Algebra and algorithms for new Boolean canonical expressions, by Edward W. Samson and Burton E. Mills. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Electronics Research Directorate. Communications Laboratory, Cambridge, Mass. Apr 1954. 54p diagr, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.50. PB 111528

1. Circuits, Electric - Theory 2. Algorithms 3. Mathematical equations and solutions 4. AAF CRC TR 54-21 5. AAF CRL E 5121.

Electrical and electronic apparatus: Government-owned inventions available for license. U. S. Government Patents Board. Oct 1954. 166p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$4.00.

PB 111468

1. Patents - Bibliography 2. Electrical equipment - Patents - Bibliography 3. Electronic equipment - Patents - Bibliography 4. GPB PA 5.

Electronics warfare, a report on radar counter-measures, released by the Joint Board on Scientific Information Policy for Office of Scientific Research and Development, War Department, Navy Department. U. S. Joint Board on Scientific Information Policy. Revised. Nov 1945. 41p diags, drawings Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C. \$.20. PB 114959

1. Electron beams - Deflection 2. Electron beams - Scattering 3. Electron diffraction patterns 4. Electronics - Use in detection of radioactivity 5. Radar - Camouflage 6. Radar - Countermeasures 7. Radar - Interference 8. Radar - Jamming.

Evaluation of shields for cooling miniature electron tube types, by Max Bialer. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Electronic Components Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Jun 1953. 18p photos, diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116011

The relative cooling effected by JAN type nickel plated shields per JAN-S-28A, black finish JAN shields, black finish JAN shields with window cut-outs, and by tubes without shields is compared with a new sample X type shield. It was found that the design of the present military type shields does not adequately take heat dissipation from electron tubes into consideration. The new sample X type shield will provide better cooling and greater reliability for electron tubes than any other shields or mounting procedures for miniature tubes presently being used in military electronic equipments. AAF WADC TR 53-174.

Field emission research. California University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Contract W33-038-ac-16649, Supplemental agreement no. 12. Order separate reports described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each report ordered.

First progress report, by D. H. Goodman. Aug 1951. 11p Microfilm \$2.00, Photocopy \$2.75. PB 116041

Outline of program. UC IER Series 1, Issue no. 47.

Second progress report, Aug 10, 1951-Oct 10, 1951, by D. H. Goodman. Oct 1951. 11p Microfilm \$2.00, Photocopy \$2.75. PB 116044

Methods of building a high total current field emitter are discussed. UC IER Series 1, Issue no. 50.

Third progress report, Oct 10, 1951-Dec 10, 1951, by D. H. Goodman. Sep 1951. 10p Microfilm \$1.50, Photocopy \$1.50. PB 116045

1. Electrons - Emission 2. Crystals, Tungsten - Structure 3. UC IER Series 1, Issue no. 51.

Fourth progress report, by D. H. Goodman. Mar 1952. 12p Microfilm \$2.00, Photocopy \$2.75. PB 116048

1. S-5 (Resnatron) 2. Vacuum tubes, Resnatron - Design 3. Electrons - Emission 4. UC IER Series 1, Issue no. 54.

General description, special installation requirements and mounting dimensions of AN/APG-5 (ARO) airborne range and equipment, by T. E. Lawrence. Massachusetts Institute of Technology. Radiation Laboratory. Jan 1944. 42p photos, drawings, diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 107212

Contract GEMsr-262.

1. AN/APG-5 (Radar) 2. Radar, Airborne - Installation 3. NDRC Div 14 4. MIT Rad Lab S-6.

"High vacuum" cold cathode gaseous discharge, a cyclotron effect, by Israel R. Senitzky. U. S. Signal Corps Engineering Laboratories, Fort Monmouth, N. J. Sep 1950. 47p drawings, diags, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.25. PB 111522

Part I describes the apparatus with which the discharge was studied. Part II describes the behavior of the discharge as a function of the RF and DC electric fields, the magnetic field, and the gas pressure. Part III presents an explanation of many of the phenomena described in Part II. The possibility of utilizing this type of discharge for the measurement of extremely low pressures and for the detection of low RF power is briefly discussed. Thesis - Columbia University. Dept. of the Army project no. 3-99-13-021. Signal Corps project no. 112A. SCEL ER E-1067.

Investigation of low frequency AT-cut crystal plates. 6th quarterly progress report, 15 Jun-15 Sep 1950, under Contract W36-039-sc-38244, by E. M. Washburn. Radio Corporation of America. RCA Victor Division, Camden, N. J. 1950. 47p photos, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116019

This report contains revised data on optimum quartz plate orientation from 500 KC to 1000 KC, crystal thickness as a function of frequency and recommended diopters for optimum contouring. A tabulation of boundary dimensions is included as a guide for best edge thickness and central flat diameters. Dept. of the Army project: 3-24-02-021. Signal Corps

project: 37-862A-5. Originally planned as final report, but Contract was extended, and 7th report to be issued. SIG Contract W36-039-sc-38244, Report no. 6.

Investigation of mechanical overtone crystals, 50 MC to 150 MC or higher. Final report under Contract no. W36-039-sc-38265, 15 Apr 1949 to 15 Oct 1950, by E. M. Washburn. Radio Corporation of America. RCA Victor Division, Camden, N. J. 1950? 136p photos, drawing, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.75, Photocopy \$17.75. PB 116018

The object of this study is to conduct research and investigation into the design, development and limits of applications of mechanical overtone crystal units in the frequency range of 50 mc/sec to 150 mc/sec or higher, to further the fundamental knowledge and characteristics of such units and to develop refinements which will permit such units to be applicable for field use in military equipment. It is also for the study of production techniques which would permit the manufacture of such crystal units in quantity production. Dept. of the Army project: DA3-24-02-021. Signal Corps project: 37-862A-5. SIG Contract W-36-039-sc-38265, Final report.

Large signal theory of the traveling-wave tube (including the effects of loss, space charge, and finite "C"), by Howard C. Poulter. Stanford University. Electronics Research Laboratory, Stanford, Calif. Jan 1954. 94p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.50, Photocopy \$12.75. PB 116008

This report is an extension of the large signal theory of the traveling-wave tube to include the effects of circuit loss, finite C, and space charge. Equations are developed which allow for the computation of cases where the electric field is not constant across the beam. The numerical calculation procedure for thin beams is described. Also included at representative points along the tube are plots of beam current versus arrival time, and arrival phase versus entrance phase. Contract N6onr 251(07) NR 073-360. SU ERL TR 73.

Microwave electrical characteristics of radome materials at 8.5 kilomegacycles per second, by Richard H. Forbes and Byron Noe. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Electronic Components Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Apr 1954. 29p photos, graphs Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.75. PB 111526

Data and illustration on the microwave electrical characteristics and suitability of commonly used radome materials now in use and under development. Includes tabulated results and equations derived for the materials tested. AAF WADC TR 54-273.

Military control specifications for electron tubes, by Walter C. Kirk. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Electronic Components Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Jun 1954. 38p diagrs, graphs, table Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.00. PB 111561

This report presents an approach to the problem of describing electron tubes for procurement purposes. This procurement is for such electron tubes as required for military applications. Part I covers the factual consideration of the specification and the relation of its content to the military requirement, while Part II covers the technical details necessary for the construction of an adequate specification. AAF WADC TR 54-348.

On the production and testing of porous core cathodes, by George Feher. California. University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Feb 1952. 37p photo, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116047

The work described in this report deals mainly with the production and testing of a cathode employing porous tungsten through which the active material, mainly barium and its oxide, diffuse to the outside. The porosity and gas permeability of the porous tungsten has been measured and their effect on the performance of the cathode is discussed. Steps are outlined to improve on the emission characteristics of this type of cathode. Contracts W33-038ac-16649 and W19-122ac-38. UC IER Series I, Issue no. 53.

Progress reports. California. University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Contracts W33-038-ac-16649 and W19-122-ac-38. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Progress report no. 29, Mar 1, 1949-Apr 30, 1949, by W. M. McBride, Jr. May 1949. 17p drawing, diagrs Microfilm \$2.00, Photocopy \$2.75. PB 115769

The circuits which are being used for testing the resonatron and the arc-cathode tube are described in this report. UC IER Series 1, Issue no. 29.

Progress report no. 30, May 1, 1949-Jun 30, 1949, by W. J. McBride, Jr. Jun 1949. 13p Microfilm \$2.00, Photocopy \$2.75. PB 115898

The results of the preliminary tests on the S-band resonatron, operating as a self-excited pulsed oscillator, are described in this report. UC IER Series 1, Issue no. 30.

Progress report no. 31, Jul 1, 1949-Aug 31, 1949, by W. J. McBride, Jr. Aug 1949. 13p photo, drawings Microfilm \$2.00, Photocopy \$2.75. PB 115900

Machine work is continuing on the cathode parts for the 5 megawatt S-band resnatron. Schematic diagrams of this tube and a 10 megawatt grounded-grid S-band resnatron are shown. Results of preliminary tests on a simple model of a triggered arc-cathode tube are given in this report. UC IER Series 1, Issue no. 31.

Progress report no. 32, Sep 1, 1949-Oct 31, 1949, by W. J. McBride, Jr. Oct 1949. 12p diagr, graphs Microfilm \$2.00, Photocopy \$2.75. PB 115901

Preliminary tests have been conducted on S-band resnatron No. 2 and oscillations have been obtained. The static characteristics of the two S-band resnatrons have been determined and are described in this report. UC IER Series 1, Issue no. 32.

Progress report no. 33, Nov 1, 1949-Dec 31, 1949, by W. J. McBride, Jr. Dec 1949. 12p photos, diagrs Microfilm \$2.00, Photocopy \$2.75. PB 115902

Various investigations have been initiated which will permit isolation of several of the variables which are involved in the operation of the two S-band resnatrons. From these investigations information is being obtained concerning the magnitude of the effects of electron debunching, the starting versus running tuning problem involved in self-excited, pulsed oscillator operation, output coupling, feedback coupling and load tuning. UC IER Series 1, Issue no. 33.

Progress report no. 34, Jan 1, 1950-Feb 28, 1950, by W. J. McBride, Jr. Feb 1950. 12p drawing, diagrs, graphs Microfilm \$2.00, Photocopy \$2.75. PB 115903

More complete data have been obtained on the static characteristics of S-band resnatrons No. 1 and 2. These data are presented in this report as plate current versus plate voltage curves. UC IER Series 1, Issue no. 34.

Progress report no. 35, Mar 1, 1950-Apr 30, 1950, by W. J. McBride, Jr. Apr 1950. 6p Microfilm \$1.50, Photocopy \$1.50. PB 115904

Positive grid static characteristics of the two S-band resnatrons have been determined. The design of the 2 megawatt S-band resnatron has been completed. A new arc-cathode tube is being constructed for operation at 200 megacycles in order to study the cathode properties free from the complications introduced by transit time effects and close spacing at L-band. UC IER Series 1, Issue no. 35.

Progress report no. 36, May 1, 1950-Jun 30, 1950, by W. J. McBride, Jr. Jun 1950. 12p photo, drawings, diagr, graphs Microfilm \$2.00, Photocopy \$2.75. PB 115905

An experimental high ratio, high power pulse transformer has been tested and the test results are described in this report. UC IER Series 1, Issue no. 36.

Progress report no. 37, Jul 1, 1950-Aug 31, 1950, by W. J. McBride, Jr. Aug 1950. 9p photo, drawing Microfilm \$1.50, Photocopy \$1.50. PB 115981

1. Vacuum tubes, Resnatron - Design 2. Transformers, Pulse - Design 3. UC IER Series 1, Issue no. 37.

Progress report no. 38, Sep 1, 1950-Oct 31, 1950, by W. J. McBride, Jr. Oct 1950. 5p Microfilm \$1.50, Photocopy \$1.50. PB 115982

1. Vacuum tubes, Resnatron - Tests 2. UC IER Series 1, Issue no. 38.

Progress report no. 40, Nov 1, 1950-Dec 31, 1950, by W. J. McBride, Jr. Dec 1950. 4p Microfilm \$1.50, Photocopy \$1.50. PB 116035

1. UC IER Series 1, Issue no. 40.

Progress report no. 41, Jan 1, 1951-Feb 28, 1951, by W. J. McBride, Jr. Feb 1951. 4p Microfilm \$1.50, Photocopy \$1.50. PB 116036

1. UC IER Series 1, Issue no. 41.

Progress report no. 42, Mar 1, 1951-Apr 30, 1951, by W. J. McBride, Jr. Apr 1951. 3p Microfilm \$1.50, Photocopy \$1.50. PB 116037

1. UC IER Series 1, Issue no. 42.

Progress report no. 43, May 1, 1951-Jun 30, 1951, by W. J. McBride, Jr. Jun 1951. 5p Microfilm \$1.50, Photocopy \$1.50. PB 116040

1. Vacuum tubes, Resnatron - Design 2. Electrons - Emission 3. UC IER Series 1, Issue no. 46.

Progress report no. 44, Jul 1, 1951-Aug 31, 1951, by W. J. McBride, Jr. Sep 1951. 4p Microfilm \$1.50, Photocopy \$1.50. PB 116042

1. Vacuum tubes, Resnatron - Design  
2. Vacuum tubes, Cathode ray 3. UC IER Series 1, Issue no. 48.

Progress report no. 45, Sep 1, 1951-Oct 31, 1951, by Daniel H. Goodman. Nov 1951. 3p Microfilm \$1.50, Photocopy \$1.50. PB 116043

1. Vacuum tubes, Resnatron - Design  
2. Vacuum tubes, Cathode - Tests 3. UC IER Series 1, Issue no. 49.

Progress report, Nov 1, 1951-Dec 31, 1951, by Daniel H. Goodman. Feb 1952. 18p diagrs, tables Microfilm \$2.00, Photocopy \$2.75. PB 116046

1. Vacuum tubes, Resnatron - Design 2. S-4 (Resnatron) 3. S-6 (Resnatron) 4. Rectifiers, High voltage - Design 5. Networks, Pulse forming 6. UC IER Series 1, Issue no. 52.

Progress report, 1 Jan 1952-29 Feb 1952, by Daniel H. Goodman. Mar 1952. 9p

Microfilm \$1.50, Photocopy \$1.50. PB 116049

1. Vacuum tubes, Resnatron - Design 2. Cathodes, Arc - Research 3. Electrons - Sources 4. Rectifiers - Design 5. Transformers, Pulse 6. UC IER Series 1, Issue no. 56.

Reflection measurements on wire grids and mesh angels at 2000 and 3000 mc., by George Sinclair and Robert B. Jacques. Ohio State University Research Foundation, Columbus, Ohio. Aug 1944. 47p diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115920

Contract OEMsr-759. Project RP-269. OSURF Project no. 129-A.  
1. Radio waves - Reflection 2. Grids - Reflection patterns 3. NDRC Div 15-759-24.

Research in physical electronics. Quarterly report no. 7 under Contract no. AF 19(604)-524, for period 15 Mar 1954 to 15 Jun 1954, by Ladislav Goldstein and Heinz von Foerster. Illinois. Engineering Experiment Station. Electrical Engineering Research Laboratory. Electron Tube Research Section. Jul 1954. 79p photos, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 115548

For Reports 3-4, 6 see FB 112885, PB 113471, PB 115048.  
1. Oscillography, High speed 2. Electrons, Emission, Secondary - Measurement 3. Analyzers, Electrons - Design 4. Electron beams - Space-charge effects 5. Waves, Electromagnetic - Propagation 6. AAF CRC TN 54-187.

Resnatron cavity resonators, by W. L. Beaver. California. University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Jun 1951. 133p photos, drawings, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.75, Photocopy \$17.75. PB 116039

For mechanical as well as electrical reasons, the cavity resonators used in resnatron vacuum tubes are of complicated shape. The approach used is to consider these cavities as perturbations of well-known configurations. The properties of these ideal structures are considered in detail. The effects of changes in shape are then examined qualitatively and quantitative information is obtained experimentally. In addition to the frequency characteristics of the modes, the interaction between the electron beam and the fields in the anode cavity is briefly considered. Contracts W19-122ac-38 and W33-038ac-16649. UC IER Series 1, Issue no. 44.

Resnatron tubes, by L. C. Marshall, D. H. Sloan, W. J. McBride, Jr. and W. L. Beaver. California. University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Dec 1950. 96p photos, drawings, diags, graphs, tables

Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.50, Photocopy \$12.75. PB 115983

Basic properties and design considerations of resnatron vacuum tubes are described. Low power and low frequency design considerations and applications are briefly discussed. The performance data of the 50 kilowatt c-w, 400-600 mcps resnatrons developed from 1942 to 1945, and the 300 kilowatt, 3000 mcps resnatrons developed at the University of California Microwave Laboratory since 1946, are discussed in detail. The report is concluded with a description of some resnatrons now being developed, including a 2 megawatt 3000 mcps tube, very high power 1200 mcps tubes using either conventional cathodes or high emission density cathodes, a 5 kilowatt and a 50 kilowatt 800 mcps resnatron for television applications. Contracts W33-038ac-16649 and W19-122ac-38. UC IER Series 1, Issue no. 39.

Selected industrial films: Electronics and electrical equipment, a list and description of films available to business from industrial, commercial, and government sources. U. S. Office of Technical Services. Nov 1954. 20p Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.00. PB 111355

1. Motion pictures, Educational - Bibliography  
2. Electrical equipment - Motion pictures - Bibliography  
3. Electronic equipment - Motion pictures - Bibliography  
4. OTS SIF 18.

Study of the generation and detection of electromagnetic waves in the millimeter wave region. Final report under Contract AF 19(122)-4, Sep 1, 1948 to May 31, 1954, by J. H. Rohrbaugh. New York University. Washington Square College of Arts and Science. Physics Dept. May 1954. 153p photos, drawings, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$6.25, Photocopy \$20.25. PB 115914

For 19th-22d reports see PB 110943, 112746, 114101, 114491.  
1. Waves, Electromagnetic - Detection 2. Waves, Electromagnetic - Generation 3. Radiation - Sources 4. Bolometers - Design 5. Spectrometers - Design 6. Gratings, Diffraction 7. Dielectrics - Constants - Measurement 8. Crystals - Optical properties 9. Refraction indexes 10. AAF CRC TN 54-155.

Study of the reflexion of waves from an inhomogeneous medium by means of a new first approximation to a solution of the general, linear, second-order differential equation and by means of iterations with convergence of the second order, by V.A. Bailey. Pennsylvania State University. Ionosphere Research Laboratory, State College, Pa. Aug 1954. 54p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115907

Contract no. AF 19(122)-44.

1. Waves, Electromagnetic - Reflection - Ionosphere
2. Equations, Differential
3. Mathematical equations and solutions
4. PSC IRL SR 67.

UHF filtering networks, Lehigh University. Electrical Engineering Dept., Bethlehem, Pa. Contract no. AF 19(122)-70. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Third quarterly report of technical progress, by Douglas E. Mode. Mar 1950. 61p diags, graphs, table Microfilm \$3.25, Photocopy \$9.00.

PB 115939

Experimental and theoretical work on three filter types is reported. These are (1) a coaxial type band pass filter, (2) a concentric cylinder type low pass filter, and (3) a coupled element band pass filter. Certain theoretical work on the coupled circuit filter is reported in which narrower pass band possibilities are looked into. For final report see PB 112700. See also PB 106224 and PB 114751 for reports on earlier contracts.

Seventh report of technical progress, by Douglas E. Mode. Jan 1951. 46p diags, graphs, tables Microfilm \$2.75, Photocopy \$6.50. PB 115940

This report includes a summary of experimental and theoretical work which has been done on two types of filters, the symmetrical coaxial band pass type and the eccentric low pass type.

Eleventh quarterly report of technical progress, by Douglas E. Mode. Dec 1951. 35p photo, diags, graphs Microfilm \$2.50, Photocopy \$5.25.

PB 115941

The coaxial transmission line band pass filter research reported herein concerns certain tests which confirm the theoretical methods presented. Theoretical plots are given in support of the experimental data. The present report indicates that a resistive surface on the mode-filtering paddle wheel will eliminate, or virtually eliminate, the moderate spurious peak resulting in the conversion from TEM to the circular TE mode.

## Generators, Motors, Transmission

Formation and effects of pressure waves in multi-cylinder exhaust manifolds, by A. W. Hussman and W. A. Pullman. Pennsylvania State University. Dept. of Engineering Research. Dec 1953. 122p photo, drawings, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$5.25, Photocopy \$16.50. PB 115855

This report describes an investigation into the formation of pressure waves in multi-cylinder exhaust manifolds and their influence upon the air flow through the engine. The procedure for calculating the blowdown pulse of an individual cylinder is outlined

and also the manner in which the wave pattern in a multi-cylinder manifold is formed by the individual blowdown pulses. Methods are given for the determination of the resulting wave pattern at speeds in and near resonance as a function of the individual blowdown pulses, the firing order and the manifold geometry. Experimental data are included in support of the theory. Contract no. Nonr-656(02), NR 097-195.

High-voltage, high-speed square wave surge generator, by D. H. Goodman, D. H. Sloan, and E. Trau. California. University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Jul 1952. 19p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116050

The design principles of a surge generator, which delivers high-voltage square pulses of short time duration, are discussed. The generator has lumped constant transmission lines substituted for the condensers usually found in Marx type circuits and incorporates other changes which reduce the hash and jitter time of the device. Test results on an experimental model are given. Contracts W19-122ac-38 and W33-038ac-16649. UC IER Series 1, Issue no. 58.

Power supplies, miniaturized, type A, B, and C, in accordance with Exhibit MCREE-612, dated 13 Jun 1949. Contract no. AF 33(038)-11220. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Interim engineering report no. 1 for period Mar 16, 1950 through May 16, 1950, by R. H. Frye. May 1950. 28p photo Microfilm \$2.25, Photocopy \$4.00. PB 116013

Report no. 11220-1.

1. Power supplies, Miniaturized - Design
2. Power supplies - Materials.

Interim engineering report no. 4 for period May 17, 1950 through Aug 17, 1950, by R. H. Frye. Aug 1950. 29p photos, graphs, tables Microfilm \$2.25, Photocopy \$4.00. PB 116014

Report no. 11220-4.

1. Power supplies, Miniaturized - Design
2. Power supplies, Vibrator - Design
3. Transformers - Design
4. Capacitors, High temperature - Design.

Interim engineering report no. 4, addendum 2 for period May 17, 1950 through Aug 17, 1950, by R. H. Frye. Aug 1950. 18p diags, graphs, tables Microfilm \$2.00, Photocopy \$2.75. PB 116014s

Report no. 11220-4, Addendum 2.

1. Power supplies, Vibrator - Testing equipment - Design.

Interim engineering report no. 7 for period Aug 17, 1950 through Nov 17, 1950, by Albert Goffstein,

Aug 1950. 44p photo, diags, graphs, tables  
Microfilm \$2.75, Photocopy \$6.50. PB 116015

1. Power supplies, Miniaturized - Design
2. Power supplies, Vibrator - Design
3. Transformers - Design
4. Capacitors, High temperature - Design.

Interim engineering report no. 16 for period Nov 17, 1950 through Feb 17, 1951, by C. G. Compton. Feb 1951. 26p photos, diags, graphs, tables  
Microfilm \$2.25, Photocopy \$4.00. PB 116016

Report no. 11220-16.

1. Power supplies, Miniaturized - Design
2. Power supplies, Vibrator - Design
3. Capacitors, High temperature - Design.

Interim engineering report no. 17 for period Feb 17, 1951 through May 17, 1951, by Charles G. Compton. May 1951. 22p photos, diags, graphs, tables  
Microfilm \$2.25, Photocopy \$4.00. PB 116017

Report no. 11220-17.

1. Power supplies, Miniaturized - Design
2. Power supplies, Vibrator - Design
3. Transformers - Design
4. Capacitors, High temperature - Design
5. Insulating materials - Tests.

Research and development on paper dielectric capacitors. Final report under Contract no. DA-36-039-sc-42485. Sprague Electric Co., North Adams, Mass. Dec 1953. 80p diagr, graphs, tables  
Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 115977

This contract is concerned with the investigation, application and evaluation of lanosterol and lanosterol mixtures as impregnants in paper and metallized paper dielectric capacitors. Paper-foil and metallized paper capacitors utilizing variations of the lanosterol impregnant were manufactured and evaluated. SIG Contract DA36-039-sc-42485, Final report.

Search for new nongaseous, nonliquid rectifying systems. Battelle Memorial Institute, Columbus, Ohio. Under Contract no. AF 33(038)-2460. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

8th interim engineering report for period Aug 15, 1950 to Nov 15, 1950, by A. E. Middleton, O. J. Mengali, and L. R. Jackson. Nov 1950. 78p diags, graphs, tables Microfilm \$3.75, Photocopy \$10.25. PB 115424

Summarizes work of first phase of the research under this contract.

1. Rectifiers - Materials - Electrical properties
2. Materials, Heat resistant - Electrical properties
3. Rectification - Theory
4. Rectifiers, Copper oxide
5. Rectifiers, Selenium
6. Rectifiers, Germanium
7. Contacts, Electric - Materials - Tests

9th interim engineering report for period Nov 15, 1950 to Feb 15, 1951, by A. E. Middleton, C. S. Peet, O. J. Mengali, R. C. Sirrine, and L. R. Jackson. Feb 1951. 44p photos, graphs, tables  
Microfilm \$2.75, Photocopy \$6.50. PB 115425

Appendix: Analysis of circuit used to indicate rectification properties of selected semiconductors.

1. Rectifiers - Testing equipment
2. Rectifiers - Materials - Electrical properties
3. Contacts, Electric - Materials - Tests
4. Silver telluride - Electrical properties
5. Titanium dioxide - Electrical properties
6. Titanium dioxide - Coatings.

10th interim engineering report for period Feb 15, 1951 to May 15, 1951, by C. S. Peet, O. J. Mengali, R. C. Sirrine, and A. E. Middleton. May 1951. 36p graphs, tables (1 fold) Microfilm \$2.50, Photocopy \$5.25. PB 115426

1. Rectifiers - Testing equipment
2. Rectifiers - Materials - Electrical properties
3. Titanium dioxide - Metallography
4. Titanium dioxide - Electrical properties
5. Titanium dioxide - Oxidation
6. Titanium dioxide - Coatings
7. Contacts, Electric - Materials - Tests.

11th interim engineering report for period May 15 to Aug 15, 1951, by C. S. Peet, O. J. Mengali, R. C. Sirrine, C. B. Griffith, M. W. Mallett, and A. E. Middleton. Sep 1951. 30p graphs, tables  
Microfilm \$2.25, Photocopy \$4.00. PB 115427

1. Rectifiers - Materials - Electrical properties
2. Contacts, Electric - Materials - Tests
3. Rectifiers, Titanium dioxide
4. Titanium - Oxidation.

12th interim engineering report for period Aug 15, 1951 to Nov 15, 1951, by C. S. Peet, C. J. Mengali, R. C. Sirrine, C. B. Griffith, M. W. Mallett, and A. E. Middleton. Nov 1951. 47p diagr, graphs (1 fold), fold tables Microfilm \$2.75, Photocopy \$6.50. PB 115428

Appendix I: Methods of obtaining preferred types of electrical conductivity in semiconductors. - Appendix II: Contact properties of materials used in rectifiers and methods used in preparing junctions.

1. Rectifiers - Materials - Electrical properties
2. Rectifiers, Titanium dioxide
3. Rectifiers, Copper-titanium dioxide
4. Contacts, Electric - Materials - Tests
5. Materials, Heat resistant - Electrical properties.

Transient characteristics of DC machines: Method for short circuit calculation, by J. Cybulski and J. P. O'Connor. U. S. Naval Research Laboratory. Oct 1954. 38p diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115799

A method has been devised for the calculation of the peak armature current and the magnitude of the shunt field current at peak time for dc machines



undergoing a short circuit. The equations which have been derived take into account the initial machine operation as a motor or a generator, the magnitude of initial load or input current, the degree of saturation, the connection of the series field, the degree of compensation, and the effects of commutation. NRL R 4414.

### Miscellaneous

Control of self-saturating magnetic amplifiers using rectified A-C with varying angle of truncation, by Isaac Weissman. Polytechnic Institute of Brooklyn. Microwave Research Institute. Dec 1953. 104p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.75, Photocopy \$14.00. PB 115875

This work investigates the operation of self-saturating magnetic amplifiers using rectified a-c excitation as obtained from a preceding state or from a thyatron arrangement. Only control by varying the angle of truncation with constant amplitude of signal is considered. A theoretical analysis, in addition to an experimental study, is made for different modes of steady state operation. It is then attempted to justify the assumptions involved in the analysis and deviations from these assumptions are considered. Then results obtained from the measurement of the transient response are discussed. Contract no. NONr-292(00) Project no. 075-215. PIB 268. PIB R-332-53.

Electronic wave spectrum analyzer and its use in engineering problems, by Willard J. Pierson, Jr. New York University. College of Engineering. Dept. of Meteorology and Oceanography. Oct 1954. 97p diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.50, Photocopy \$12.75. 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 115917

Contract DA-49-055-eng-32.

1. Analyzers, Electronic - Design 2. Waves, Ocean - Velocity 3. Waves, Ocean - Energy spectrum 4. Waves, Ocean - Mathematical analysis 5. Instruments, Measuring - Waves 6. ENG BEB TM 56.

High power pulse line switching devices, by A. L. Gardner, D. H. Sloan, L. C. Marshall, and W. J. McBride, Jr. California. University. Institute of Engineering Research. Microwave Laboratory, Berkeley, Calif. Apr 1952. 88p photos, drawings, diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50. PB 115980

This is a complete technical discussion of the research and development work on high power pulse line switching devices. Contract no. W-28-099-ac-446, Final report, June 15, 1948-Oct 15, 1950. UC IER Series 5, Issue no. 10.

Probe measurements of potential within high-density electron beams, by Milton D. Hare. Union College. Dept. of Physics, Lincoln, Neb. Sep 1951. 239p photos, drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$8.50, Photocopy \$30.25. PB 115783

Technical report no. 1 under Contract N6onr-251, Consolidated task no. 7, NR-078-360.

1. Electron beams - Electromagnetic effects  
2. Electrons - Velocity - Measurement 3. Electrons, Secondary - Emission 4. Thermionic emissions  
5. Probes, Electromagnetic - Design 6. Probes, Electromagnetic - Mathematical analysis.

## FOOD AND KINDRED PRODUCTS

Nutritive value of the wood-rotting fungi and their synthetic products. Semi-annual progress report no. 3, Jul-Sep 1953, under Contract N-onr-669(06), NR 132-099, by M. W. Jennison, Maurice Fagan, Chester Koda, Donald Lundgren, Harvey Newcomb, Carl Richberg. Syracuse University, Syracuse, N. Y. Jun 1954. 23p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115821

Basic procedures, brief summary of the work, progress and conclusions are given. Tables and bibliography included.

Standard values in nutrition and metabolism, edited by Errett C. Albritton. American Institute of Biological Sciences. Committee on the Handbook of Biological Data. Dec 1953. 387p diagrs, tables Available from W. B. Saunders Co., W. Washington Sq., Philadelphia 5, Pa. PB 115979

Part 2 of Handbook of biological data. For part 1 see PB 106553.

1. Metabolism 2. Nutrition 3. Biological chemistry  
4. AAF WADC TR 52-301.

## FUELS AND LUBRICANTS

Effects of variation of gear lubricant flow on the noise output of a 300 kw reduction gear, by M. W. Robbins, Jr. U. S. Naval Engineering Experiment Station, Annapolis, Md. Jun 1952. 64p photos, diagrs, graphs, tables Available from U. S. Naval Engineering Experiment Station, Annapolis, Md. PB 115870

This report covers an investigation to determine the effects of gear lubricant temperature, rate of flow, and angle of impingement on the noise output of a 300 kw reduction gear assembly. NS-631-097, Part I. NAV EES 5B(2)066841.

## HIGHWAYS AND BRIDGES

Durability of road tar (with special reference to its use in tarmacadam wearing surfaces), by A. R. Lee and E. J. Dickinson. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England. 1954. 62p photos, diags, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.65. PB 115863

S. O. code no. 47-110-31.

1. Bitumen-tar mixtures - Properties - Gt. Brit.
2. Tar-bitumen mixtures - Properties - Gt. Brit.
3. Roads - Surface treatment - Bitumen-tar mixtures - Gt. Brit.
4. DSIR RR TP 31.

Highway accidents and related factors, presented at the thirty-third annual meeting, January 12-15, 1954. High Research Board. 1954. 60p photos, drawing, diagr, graphs, tables Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. \$.75. PB 115844

Contents: - Psychology of trip geography, by Heinz Haber, Robert Brenner and Slade Hulbert. - Rural intersection accidents on two-lane tangents, by D. M. Belmont. - Effect of enforcement on vehicle speeds, by James Stannard Baker. - Automobile-barrier impacts, by D. M. Severy and J. H. Mathewson. HRB Bul 91. NRC 334.

Urban traffic congestion. Presented at the thirty-third annual meeting, January 12-15, 1954. Highway Research Board. 1954. 44p photos, graphs, maps, tables Available from Highway Research Board, 2101 Constitution Ave., N. W., Washington 25, D. C. \$.60. PB 114362

National Research Council Publication 312. Contents: Economic costs of traffic congestion, by John W. Gibbons and Albert Proctor. - Urban congestion index principles, by C. A. Rothrock. HRB Bul 86. NRC 312.

Vehicle headlighting: Visibility and glare, by A. J. Harris. Gt. Brit. Dept. of Scientific and Industrial Research. Road Research Laboratory, Harmondsworth, England. 1954. 54p diags, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.50. PB 115864

S. O. code no. 47-110-32.

1. Headlights - Beams - Tests - Gt. Brit.
2. Headlights - Glare - Reduction - Gt. Brit.
3. Headlights - Visibility - Gt. Brit.
4. DSIR RR TP 32.

## INSTRUMENTS

Anoxia warning system. Annual progress report under Contract Nonr-808(00). American Electronic Laboratories, Inc., Philadelphia, Pa. Jan 1954. 13p diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115881

Report no. 5209-4.

1. Oxygen deficiency - Warning systems
2. Photoelectric cells.

Apparatus for the production of uniform drops (spinning tip), by Abraham Koblín. U. S. Chemical Corps. Chemical and Radiological Laboratories, Army Chemical Center, Md. Sep 1954. 12p photos, graph, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115959

An apparatus was devised for producing uniform drops of toxic liquids. It consists essentially of a special capillary sealed in one of two side arms jutting out from a stoppered conical container which is spun in a chuck of a variable high-speed motor. Project 4-08-04-005. Interim report, Jan 1953-May 1954. CC CRL R 375.

Construction of an inexpensive motorized swing, by Earl W. Stimmel, Harvey F. Midkiff, and Herman I. Chinn. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1954. 5p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115806

The construction of an inexpensive, motorized swing from generally available materials is described. Such a swing affords more uniform motion and a considerable saving in manpower. AAF SAM Proj 21-1208-0012, Report no. 6.

Decompression gauge for divers, by Gordon Groves and Walter Munk. California. University. Scripps Institution of Oceanography. Dec 1953. 30p diags, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115885

Contract N6ori-111, Task VI, Project NR 083-005.  

1. Gages, Decompression - Design
2. Decompression - Theory
3. UC SIO 53-64.

Development of an instrument for the instantaneous analysis of gas mixtures. Fourth quarterly progress report, 1 Oct 1952 to 31 Dec 1952, under Contract AF 33(615)-15, by M. K. Testerman and Wm. B. Stiles. Arkansas. Engineering Experiment Station, Fayetteville, Ark. Jan 1953. 10p drawings, diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115954

1. Mass spectrometers - Design 2. Gas analysis - Instruments.

Improved infrared transmissometer for cloud drop sizing, by John C. Johnson, Ralph G. Eldridge, James R. Terrell. Massachusetts Institute of Technology. Dept. of Meteorology. Jul 1954. 106p drawings, diagr, graphs (1 fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.75, Photocopy \$14.00. PB 116010

An optical instrument is described which measures absolute drop size distribution (in the diameter range 2 to 30 microns) and liquid water content in natural clouds. The characteristics of the cloud are not significantly altered by the process of measurement. In a series of mountain top observations, the majority of cloud droplets were found to be of two microns diameter or less. Scientific report no. 4. Contract no. AF 19(122)-245. MIT Met SR 4.

Investigation of the synchrodyne, by Lyle R. Battersby and Edgar A. Conover. U. S. Signal Corps Engineering Laboratories, Fort Monmouth, N. J. Nov 1952. 11p diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116021

Dept. of the Army project no. 3-99-12-021. Signal Corps project no. 132A.

1. Synchrodynes - Design 2. Synchrodynes - Performance 3. SCEL TM M-1478.

Oscillator apparatus for the measurement of thermal neutron absorption cross-sections in B.E.P.O., by V. G. Small and A. H. Spurway. Gt. Brit. Ministry of Supply. Atomic Energy Research Establishment. May 1954. 26p drawings, diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.00. PB 115868

S. O. code no. 70-674-1-71.

1. Neutrons, Thermal - Absorption - Measurements - Gt. Brit. 2. Oscillators - Design - Gt. Brit. 3. Oscillators, Ultra high frequency - Design - Gt. Brit. 4. AERE RP/R 1439.

Simulator (code) for PCM data transmission apparatus. Final engineering report under Contract no. DA-36-039sc-42705. Applied Science Corporation of Princeton, Princeton, N. J. Jul 1954. 88p photos, diagrs (part fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50. PB 116022

These equipments permit rapid analysis of pulse transmission distortion under controllable conditions and permit optimum design of critical elements in pulsed carrier transmission systems. SIG Contract DA36-039-sc-42705, Final report. Report no. F-230.

Summary technical report on the logical system design of the DYSEAC, vol. II, by A. L. Leiner, W. A. Notz, J. L. Smith, A. Weinberger, W. H. Bridge, and A. E. Upperman. U. S. National Bureau of Standards. Electronics Division. Electronic Computer Laboratory. May 1954. 268p tables Available from Office of the Director, National Bureau of Standards, Washington 25, D. C. PB 115667

For vols. 1 and 3 see PB 115666 and PB 115668.  
1. Computers, Electronic - Design 2. Computers, Electronic - Components 3. DYSEAC (Electronic computer) 4. NBS 3459, Vol. II.

## LEATHER AND LEATHER PRODUCTS

Service shoe upper leather: A comparison of chrome tanned and retan leathers, by C. W. Mann. U. S. Office of the Quartermaster General. Research and Development Division. Textiles, Clothing and Footwear Branch. May 1954. 31p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.00. PB 111535

1. Leather - Tanning 2. Leather, Chrome tanned 3. Leather, Shoe - Tests 4. QMC LSR 9.

## MACHINERY

Cylinder arrangement of six-stage 1,000-4,000 ats. booster compressor. Hofer, Andreas, Hochdruck-Apparatebau, G.m.b.H., Mülheim, Ger. n.d. 14f drawings (Legends in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Enlargement Print \$4.00. PB 115889

Listed in BIOS Final report 1706, p. 19-20.

1. Compressors, High pressure - Design - Germany 2. Micro BIOS DOCS 2657/1524/1-3 3. Micro BIOS FD 367/48 frames 1-3 4. BIOS FR 1706 LD.

Description of Uhde super-compressor plant 5000 atm. ga., by Dr. Gerstein. Uhde, Friedrich, K-G., Dortmund, Ger. Dec 1946. 15f drawings Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Enlargement Print \$4.00. PB 115893

Listed in BIOS Final report 1706, p. 20.

1. Compressors, Gas - Design - Germany 2. Micro BIOS DOCS 2657/2320/1-4 3. Micro BIOS FD 370/48 frames 1-6+9 4. BIOS FR 1706 LD.

Polymérisation de l'éthylène pris comme modèle de réaction de polymérisation (Polymerization of ethylene used as a model of the polymerization reaction), by Dr. H. Hopff. Badische Anilin und Soda Fabrik, Ludwigshafen, Ger. Jul 1946. 49f drawings, tables (Text in French) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Enlargement Print \$7.75. PB 115892

Listed in BIOS Final report 1706, p. 17-18. Accompanied by drawings of high pressure compressor assemblies for ethylene.

1. Compressors, High pressure - Design - Germany
2. Polymerization - Germany
3. Ethylene - Polymerization - Germany
4. Polymerization - Equipment - Design - Germany
5. Micro BIOS DOCS 2657/1790/1-9
6. Micro BIOS FD 369/48, frames 1-28+21
7. BIOS FR 1706 LD.

300-4,000 ats. compressor (Bsu-12) for nitrogen. Maschinenfabrik A. G., Esslingen, Ger. n.d. 75f drawings (Legends in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Enlargement Print \$11.50. PB 115891

Listed in BIOS Final report 1706, p. 22-24.

1. Compressors, High pressure - Design - Germany
2. Nitrogen - Polymerization - Equipment - Germany
3. BIOS FR 1706 LD
4. Micro BIOS DOCS/2657/1609/1-14
5. Micro BIOS FD 368/48 frames 1-14.

300-4,000 ats. compressors for ethylene and nitrogen. Maschinenfabrik A. G., Esslingen, Ger. n.d. 86f drawings (Legends in German) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Enlargement Print \$12.75. PB 115890

Listed in BIOS Final report 1706, p. 18-19.

1. Compressors, High pressure - Design - Germany
2. Ethylene - Polymerization - Equipment - Germany
3. Nitrogen - Polymerization - Equipment - Germany
4. BIOS FR 1706 LD
5. Micro BIOS DOCS 2657/1601/1-10
6. Micro BIOS FD 368/48 frames 1-15.

## MEDICAL RESEARCH AND PRACTICE

Acute experimental hemorrhagic shock in the dog treated with subcutaneous dextran or physiologic sodium chloride solution, by Robert O. Bauer, William H. Graves, Jr., Charles S. Hill, and Lawrence J. Milch. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Sep 1954. 5p tables, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50.

PB 115809

In acute hemorrhagic shock, produced by rapid controlled hemorrhage in dogs, approximately one-half of the animals could be expected to survive without treatment for 24 hours (controls). When the acute

hemorrhagic shock was treated immediately by subcutaneous administration of 6 percent dextran in physiologic sodium-chloride solution containing 300 units percent of hyaluronidase, a survival rate no better than that of the controls was observed, and significant quantities of dextran were not detected in the venous blood as late as 8 hours. When physiologic sodium chloride solution containing 300 units percent of hyaluronidase was administered subcutaneously to treat the acute hemorrhagic shock, 93 percent of the animals were observed to survive indefinitely. AAF SAM Proj 21-2301-0008, Report no. 1.

Altitude stress in subjects with impaired cardio-respiratory function. D: Responses to hypoxia made by normal subjects, patients with angina pectoris, and patients with anemia, by John P. Marbarger, Pablo H. Wechsberg, Clarence V. Pestel, Gordon F. Vawter, and Sanford A. Franzblan. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. May 1954. 36p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115801

Certain circulatory and respiratory responses of 8 patients with angina pectoris, 14 patients with chronic anemia, and 8 normal subjects were observed during exposure to simulated altitudes of 10,000 and 18,000 feet. AAF SAM Proj 21-23-019, Report no. 4.

Biophysical investigations on bacteriophages. Annual progress report, May 1, 1953 to Dec 31, 1953, under Contract Nonr-624(03), by Max A. Lauffer. Pittsburgh University. Jan 1954. 21p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115925

1. Bacteriophage
2. Nucleoprotein - Determination
3. Nucleic acid - Determination
4. Bacterium coli - Viability.

Bone marrow and cutaneous circulation during decompression, by M. H. Kalser, T. M. Lin, G. Roback, L. Pevsner, H. K. Ivy, P. K. Moon, and A. C. Ivy. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1954. 20p drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115802

An investigation was made to determine bone marrow and cutaneous circulatory pressures in anesthetized dogs during decompression to simulated high altitudes (without hypoxia) and the influence of the sympathetic nerves on these changes. There was no change in systemic blood pressure with decompression, but there was a direct relation between decompression and the fall in bone marrow pulse pressures. Decompression, without hypoxia, causes a fall in the skin temperature of the toes and forelegs, presumably due primarily to an increased sympathetic tone of the cutaneous blood vessels. Contract no. AF 33(038)-14306. AAF SAM Proj 21-23-019, Report no. 6.

Development of a field culture for primary virus isolation. Annual progress report for period Jan 1-Dec 31, 1953 under Contract Nonr-1037(00) and Nonr-840(02), NR 134-173, by Murray Sanders. Miami. University. Dept. of Microbiology. Dec 1953. 11p fold table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 115824

1. Culture media 2. Viruses - Isolation.

Effects of ingestion of large doses of radioactive elements on the alimentary canal (including mouth, teeth and periodontal structures and other vital organs), by H. Becks and H. M. Myers. California. University, Los Angeles, Calif. Feb 1954. 4p graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50.

PB 116028

Irradiation studies by oral ingestion of Zr and Nb<sup>95</sup> isotopes. Annual progress report on Contract Onr 29539, NR 182 008 for period Jul 1, 1953 to Dec 31, 1953.

Handbook of laboratory animals, by H. G. Herrlein, G. B. Coursen, R. Randall, C. A. Slanetz. Institute of Animal Resources. 1954. 82p tables Available from National Research Council, 2101 Constitution Ave., N. W., Washington, D. C. \$1.25. PB 115997

This publication is a preliminary attempt to list producers and users of laboratory animals and to estimate approximately the numbers needed and available of the different species used in research, testing and teaching. Sections are devoted to genetics, nutrition, and diseases of laboratory animals. List of references is given pertaining to the care, management, nutrition and uses of laboratory animals. NRC 317.

Locus of emetic action of irradiation, by Herman I. Chinn and S. C. Wang. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. May 1954. 6p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50.

PB 115810

The incidence of vomiting among dogs receiving from 300 to 800 r is reported. All dogs exposed to 800 r vomited within two hours after completion of the irradiation. The 50 percent vomiting dose was 540 r. No dog subjected to bilateral destruction of the emetic chemoreceptor zone vomited after 800 r exposure. The significance of these findings is discussed. AAF SAM Proj 21-3501-0001, Report no. 3.

Neurological mechanisms in epilepsy. Annual progress report, Nov 1-Dec 31, 1953 under Contract SAR/ Nonr-609(08), NR 113-320, by José M. R. Delgado. Yale University, New Haven, Conn. Jan 1954. 5p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50.

PB 115823

1. Brain - Stimulation 2. Epilepsy - Therapy.

Physical, chemical, and biophysical characterization of viruses and virus systems. Annual progress report, 1 Jan 1953 to 31 Dec 1953, under Contract N6-ori-168, Task order II, NR135-197, by Thomas F. Anderson. Pennsylvania. University, Philadelphia, Pa. Jan 1954. 12p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 115879

1. Virus infections 2. Viruses - Absorption spectra 3. Microscopy, Electron.

Relative rates of biological decay of thyroidal I<sup>131</sup> in the rat and guinea pig, by Catherine E. Stevens and S. A. D'Angelo. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1954. 5p graph, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50.

PB 115804

The rate of biologic decay of thyroidal I<sup>131</sup> was compared in rat and guinea pig by determining the reduction in radioactivity over the gland utilizing the in vivo detection technique. The biological half-life of radiiodine was estimated to be 3.5 and 26 days for the rat and guinea pig, respectively. The results are considered to suggest that thyroid hormone secretion in the guinea pig normally proceeds at a much slower rate than in the rat. Consideration of other parameters of pituitary-thyroid function for both species supports this view. AAF SAM Proj 21-1201-0013, Report no. 11.

Semiannual progress report, Jan 1-Jun 30, 1953 and addendum for period Jul 1-Dec 31, 1953, by W. R. Boss and H. J. Evans. Syracuse. University. Institute of Industrial Research. Materials Engineering Laboratory. Jul 1953-Jan 1954. 34p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25.

PB 115888

Reports a study of the induced abnormalities in the internal distribution of body fluids and renal damage resulting from varying dosages of x-rays. NR 115-096.

Some effects of a lethal dose of x-radiation upon retention in monkeys, by Sylvan J. Kaplan, George Gentry, William H. Melching, and Maurice Delit. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1954. 11p photo, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 115812

The experiment was designed to investigate the performance of rhesus monkeys on a multiple discrimination task involving two orders and two groupings of stimuli, both before and after exposure to a lethal dose of x-radiation. No statistically significant differences appeared in the discrimination performance of any of the groups in any phases prior to radiation. Following radiation, the experimental group per-

formed at or above the .01 level as late as trial 11 of the 13 trials given. Moreover, the performance of each experimental subject was at or beyond the .01 level during the post-radiation period when all responses on all trials involved were combined. Principal behavioral deficits noted were increases in reaction times and failures to respond in the testing situation. AAF SAM Proj 21-3501-0003, Report no. 8.

Studies on the prevention of tooth decay. Progress report, Jul 1, 1953 to Dec 31, 1953, under Contract N5ori-07658, by James H. Shaw. Harvard University. School of Dental Medicine. Dec 1953. 3p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115825

Progress is reported in two parts: (a) Caries-susceptibility and (b) Genetic constitution.

Study by phase contrast microscopy of cytological effects of freezing-drying procedures on cultured fibroblasts and guinea pig tissues, by David Bloom, Richard H. Swigart, William F. Scherer, and David Glick. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. May 1954. 6p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115800

Observations made by phase contrast microscopy have been reported for the effects of formalin fixation, freezing-thawing, and freezing-drying on tissue culture fibroblasts. The fibroblasts appeared somewhat shrunken after formalin fixation, and the cellular structures appeared to be more clearly delineated. A granular cytoplasm and "brilliant" nuclei were observed. Freezing-thawing resulted in minimal change, but paraffin embedding and deparaffinization had a marked effect on the intracellular morphology. Similar studies were made on frozen-dried tissues with and without paraffin infiltration. Contract no. 18(600)169. AAF SAM Unnumbered report.

Study of the influence of Bacterium tularensis on the amino acid metabolism of animal hosts, by John M. Woodward. Tennessee. University. Dept. of Bacteriology, Knoxville, Tenn. Dec 1953. 36p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116029

Annual progress report with tables and references attached. Contract no. Nonr-811(02). Period covered: Jan 1, 1953-Dec 31, 1953.

Survey of foot measurements and the proper fit of army shoes. U. S. Armored Medical Research Laboratory, Fort Knox, Ky. (Project no. T-13). SGO Project no. 611. SPMEA 727.3. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Second partial report: Study of sweating of the feet of marching troops, by Arthur Freedman

and Charles M. Kirkpatrick. Dec 1945. 11p tables Microfilm \$2.00, Photocopy \$2.75. PB 115976

1. Foot - Measurement
2. Shoes - Fitting
3. Foot - Sweating.

Third partial report: Foot dimensions of soldiers, by Arthur Freedman, Everett C. Huntington, George C. Davis, Richard B. Magee, Valgene M. Milstead, Charles M. Kirkpatrick. Mar 1946. 167p photos, drawings, diags (1 fold), graphs, tables Microfilm \$6.50, Photocopy \$21.50. PB 115975

1. Foot - Measurements
2. Shoes - Fitting.

Technique for leukocyte concentration, by C. H. Steinmetz, W. J. Longmore, F. J. Wierzbowski. U. S. Air Force. Air Research and Development Command. Holloman Air Development Center. Aero Medical Field Laboratory, Holloman Air Force Base, New Mexico. 1954. 13p photo, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115796

A step by step presentation is made of a technique for the concentration of leukocytes from samples of whole blood. The method presented permits an approximately seven fold concentration of the white blood cells. The normal differential leukocyte count is altered by this technique; the percentage of lymphocytes observed in these preparations is increased while the percentage of neutrophils is decreased. The frequency of occurrence of abnormal lymphocytes is not reduced. AAF HADC TR 54-23.

Tests of motor functions in laboratory investigations on fitness, by Josef Brozek and Henry Longstreet Taylor. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. May 1954. 22p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115803

A battery of tests of motor functions was used in the study of human "fitness" and of changes in fitness under a variety of biological stresses. Employed were two tests of strength, three tests of speed, and one test of coordination. Examples are presented to show that the combination of a battery of tests of motor functions, plus physiological indices of the ability to do hard physical work, measures deterioration in the presence of stress better than either approach used alone and provides a more meaningful basis for analysis of fitness deterioration. Contract no. AF 33(038)-21914. AAF SAM Proj 21-32-004, Report no. 4.

Toxicity of certain polymers with particular reference to the products of their thermal decomposition, by Joseph F. Treon, Frank P. Cleveland, John Cappel, Edwin E. Larson. Cincinnati. University. Kettering Laboratory. Jun 1954. 68p photos, drawing, graphs, tables Available from Library of

Congress, Publication Board Project, Washington  
25, D. C. Microfilm \$3.25, Photocopy \$9.00.

PB 115873

When given undiluted in a single oral dose to animals, Fluorolube F. S. or either grade of silicone (DC-200 or DC-701) was found to be relatively harmless. When maintained in contact with either the intact or abraded skin of rabbits for 24 hours, these silicones were practically non-toxic. Animals tolerated repeated exposure to the mist of any of these substances in the air. Contract no. AF 33(038)-26456. AAF WADC TR 54-301.

## METALS AND METAL PRODUCTS

Absorption of iron and iron oxide in the soft X-ray region, by M. Parker Givens and Brian O'Brien. Rochester. University, Rochester, N. Y. Jan 1954. 12p diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.

PB 115928

Contract N6onr-24109, NR 017-202.

1. X-rays - Absorption
2. Iron - X-ray absorption
3. Iron oxides - X-ray absorption.

Analysis of the phenomenon of high temperature creep, by Cleg D. Sherby and John E. Dorn. California. University. Institute of Engineering Research, Berkeley, Calif. Jan 1954. 42p photos, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115924

A review is made of some of the facts known about high temperature creep. It is shown that the energies of activation for creep of pure metals are approximately equal to the best known values of the activation energies for self-diffusion. The creep rate dependence of metals on the applied stress for constant structure is reviewed. A model for creep is presented. Technical report no. 34. Contract N7onr-295, T. C. II, NR-031-048. Presented as part of a symposium sponsored by the Society for Experimental Stress Analysis at its fall meeting in New York City. UC IER Series 22, Issue 34.

Arc-cast molybdenum-base alloys. Fourth annual report under Contract N8onr-78700, Task order N8onr-78701, Project NR 039-002, for the period Aug 1, 1952 through July 31, 1953, by M. Semchyshen and R. Q. Barr. Climax Molybdenum Co., Detroit, Mich. 1953. 315p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$40.25. PB 115974

Twenty-two different alloys representative of five different binary systems have been produced on a pilot plant scale and have been fabricated by conventional commercial methods. Carbon-free molybdenum-vanadium and molybdenum-titanium alloys have been produced by deoxidation with rare earth metals in

vacuum and have been hot worked successfully. The fourth year program has included the exploration of a series of graded castings of solid solution, molybdenum-rich, ternary alloys, each of which was composed of a different combination of two elements from the following group: aluminum, cobalt, niobium, titanium, vanadium, and zirconium.

Causes of cracking in high-strength weld metals, by A. J. Jacobs, P. J. Rieppel, C. B. Voldrich. Battelle Memorial Institute, Columbus, Ohio. Feb 1954. 47p photos, drawings, graphs, tables Available from Office of Technical Services, U.S. Dept. of Commerce, Washington 25, D. C. \$1.25. PB 111532

This report discusses an experimental investigation of the causes of cracking in high-strength weld metals. Specifically, the work included hot-ductility and weld-metal cracking tests on special high-strength steels and a metallographic examination of grain boundaries and inclusions in two of the steels. The results indicate that low-sulfur contents are associated with high hot ductility and high resistance to hot cracking. They also suggest a possible relationship between low-melting intergranular films and low hot ductility. Contract no. AF 33(038)-12619. For Part 1 see PB 111531. Summarizes work done from Aug 12, 1952 to Aug 12, 1953. AAF WADC TR 52-322, Part 2.

Development of procedures for the identification of minor phases in heat-resistant alloys by electron diffraction. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Under Contract AF 33(616)-23, project 2020, by L. C. Brockway and W. C. Bigelow. Order separate parts described below from Library of Congress, Publication Board Project, Washington 25, D. C., giving PB number of each part ordered.

Annual summary report, 15 Jan 1952 to 15 Jan 1953. May 1953. 30p graph, tables Microfilm \$2.25, Photocopy \$4.00. PB 115971

A summary of the work completed on this project during the first contract year is presented. An extensive investigation has been made of the influence of high-temperature aging on the minor phases of 16-25-6 alloy, and preliminary studies have been made of S816 and low-carbon N-155 alloys. This report is devoted principally to the discussion of the techniques of preparing heat-resistant alloy samples for the electron-diffraction studies because sample preparation is the most important and the most difficult part of the adaptation of the electron-diffraction method to the heat-resistant alloys and also because this material has not been organized and presented previously. The results of the studies of the S816, N-155, and 16-25-6 alloys are described only briefly, inasmuch as they were presented in detail in the preceding quarterly reports. Micrographs are not included. NP 5096.

Progress report no. 3, 15 Jul to 15 Oct 1952.  
Jan 1953. 15p photos, graph, tables Microfilm  
\$2.00, Photocopy \$2.75. PB 115970

1. Alloys, High temperature - Analysis 2. Alloys,  
High temperature - Phase studies 3. Alloys,  
High temperature - Metallography 4. Electrons -  
Diffraction.

Progress report no. 5, for the period 15 Jan to 15  
Apr 1953. Apr 1953. 17p photos, tables Micro-  
film \$2.00, Photocopy \$2.75. PB 115972

The electron-diffraction method has been applied  
to the study of Alcoa M-276 sintered aluminum  
product and  $\gamma$ -Al<sub>2</sub>O<sub>3</sub> has been identified as the  
principal minor phase in this material. A special  
etching procedure using HCl and Cl<sub>2</sub> gases was  
developed for this work to minimize the oxidation  
of the aluminum during preparation. A number of  
polishing and etching treatments have been inves-  
tigated for suitability in preparation of Inconel-X  
alloy for the electron-diffraction studies. Polish-  
ing methods which appear to be satisfactory have  
been found. Difficulty has been encountered in  
etching this alloy due to the formation of reaction  
products on the samples during the etching process.  
Data have been obtained which indicate a variation  
of about 1% in the unit cell size of the MgC phase  
of the 16-25-6 alloy, depending on the temperature  
of the aging treatment. Photos will not reproduce.  
NP 5097.

Progress report no. 7 for period 15 July to 15 Oct  
1953. Oct 1953. 30p photos, drawings, tables  
Microfilm \$2.25, Photocopy \$4.00. PB 115973

Minor phases have been identified in samples of  
Inconel-X alloy representing aging treatments of  
100 and 1000 hours at 1400°F and 10, 100, and  
1000 hours at 1600°F. These results suggest a  
strong influence of aging temperature on minor-  
phase formation; the investigation is therefore  
being extended to include samples aged at 1200°F.  
Mechanical polishing procedures were used in-  
stead of the usual electrolytic polishing in pre-  
paring the N-155 alloy samples for the electron-  
diffraction examination. The results indicate that  
satisfactory surface preparations may be obtained  
in this manner and are discussed in terms of the  
possible advantages and disadvantages of using  
mechanical polishing.

Dutch report on different subjects in the steel and  
metal industry, reported by D. v. d. Berg, J. E. de  
Graaf, H. J. Meerkamp van Embden, C. H. Luiten.  
British Intelligence Objectives Sub-Committee.  
May 1948. 51p Available from British Information  
Services, 30 Rockefeller Plaza, New York 20, N. Y.  
\$1.25. PB 115833

Date of trip: Jan 24-Feb 14, 1947.

1. Metal industries - Germany 2. Steel foundries -  
Germany 3. Iron and steel industry - Germany  
4. BIOS M79.

Flocculation studies of ferric oxide and aluminum  
oxide sols. Technical report for year ending Jan

31, 1954 under Contract NR 356-336, by Harold  
Strange. Pennsylvania. University. Dept. of  
Chemistry, Philadelphia, Pa. Jan 1954. 46p  
graphs, tables Available from Library of Con-  
gress, Publication Board Project, Washington 25,  
D. C. Microfilm \$2.75, Photocopy \$6.50.  
PB 115929

Effects of surfactants and colloidal systems on each  
other are studied for some specific systems.

Influence of exposed area on stress-corrosion  
cracking of 24S aluminum alloy, by William H.  
Colner and Howard T. Francis. U. S. National  
Advisory Committee for Aeronautics. Nov 1954.  
22p photos, drawing, table Available from Na-  
tional Advisory Committee for Aeronautics, 1512  
"H" St., N. W., Washington 25, D. C. PB 115778

Results are presented of a study of the "area effect"  
in 24S aluminum alloy. This effect is the phenome-  
non whereby small exposed areas show long times  
to stress-corrosion failure, whereas large areas  
show short times. The effects of stress level, de-  
gree of sensitivity of the alloy, and hydrogen per-  
oxide concentration in the corrosion medium were  
studied. Hydrogen peroxide decomposition and the  
substitution of oxygen for peroxide were also in-  
vestigated. NACA TN 3292.

Investigation of methods of producing single crystals  
of non-metallic ferromagnetic substances. Fourth  
quarterly progress report, Apr 1st to Jun 30th,  
1954, under Contract AF 19(604)-867, by John  
Koenig. Brush Laboratories Co., Cleveland, Ohio.  
Jun 1954. 15p drawings Available from Library of  
Congress, Publication Board Project, Washing-  
ton 25, D. C. Microfilm \$2.00, Photocopy \$2.75.  
PB 115923

Brush report no. 532-4. For 1st-3d reports see  
PB 112795, 114024, 114669.

1. Crystals, Ferromagnetic - Production 2. Crys-  
tals, Magnetite - Growth 3. Autoclaves - Design  
4. AAF CRC TN 54-356.

Mobilities in diffusion in alpha brass, by G. T.  
Horne and R. F. Mehl. Carnegie Institute of  
Technology. Metals Research Laboratory, Pitts-  
burgh, Pa. Jan 1954. 65p diagrs, graphs, tables  
Available from Library of Congress, Publication  
Board Project, Washington 25, D. C. Microfilm  
\$3.25, Photocopy \$9.00. PB 115919

Diffusion coefficients and mobilities were deter-  
mined as functions of concentration in the alpha  
phase of the copper-zinc system. Use was made of  
incremental diffusion couples to determine the  
Kirkendall effect at various concentrations; Darken's  
analysis was used to calculate the individual dif-  
fusion coefficients and mobilities from these data.  
Contract N6ori-47/IV, Project NR 031-184. Part  
of a thesis by G. T. Horne submitted to Carnegie  
Institute of Technology.



Organometallic chemistry of transition metals. Interim technical report for the period from Jun 1, 1952 through May 31, 1953, by Lawrence Summers and William W. Bakke. North Dakota. University. Jan 1954. 55p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115930

A survey of the literature on the organometallic chemistry of the transition metals of the third period is given. A collection of literature data on the anhydrous halides of these transition metals is given, and results of work on the preparation of these substances is described. A study of the stoichiometry of the reaction between phenyllithium and seven anhydrous halides of transition metals is described. Contract Nonr-582(00), Project NR 356 281.

Research and development of methods of vapor deposited coatings for titanium and titanium alloys. Final technical report, under Contract DA30-069-ORD-215, by Mohammed S. Hyder and Edmond J. Silk. Tour, Sam, & Co., Inc., New York, N. Y. Apr 1952. 29p photos, diagr, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.75. PB 111533

Experiments on "pyrolysis of molybdenum hexacarbonyl" for "vapor deposited coatings on titanium" were conducted. Photomicrographs, showing microstructures of the parent metal and the molybdenum plate, are included. P. 2286, R. 9408. O. O. Project no. TB4-15. WAL R 401/48/B-10.

Research and development of methods of vapor deposited coatings for titanium and titanium alloys. Final technical report, Jul 1, 1952-Oct 31, 1953, under Contract DA30-069-ORD-860, by Andre Styka. Tour, Sam, & Co., Inc., New York, N. Y. Dec 1953. 29p photos, diagr, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.75. PB 111534

Molybdenum was deposited on titanium by the decomposition of molybdenum hexacarbonyl  $\text{Mo}(\text{CO})_6$  in forty different runs. Techniques were developed which produced adherent molybdenum coatings. Photomicrographs, showing microstructures of the titanium base metal and the molybdenum deposits, are included. P. 2286, R. 10556. O. O. Project no. TB4-15. WAL R 401/48/B-26.

Research on electrical conduction in, and thermionic emission from, thorium oxide and similar compounds. Final report under Contract Nonr 628(00), Nov 1, 1951-Jan 31, 1954, by W. E. Danforth, O. A. Weinreich, Harry Bleicher. Bartol Research Foundation, Swarthmore, Pa. Jan 1954. 57p drawings, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115853

Studies were made of electrical and optical properties of homogeneous crystalline specimens of thorium oxide. The objective has been to obtain basic information pertinent to electron tube applications of this

material. Definitive experimental data have been obtained regarding a wide range of topics. Includes Optical properties of crystalline thoria, by O. A. Weinreich and W. E. Danforth (Reprinted from Physical review, vol. 88, no. 4, p. 953-954, Nov 15, 1952).

Tensile and compressive stress-strain properties of some high-strength sheet alloys at elevated temperatures, by Philip J. Hughes, John E. Inge and Stanley B. Prosser. U. S. National Advisory Committee for Aeronautics. Nov 1954. 32p photos, drawing, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115779

Results of tensile and compressive stress-strain tests at temperatures up to  $1,200^{\circ}\text{F}$  are presented for SAE 4340, Hy-Tuf, Stainless W, and Inconel X sheet materials which had ultimate tensile strengths at room temperature in the 170 to 220 ksi range. Representative tensile and compressive stress-strain curves are given for each material at the test temperatures. Secant and tangent moduli, obtained from the compressive data, are included. NACA TN 3315.

Tool life versus feed rate when shaping titanium with high-speed-steel tools, by L. V. Colwell and R. E. McKee. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Apr 1953. 38p graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$1.25. PB 111474

Report no. 8. Project M993. Contract no. DA 20-018-ORD-11918.  
1. Titanium - Machinability 2. Steel - Machinability  
3. Tools, Cutting - Life expectancy 4. Tools, Cutting - Cutting force - Measurement 5. Tools, Cutting - Steel 6. Titanium alloys - Machinability 7. MU ERI  
8 8. WAL R 401/109-8.

## METEOROLOGY AND CLIMATOLOGY

Atmospheric pressure and temperature measurements between the altitudes of 40 and 110 kilometers, by F. V. Schultz, N. W. Spencer, A. Reifman. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Jul 1948. 198p photos, drawings, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$7.25, Photocopy \$25.25. PB 115934

Upper air research program, Report no. 2. Contract no. W33-038-ac-14050.  
1. Atmosphere, Upper - Pressure - Measurement  
2. Atmosphere, Upper - Temperature - Measurement  
3. Rockets, Upper air - Equipment 4. Rockets, Upper air - Rotation - Theory 5. Gages, Pressure - Theory 6. Gages, Pressure - Design 7. Gages, Pirani.

Bibliography on cometary spectra for the period 1938-1953, by P. Swings and L. Haser. Liege. University. Institute of Astrophysics, Cointe-Sclessin, Belgium. 1953. 8p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50.  
PB 115856

Technical report no. 1. Contract AF 61(514)-628C.  
1. Comets - Spectrographic analysis - Bibliography - Belgium 2. Spectra, Cometary - Bibliography - Belgium.

Bibliography on snow, ice and permafrost, with abstracts, vol. VI. U. S. Library of Congress. Technical Information Division. Jul 1954. 371p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$47.75.  
PB 115969

Dept. of the Army project no. 8-66-02-004. For vols. 1-5 see PB 113539-113540, 112250, 112252, 114461.  
1. Snow - Bibliography 2. Ice - Bibliography  
3. Permafrost - Bibliography 4. SIPRE 12, vol. 6

Circulation of the lower atmosphere over the Marshall Islands during October 1952, by Gordon A. Dean. California. University. Institute of Geophysics. Jul 1954. 33p diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25.  
PB 115951

Scientific report no. 5. Contract no. AF 19(604)-546.  
1. Atmosphere - Circulation - Marshall Islands  
2. Atmosphere - Circulation - Troposphere  
3. Cyclones - Development - Marshall Islands  
4. Winds - Measurement - Marshall Islands 5. AAF CRC TN 54-252.

Extended range ionospheric observations at 150 kc/s, by R. L. Schrag. Pennsylvania State University. Ionosphere Research Laboratory, State College, Pa. Jul 1954. 142p photos, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$6.00, Photocopy \$19.00.  
PB 115795

Contract no. AF 19(122)-44.  
1. Ionosphere - Research 2. Waves, Electromagnetic - Reflection - Ionosphere 3. PSC IRL SR 66.

Hardness of single ice crystals, by T. R. Butkovich. U. S. Army. Corps of Engineers. Snow, Ice and Permafrost Research Establishment, Wilmette, Ill. May 1954. 13p photos, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.  
PB 115968

Final report for Project SIB 53-9.  
1. Ice - Hardness - Tests 2. Brinnell hardness tests 3. Microcharacter (Hardness testing machine) 4. SIPRE RP 9.

Heights and locations of the aurora Australis, by G. W. McQuistan, B. L. Frankpitt and I. L. Thomsen. Carter Observatory, Wellington, N. Z. Jul 1954. 12p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75.  
PB 115816

A discussion of the errors arising during the measurement and calculation of auroral heights and locations and the result observed from 3 displays as observed from New Zealand 1951 to July 1, 1954. No aurora have been photographed. Scientific report no. 2. Contract no. AF 64(500)-1.

Measurement of ozonosphere temperatures from ground stations, by Arthur Adel. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Jun 1949. 59p photos, fold graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115935

Project M669A. Contract W33-038ac-14050.  
1. Atmosphere, Upper - Temperature - Measurement 2. Radiation, Black body 3. Black body - Theory.

Progress report no. 1 under Contract AF 19(122)-55 for the period Jun-Aug 1949, by W. G. Dow and N. W. Spencer. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Nov 1949. 29p photos, fold diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115936

1. Atmosphere, Upper - Pressure - Measurement  
2. Atmosphere, Upper - Temperature - Measurement 3. Rockets, Upper air - Equipment 5. Rockets, Upper air - Firing - Tests 5. Gages, Ionization - Design.

Pressure and temperature measurements in the upper atmosphere, by W. G. Dow and N. W. Spencer. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. May 1950. 39p photos, drawings, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115938

Contract no. W-33-038ac-14050, Final report. Project M669.  
1. Atmosphere, Upper - Pressure - Measurement  
2. Atmosphere, Upper - Temperature - Measurement 3. Rockets, Upper air - Equipment.

Proposed radar storm warning service for Army combat operations, by M. G. H. Ligda. U. S. Air Force. Air Research and Development Command. Cambridge Research Center. Geophysics Research Directorate. Special Projects Laboratory, Cambridge, Mass. Aug 1954. 85p photos, diags, tables (1 fold) Available from Library of Con-

gress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50.

PB 115872

Techniques of storm observation and reporting are described. Some practical applications of the advisory service are suggested. AAF GRD SG 54. AAF CRC TN 54-20.

Study of the composition of the upper atmosphere by means of mass spectrometer techniques. Final report under Contract no. AF 19(604)-226, by John A. Karas. New Hampshire. University. Dept. of Physics. Jul 1954. 12p photos Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115793

Consists of summary of Progress reports 1-8.  
1. Atmosphere, Upper - Spectrographic analysis  
2. Mass spectrometers - Design  
3. Oscillations, Atmospheric  
4. Electrons - Oscillations  
5. AAF CRC TR 54-255.

Tentative absorption and emission spectra of the atmosphere, by H. K. Kallmann. California. University. Institute of Geophysics. Jun 1954. 33p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115571

Scientific report no. 2 under Contract no. AF 19-(604)-111.

1. Atmosphere, Upper - Radiation - Absorption  
2. Atmosphere, Upper - Radioactivity.

Theory of the determination of auroral heights and locations from photographs, by G. W. McQuistan and L. L. Thomsen. Carter Observatory, Wellington, N. Z. Jun 1954. 12p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115857

Attempts at determinations of height of auroral forms above the earth generally follow the Norwegian methods. The method (much more numerical work is graphical) described in this report reduces the task and at the same time affords the operator a fine control which is not always available in graphical methods. The authors believe it especially useful to engineers in the subject. Scientific report no. 1. Contract no. AF 64(500)-1. AAF CRC TN 54-256.

Two studies on the methodology of spectrum analysis. Johns Hopkins University. Dept. of Civil Engineering, Baltimore, Md. Sep 1954. 55p diagr, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115794

Scientific report no. 4. Contract no. AF 19(122)-365. Contents: Part I. Evaluation of transport spectra of momentum and heat for large scale atmospheric turbulence, by Mariano A. Estoque. - Part II. New method of spectrum analysis based upon an averaging

function, by George S. Benton and Arthur B. Kahn.  
1. Spectrographic analysis - Methods  
2. Atmosphere - Turbulence - Spectrographic analysis  
3. Atmosphere - Turbulence - Theory  
4. AAF CRC TN 54-259.

Use of atmospheric data in the evaluation of evapotranspiration, by George S. Benton and Jack Dominitz. Johns Hopkins University. Dept. of Civil Engineering, Baltimore, Md. Sep 1954. 41p maps, diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115792

A method of evaluating evapotranspiration is developed which is based on the mass balance of water vapor in the atmosphere. The method is applied to various regions of the North American continent for the calendar year 1949 and the results are compared with hydrologic data and with an empirical method of estimating evapotranspiration. The potentialities and limitations of the proposed method are also evaluated. Scientific report no. 3. Contract no. AF 19(122)-365. AAF CRC TN 54-251.

Use of geostrophic distance in analysis and forecasting. U. S. Air Force. Air Weather Service, Andrews Air Force Base, Washington, D. C. Sep 1954. 15p diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115817

1. Winds, Geostrophic - Velocity  
2. Winds, Geostrophic - Forecasting  
3. Distances, Geostrophic  
4. AAF AWS 105-98 Revised.

Variations of the E-layer, by Donald H. Menzel and John G. Wolbach. Harvard University. Harvard College Observatory. Solar Dept. Aug 1954. 5p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115597

Contract AF 19(604)-146.

1. Ionosphere - E-layer  
2. HU HCO SR 19.

Zodiacal light. Final report under Contract no. AF 19(604)-181, by Victor H. Regener. New Mexico. University. Dept. of Physics, Albuquerque, N. Mex. Aug 1954. 54p maps, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115798

For Reports no. 1-3 see PB 110892, 115205-115206.

1. Zodiacal light - Photometric measurement  
2. Zodiacal light - Spectrographic analysis  
3. Zodiacal light - Theory.

## MINERALS AND MINERAL PRODUCTS

Color of minerals, by W. A. Weyl. Pennsylvania State University. College of Mineral Industries,

State College, Pa. Jan 1954. 33p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115918

Final report under Contract N6onr 269, Task order 11, NR 081-060.

1. Minerals - Color.

Selenium, a short review of its production and utilization with reference to the current shortage, by R. Ashton, E. G. Hill, D. Neville-Jones. Gt. Brit. Dept. of Scientific and Industrial Research. 1954. 34p tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$40. PB 115862

S. O. code no. 47-180.

1. Selenium - Production - Gt. Brit. 2. Selenium - Properties - Gt. Brit. 3. Selenium - Uses - Gt. Brit. 4. Selenium - Conductivity - Gt. Brit.

Silica sand resources of western Virginia, by W. D. Lowry. Virginia. Engineering Experiment Station, Blacksburg, Va. Oct 1954. 66p photos, diagrs, graphs, map (1 fold), tables Available from Engineering Experiment Station, Virginia Polytechnic Institute, Blacksburg, Va. \$.75. PB 115946

Bulletin of the Virginia Polytechnic Institute, Vol. XLVII, no. 12.

1. Silica sand - Virginia 2. V EES B 96.

## PERSONNEL APTITUDE TESTING AND JOB TRAINING

Development of a record form for evaluating research through the report, by James W. Altman and Mahlon V. Taylor, Jr. American Institute for Research, Pittsburgh, Pa. Jan 1954. 47p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115818

AIR 1500. Project no. NR 153-146. Fifth in a series of reports dealing with the evaluation and measurement of research performance.

1. Research - Evaluation.

Effect of high school physics and college laboratory instruction on achievement in college physics, by Haym Kruglak. Minnesota. University. Dept. of Physics. Jan 1954. 11p table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115847

Technical report no. 8. Contract N8onr-66213, Project NR 153-148: Performance examinations for the training and selection of scientific personnel.

1. Physics - Education 2. Education - Research 3. Performance tests.

Factor analysis of physical proficiency and manipulative skill, by Walter E. Hempel, Jr. and Edwin A. Fleishman. 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. Aug 1954. 17p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115828

Project no. 7703. Task no. 77084.

1. Ability tests 2. Motor reactions - Analysis 3. AAF PTRC TR 54-34.

Follow-up study of Naval Academy graduates of the class of 1951, by Henry N. Ricciuti. U. S. Bureau of Naval Personnel. Classification and Survey Research Branch. Personnel Analysis Division. Jan 1954. 23p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115791

Contract no. Nonr-694(00).

1. Ability tests 2. Officer performance records 3. Personnel, Naval - Performance 4. NAVPERS TB 54-1.

Light plane as a pre-primary selection and training device. II: Analysis of training data, by Everett L. Sutter, John C. Townsend, and George N. Ornstein. U. S. Air Force. Air Research and Development Command. Air Force Personnel and Research Center. Basic Pilot Research Laboratory, Goodfellow Air Force Base, San Angelo, Texas. Aug 1954. 26p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116009

Part I issued as AAF HRCC TR 53-33.

1. Personnel, Flying - Selection 2. Personnel, Flying - Training 3. AAF PTRC TR 54-35.

Proficiency of Q-24 radar mechanics. I: Purposes, instruments, and sample of the study, by Robert G. Demaree, Norman A. Crowder, Edward J. Morrison, and Melvin S. Majesty. 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. Nov 1954. 61p photos, diagrs, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.25, Photocopy \$9.00. PB 115922

1. Q-24 (Radar) 2. Mechanics, Radar - Training tests 3. Personnel, Maintenance - Ability tests 4. AAF PTRC TR 54-50.

Study of the relative effects of six-week and twelve-week basic training programs on a sample of

limited-aptitude airmen. Part III: Eight-month follow-up comparisons, by Salvatore Mastropaolo, Abraham Carp, and Robert L. Erdmann. U. S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Personnel Research Laboratory, Lackland Air Force Base, Texas. Sep 1954. 25p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115829

Project no. 7705. Task no. 77111. For parts 1-2 see FB 115472.

1. Personnel, Flying - Training 2. Personnel, Flying - Tests 3. AAF PTRC TR 54-37.

## PHOTOGRAPHIC AND OPTICAL GOODS

Rutherford process camera for mobile reproduction plant. Instruction book and parts list. Rutherford Machinery Co., New York, N. Y. n.d. 56p photos, diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115858

Includes instructions for installing and operating Gelb multi-balanced camera lamps model L-125T, by Jos. Gelb Co., New York, N. Y.

1. L-125T (Camera lamp) 2. Cameras, Photostat - Operation 3. Cameras, Photostat - Parts 4. Lamps, Camera - Operation 5. WD TM5-6006.

## PHYSICS

### General

Annual summary report on Contract N8onr-66901, NR 016-412, by T. Soller. Amherst College. Dept. of Physics, Amherst, Mass. Dec 1953. 11p diagr Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115822

A practical method is described for separating the  $\text{He}^3$  which occurs in well helium from the liquefied mixture using the "heat flush" technique. When the separated isotope is finally withdrawn at room temperature, the concentration of  $\text{He}^3$  is approximately 0.5 percent. This concentration corresponds to an enrichment factor of  $3 \times 10^4$ , which is an order of magnitude greater than factors previously reported in the literature. Includes Rapid separation of  $\text{He}^3$  from  $\text{He}^4$  by the "heat flush" method, by T. Soller, W. M. Fairbank, and A. D. Crowell (Reprinted from Physical Review vol. 91, no. 5, p. 1058-1060, Sep 1, 1953).

Attenuation of sound in the atmosphere. Summary of work under Contract W28-099-ac-228, by L. P. Delsasso. California. University. Dept. of Physics, Los Angeles, Calif. Feb 1953. 66p photos, drawing, diags, graphs (2 fold), tables Available

from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.25, Photocopy \$9.00. PB 116020

The objective of the program has been to extend available information on the attenuation of sound at sea level pressures and normal temperatures to pressures and temperatures which may be encountered in acoustical signaling and tracking problems. This report summarizes the research. For earlier report see PB 113430. Appendix A. Equipment and field operations. - Appendix B. Recording hygrometer for moderate altitudes. - Appendix C. Fog counter at its present stage.

Determination of polydisperse aerosol size distribution from the analysis of light scattering data, by T. L. Gilbert. Armour Research Foundation, Chicago, Ill. Aug 1954. 46p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115869

The analytical problem of calculating the particle size distribution of a polydisperse aerosol from light scattering data is equivalent to the mathematical problem of solving an integral equation of the first kind. This integral equation will, in general, not have an exact solution if there are experimental errors in the light scattering data used. As a consequence, previously used approximate methods for obtaining a solution are completely unreliable. A new method has been developed for calculating that size distribution which represents the optimum compromise between experimental errors and unavoidable errors due to the necessarily approximate method of solving the integral equation. Scientific report no. 12, May 1, 1952 to Aug 15, 1954, under Contract AF 19(122)-472. ARF Proj C 022.

Diffusion phenomenon in rotating and stratified fluids, by Robert R. Long. Johns Hopkins University. Dept. of Civil Engineering. Dec 1953. 17p photos, graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115886

Technical report no. 2. Contract NOnr-248(31), Project NR 082-104.

1. Fluids, Rotating - Diffusion 2. Fluids, Stratified - Diffusion 3. Diffusion theory.

Dimensional relations in magnetohydrodynamics, by Walter M. Elsasser. Utah. University. Dept. of Physics, Salt Lake City, Utah. Jan 1954. 17p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 116012

An analysis of the dimensional relations characteristic of electromagnetic phenomena in fluids of large dimensions is carried out. Most dimensionless quantities are found to be exceedingly small, or large, compared to unity, with resultant simplifications of the theory. We find that in the absence of instabilities the conditions for the acceleration of particles to the higher cosmic-ray energies are

favorable only when the linear dimensions of the fluids involved are very large. Technical report no. 2 under Contract Nonr 1288(00): Earth's magnetism and magnetohydrodynamics.

Further analysis of the data of Gabrielli and von Karman on the power-speed-weight relationship of vehicles. Stevens Institute of Technology. Experimental Towing Tank, Hoboken, N. J. Oct 1951. 6p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 114921s

Note no. 154. Contract Nonr-462(00). Supplements E.T.T. Technical memorandum no. 97 (PB 115274).

High-intensity noise and military operations, an evaluation, by Hallowell Davis, Donald H. Eldredge, Aram Glorig, Edwin B. Newman, Horace C. Parrack, Clifford P. Phoebus. Armed Forces - National Research Council Committee on Hearing and Bio-Acoustics, St. Louis, Mo. Jan 1954. 12p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115827

CHABA report no. 1.

1. Noise - Effects 2. Noise - Elimination.

Potential flow through a conical pipe with an application to diffraction theory, by J. Bazer and S. N. Karp. New York University. Institute of Mathematical Sciences. Division of Electromagnetic Research. Aug 1954. 73p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 115913

Contract no. AF 19(122)-42.

1. Flow, Fluid - Theory 2. Flow, Fluid - Velocity 3. Diffraction - Theory 4. Legendre functions 5. Mathematical equations and solutions 6. NYU RR EM-66 7. AAF CRC TN 54-198.

Probability distributions related to random transformations of a finite set, by H. Rubin and R. Sitgreaves. Stanford University. Applied Mathematics and Statistics Laboratory, Stanford, Calif. Jan 1954. 51p diags, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.00, Photocopy \$7.75. PB 115906

Contract N6onr 25140 (NR-342-022). Technical report no. 19A (Final).

1. Probability - Theory 2. Transformations (Mathematics) 3. Random functions 4. Mathematical equations and solutions.

Relations between the time-distance surface and a discontinuity surface in seismic reflection, by Heinz Helfenstein. Stanford University. Dept. of Mathematics, Stanford, Calif. Jan 1954. 25p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115895

Technical report 36. Contract N6ori-106, T. O. 5 (NR-043-992).

1. Waves, Seismic - Reflection - Theory 2. Waves, Seismic - Velocity - Calculation 3. Mathematical equations and solutions.

Survey of porous-wall heat-transfer literature, by J. E. Broadwell and P. Sherman. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Apr 1953. 35p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116074

Contract AF 18(600)-51.

1. Heat - Transference - Bibliography 2. Walls - Heat transmission - Bibliography 3. MU ERI Proj M992-7.

Tensor virial equations, by Eugene N. Parker. Utah. University. Dept. of Physics, Salt Lake City, Utah. Jan 1954. 49p diags Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116025

Technical report no. 1 under Contract Nonr 1288-(00): Earth's magnetism and magnetohydrodynamics. 1. Virial coefficients 2. Mathematical equations and solutions 3. Lagrange equations.

Theory of permanents. Part II: Circulant permanents, by Charles L. Carroll, Jr. and Jack Levine. North Carolina State College. Dept. of Engineering Research, Raleigh, N. C. Feb 1954. 103p diag, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.75, Photocopy \$14.00. PB 116101

In the summary, there is gathered together a large number of formulas for coefficients of various kinds. These represent, in general, the cases where the idea of links can be used to advantage. Contract no. Nonr-870(00), report for the period Jun 15, 1953-Feb 1, 1954.

## Nuclear

Cosmic ray nuclear interactions in gases, by W. W. Brown. Duke University. Dept. of Physics, Durham, N. C. Jan 1954. 26p photos, drawing, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115894

Contract N7onr-455, T. O. III, NR 021 090. Technical report no. 5.

1. Argon - Isotopes - Nuclear reactions 2. Helium - Isotopes - Nuclear reactions 3. Neon - Isotopes - Nuclear reactions 4. Nitrogen - Isotopes - Nuclear reactions 5. Particles, Charged - Photographic analysis 6. Particles, Charged - Reactions 7. Atomic power - Research 8. Ionization chambers.

Dissociation energy of NO and N<sub>2</sub>, by Marx Brook and J. Kaplan. California. University. Institute of Geophysics. Jul 1954. 12p photos, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115952

Scientific report no. 3. Contract no. AF 19(122)-453. 1. Nitrogen - Spectrographic analysis 2. Nitrogen oxides - Spectrographic analysis 3. Spectroscopy, Molecular 4. Afterglow - Measurement.

Influence of positive ions on electron-beam profiles, by Behram H. Wadia. Stanford University. Electronics Research Laboratory, Stanford, Calif. Jan 1954. 71p photos, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.75, Photocopy \$10.25. PB 116023

The results of the investigation indicate that both methods of control involve more complicated phenomena than are accounted for in the prevailing simple theory. The investigation also shows that the design of the second method, called ion trapping, is only possible by a process of trial and error. Qualitative suggestions are made which can be of help in designing an acceptable trapping system. Contract N6onr-251(07), NR 073 360. SU ERL TR 74.

Investigation of nuclear energy levels. Progress report to Jan 1, 1954 under Contract N5ori-116, Project order III, NR 024-01, by J. M. Cork. Michigan. University. Engineering Research Institute, Ann Arbor, Mich. Jan 1954. 36p diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116024

Project M670-2. Reprints of papers published in Physical Review during 1953. Contents: I. Radioactive decay of tungsten 187, by J. M. Cork, M. K. Brice, W. H. Nester, J. M. LeBlanc, and D. W. Martin (From Physical review, vol. 89, no. 6, p. 1291-1292, Mar 15, 1953). - II. Radioactive decay of Cs<sup>134</sup>, Os<sup>185</sup>, Os<sup>191</sup>, and Os<sup>193</sup>, by J. M. Cork, J. M. LeBlanc, W. H. Nester, D. W. Martin, and M. K. Brice (From Physical review, vol. 90, no. 3, p. 444-447, May 1, 1953). - III. Nuclear levels associated with zirconium 95 and niobium 95, by J. M. Cork, M. M. LeBlanc, D. W. Martin, W. H. Nester, and M. K. Brice (From Physical review, vol. 90, no. 4, p. 579-581, May 15, 1953). - IV. Decay of Rh<sup>104m</sup> (4.3 min) and Rh<sup>104</sup> (44 sec) by W. C. Jordan, J. M. Cork, and S. B. Burson (From Physical review, vol. 90, no. 5, p. 862-864, June 1, 1953). - V. Nuclear levels in Cs<sup>131</sup>, by J. M. Cork, M. M. LeBlanc, W. H. Nester, and M. K. Brice (From Physical review, vol. 91, no. 1, p. 76-77, July 1, 1953). - VI. Radioactive decay of tungsten 181, by J. M. Cork, W. H. Nester, J. M. LeBlanc, and M. K. Brice (From Physical review, vol. 92, no. 1, p. 119-120, Oct 1, 1953). - VII. Radioactive decay of calcium 47, by J. M. Cork, J. M. LeBlanc, M. K. Brice, and W. H. Nester (From Physical review, vol. 92, no. 2, p. 367-369, Oct 15, 1953). - VIII. Radiations of <sup>64</sup>Gd<sup>159</sup> (18 hr) and <sup>64</sup>Gd<sup>161</sup> (3.7 min), by W. C. Jordan, J. M. Cork, and S. B. Burson (From Physical review, vol. 92, no. 2, p.

315-318, Oct 15, 1953). - IX. Gamma spectra of Cd<sup>117</sup> and In<sup>117</sup>, by J. M. LeBlanc, J. M. Cork, and S. B. Burson (From Bulletin of the American Physical Society, v. 28, no. 6, p. 12, Nov 27, 1953). MU ERI Proj M670-2.

Isotopic shift of germanium lines (GeI), by G. V. Deverall, K. W. Meissner, and G. J. Zissis. Purdue University. Dept. of Physics, Lafayette, Ind. Jan 1954. 39p photos, drawings, diagr, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115896

Technical report no. 1. Contract N7onr-39421, NR 019-127: Spectroscopic research. 1. Germanium - Isotopes - Energy levels 2. Germanium - Spectrographic analysis 3. Spectrographic analysis - Methods 4. Atomic power - Research 5. Atomic beam equipment - Design.

Precision wavelength measurements of germanium lines (GeI) produced in an atomic beam light source, by G. V. Deverall, K. W. Meissner, and G. J. Zissis. Purdue University. Dept. of Physics, Lafayette, Ind. Jan 1954. 26p photos, drawing, diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115897

Technical report no. 2. Contract N7onr-39421, NR 019-127: Spectroscopic research. 1. Germanium - Isotopes - Energy levels 2. Germanium - Spectrographic analysis 3. Atomic beam equipment - Design 4. Interferometers, Perot-Fabry - Design 5. Atomic power - Research.

Quarterly progress report no. 11 under Contract N5ori-07856. Massachusetts Institute of Technology. Solid State and Molecular Theory Group. Jan 1954. 69p diags, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$3.25, Photocopy \$9.00. PB 115851

Contents: 1. Wave functions for impurity levels, by J. C. Slater and G. F. Koster. - 2. Example of impurity levels in solids, by G. F. Koster. - 3. Energy bands in copper, by D. J. Howarth. - 4. Augmented plane wave method, by M. M. Saffren. - 5. Energy bands in chromium, by R. H. Parmenter. - 6. Studies of atomic self-consistent fields, by P.-O. Löwdin. - 7. Revised valence bond method, by R. McWeeney. - 8. Limited configuration interaction treatment of the NH<sub>3</sub> molecule, by H. Kaplan. - 9. Configuration interaction applied to the hydrogen molecule, by E. Callen. - 10. Water molecule, by G. F. Koster and H. C. Schweinler. - 11. Mechanization of molecular orbital determination, by A. Meckler. - 12. Antiferromagnetism, by G. V. Pratt, Jr. - 13. Nuclear electric quadrupole interaction in the KCl molecule, by L. C. Allen. - 14. Scattering of slow neutrons by O<sub>2</sub>, by W. H. Kleiner. - 15. Transition probabilities for X-ray emission in the transition metals, by A. J. Freeman. - 16. Decomposition of direct products of spherical harmonics, by H. C. Schweinler. - 17. Thermal vibrations of Cu-Zn system crystals, by H. C. White.

## PHYSIOLOGY

Genetic factors in temperature stress resistance in dogs. Annual progress report, Jan 1, 1953 to Dec 31, 1953, under Contract 1001(02), NR-160-093, by John L. Fuller, R. M. Chambers, John Craig, Jr. Jackson, Roscoe B., Memorial Laboratory, Bar Harbor, Maine. Jan 1954. 12p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115880

1. Temperature - Physiological effects
2. Genetics - Research
3. Dogs - Body temperature.

## PSYCHOLOGY

Factor analysis of the Minnesota teacher attitude inventory, by John L. Ferguson, Kenneth B. Brown, and Robert Callis. Missouri. University, Columbia, Mo. Jan 1954. 9p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115826

Technical report no. 4 for Contract NOnr 649(00).  
1. Psychological tests  
2. Teachers - Effectiveness  
3. Minnesota Teacher Attitude Inventory (MTAI).

Four-digit number telling methods, by Henry M. Moser, John J. Dreher and Sol Adler. Ohio State University Research Foundation, Columbus, Ohio. Sep 1954. 19p graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115950

Contract AF 18(600)-316.  
1. Numerals - Intelligibility  
2. Articulation tests  
3. ARF Proj 519, Report no. 16  
4. AAF CRC TR 54-86.

N-V alternate word investigation, by H. M. Moser and J. J. Dreher. Ohio State University Research Foundation, Columbus, Ohio. Sep 1954. 25p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115947

Contract AF 18(600)-316.  
1. Speech - Intelligibility  
2. Articulation tests  
3. ARF Proj 519, Report no. 13  
4. AAF CRC TR 54-83.

Non-normal models for classification of speech sounds, by H. L. Stubbs. Northeastern University. Electronics Research Laboratory. Oct 1954. 43p graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115915

Supplementary technical report no. 54-1 for Contract no. AF 19(604)-1039, Item I.

1. Speech - Analysis
2. Speech - Measurement - Electronic
3. Phonemes - Segmentation
4. Mathematical equations and solutions
5. AAF CRC TN 54-358.

Phonemic confusion vectors, by Henry M. Moser and John J. Dreher. Ohio State University Research Foundation, Columbus, Ohio. Sep 1954. 21p diags, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115948

Contract AF 18(600)-316.  
1. Speech - Intelligibility  
2. Phonemes  
3. Articulation tests  
4. ARF Proj 519, Report no. 14  
5. AAF CRC TR 54-84.

Sentence form and intelligibility (Flight traffic instructions), by Henry M. Moser, John J. Dreher, Robert E. Patterson, and Sol Adler. Ohio State University Research Foundation, Columbus, Ohio. Sep 1954. 26p diagr, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115949

Contract AF 18(600)-316.  
1. Speech - Intelligibility  
2. Sentences - Construction  
3. Airports - Control towers - Operators - Speech  
4. ARF Proj 519, Report no. 15  
5. AAF CRC TR 54-85.

Some effects of a lethal dose of x-radiation upon retention: Studies of shock avoidance motivation, by William H. Melching and Sylvan J. Kaplan. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Aug 1954. 9p diags, graphs, tables Available from Library of Congress Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115813

Each of eight Macaca rhesus monkeys was trained to give an instrumental response under shock motivation. Four of the subjects were trained on two problems in a shuttle-box involving visual and auditory cues, and four were trained to select the correct alley in a maze on the basis of visual cues. Upon reaching criterion of mastery, subjects were exposed to 1,500 r of x-radiation. Results indicated that radiation had no deleterious effects upon the performance tested. The experiments demonstrated the feasibility of employing shock motivated devices in the behavior testing of irradiated monkeys. AAF SAM Proj 21-3501-0003, Report no. 9.

Study of discrimination learning in monkeys with implications for the investigation of the psychological effects of ionizing radiation, by J. M. Warren and Sylvan J. Kaplan. U. S. Air Force. School of Aviation Medicine, Randolph Field, Texas. Jul 1954. 7p photo, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115811



This experiment investigated the effect of stimulus variables on discrimination learning in monkeys. It was found that the difficulty of discrimination problems is an inverse function of the number of relevant stimulus cues present. These results suggest the possibility and utility of a monkey "intelligence test" to aid in the analysis of the effects of radiation of the psychobiological efficiency of the organism. Contract AF 18(600)-165. AAF SAM Proj 21-3501-0003, Report no. 6.

Time perspective and the initiation of cooperation, by Philip Lichtenberg. New York University. Research Center for Human Relations. Jan 1954. 48p diagr, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115819

Contract Nonr-285(00).

1. Stresses, Psychological
2. Time intervals
3. Psychological research.

Word association, methods of deduction and induction, and reactions to set in good and poor reasoners, by Olga W. McNemar. Stanford University. Dept. of Psychology, Stanford, Calif. Jan 1954. 33p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115820

Technical report no. 2 under Contract Nonr 225(02) (NR 150-104).

1. Words - Association
2. Psychological tests.

## STRUCTURAL ENGINEERING

Determination of stresses from strains measured on three intersecting gage lines, by E. W. Suppinger. U. S. Army. Air Corps. Materiel Division, Dayton, Ohio. Oct 1942. 27f diagrs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Enlargement Print \$5.25. PB 115955

1. Stress analysis - Methods
2. Stresses - Calculations
3. Structural theory
4. Mathematical equations and solutions
5. AAF TR 4822.

Investigation of static strength and creep behavior of an aluminum-alloy multiweb box beam at elevated temperatures, by Eldon E. Mathauser. U. S. National Advisory Committee for Aeronautics. Nov 1954. 21p photos, drawings, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115768

Results of an investigation to determine static strength and creep behavior at elevated temperatures of 24S-T3 aluminum-alloy multiweb box beams are presented. Methods that were used to predict failure stresses in the static-strength tests were in good agreement with the experimental results. Creep

deflections and creep lifetimes are presented for beams subjected to constant load and various heating conditions. Lifetime is satisfactorily predicted from material stress-rupture data when tensile failure occurs at both constant and varying temperatures. NACA TN 3310.

Some general principles of the lighting of buildings.

Gt. Brit. Dept. of Scientific and Industrial Research. Building Research Station, Watford, Eng. Oct 1954. 8p photos, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.10. PB 115957

S. O. code no. 72-22-0-70.

1. Buildings - Lighting - Gt. Brit.
2. Lighting - Techniques - Gt. Brit.
3. DSIR BRD 70.

Sound absorbent treatments. Revised. Gt. Brit.

Dept. of Scientific and Industrial Research. Building Research Station, Watford, Eng. Sep 1954. 10p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.10. PB 105761r

Revision of PB 105761. S. O. code no. 72-22-36-1.

1. DSIR BRD 36 Revised.

## TRANSPORTATION EQUIPMENT

### Aeronautics

#### Aircraft

Aircraft material specification: Extreme low temperature grease. Gt. Brit. Ministry of Supply. Apr 1954. 15p drawings Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.30. PB 115532

1. Greases, Low temperature - Specifications - Gt. Brit.
2. MS DTD MS 866.

Mechanism of start and development of aircraft crash fires, by I. Irving Pinkel, G. Merritt Preston and Gerald J. Pesman. U. S. National Advisory Committee for Aeronautics. 1953. 55p photos (part col.), drawings, diagrs (1 col.), graphs, tables Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C. \$.50. PB 115842

Formerly NACA TM E52F06.

1. Fire prevention - Airplanes
2. Airplanes - Fire hazards
3. Fuels, Aviation - Ignition
4. Airplanes - Safety devices and measures
5. Engines, Aircraft - Fire prevention
6. Exhaust gases - Effects
7. NACA 1133.

Model tests on an air interchange system for removing engine exhaust products from a wind tun-

nel, by F. W. Newby, E. G. Barnes and D. W. Bottle. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1948. 34p drawings (1 fold), diags, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N.Y. \$2.00. PB 115961

Cover date is 1954. S. O. code no. 23-2639.

1. Wind tunnels - Fan drive systems - Gt. Brit.
2. Wind tunnels - Flow, Gas - Gt. Brit.
3. Wind tunnels - Air interchange systems - Gt. Brit.
4. Exhaust gases - Disposal - Gt. Brit.
5. Exhaust collectors - Use in wind tunnels - Gt. Brit.
6. ARC RM 2639.

### Instruments

Application of Hilsch tube to aircraft and missiles, by Eugen Knoernschild. U. S. Air Materiel Command. Engineering Division. Equipment Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Jun 1948. 46p drawings, diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 113835

Some pages will not reproduce well. For theory of operation see PB 110936.

1. Hilsch tube 2. Aeronautical equipment - Cooling
3. Missiles, High speed - Cooling
4. AAF TSEPE 664-510A.

Description and preliminary flight investigation of an instrument for detecting subnormal acceleration during take-off, by Garland J. Morris and Lindsay J. Lina. U. S. National Advisory Committee for Aeronautics. Nov 1954. 19p photos, drawing, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115777

1. Accelerometers - Design
2. Instruments, Aeronautical - Acceleration
3. Airplanes - Acceleration - Measuring equipment
4. Airplanes - Take-off
5. NACA TN 3252.

Development of helicopter blade tip lighting, by Marvin J. Anderson and Cecil B. Phillips. U. S. Civil Aeronautics Administration. Technical Development and Evaluation Center, Indianapolis, Ind. Oct 1954. 13p photos, diags, graphs, tables Available from Office of Technical Services, U. S. Dept. of Commerce, Washington 25, D. C. \$.50. PB 111562

1. Helicopter blades - Tips - Lighting
2. CAA TDR 248.

Evaluation and comparison of the model A-2 flight director (zero reader) and the integrated flight system, by Lawrence C. Wright. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Directorate of Flight and All-Weather Testing, Wright-Patterson Air Force Base, Dayton, Ohio. Aug 1953. 144p photos,

diags, graphs Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$6.00, Photocopy \$19.00. PB 115832

XSO no. 202-14. Appendix I: Principles of operation of the Sperry A-2 zero reader flight director. - Appendix II: Theory of operation of the Collins integrated flight system. - Appendix III: Photographs, instrumentation and installation. - Appendix IV: Flight test procedure and summation of pilot answers to questions.

1. A-2 (Zero reader)
2. Collins integrated flight system
3. Instruments, Aeronautical - Tests
4. Flying, Instrument
5. Pilots, Automatic
6. AAF WCT TN 53-27.

Field evaluation of a trouble-shooting aid, by James R. Berkshire. U. S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Training Aids Research Laboratory, Chanute Air Force Base, Illinois. Jun 1954. 13p tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115814

Project no. 7714. Task no. 77253.

1. Airplanes - Equipment - Failures - Location
2. Personnel, Maintenance - Training
3. AAF PTRC TR 54-24.

Preferred list of radio frequency coaxial electrical connectors recommended by the Air Force for use in airborne equipment, by Galen B. Eley. U. S. Air Force. Air Research and Development Command. Wright Air Development Center. Electronic Components Laboratory, Wright-Patterson Air Force Base, Dayton, Ohio. Apr 1953. 8p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$1.50, Photocopy \$1.50. PB 115831

Supersedes edition of 10 Mar 1953.

1. Connectors, Electric
2. AAF WCLC TN 53-7.

Shearing-stress measurements by use of a heated element, by H. W. Liepmann and G. T. Skinner. U. S. National Advisory Committee for Aeronautics. Nov 1954. 27p drawing, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115765

1. Friction - Measuring equipment
2. Flow, Viscous - Measurements
3. Heat - Transference - Measurement
4. Airplanes - Skin - Friction - Measurement
5. Probes, Hot wire
6. NACA TN 3268.

Viscosity corrections to Cone probes in rarefied supersonic flow at a nominal Mach number of 4, by L. Talbot. U. S. National Advisory Committee for Aeronautics. Nov 1954. 39p photo, drawings, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115776

1. Pressure, Air - Probes 2. Wind tunnels, Supersonic - Flow 3. Mach number - Effect 4. Flow, Supersonic - Theory 5. Flow, Supersonic - Measurements 6. Gases, Rarefied - Viscosity 7. Cones - Pressure distribution 8. NACA TN 3219.

### Engines and Propellers

Helicopter control to trim in forward flight, by W. Stewart. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1950. 34p drawings, diags, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$2.00. PB 115962

Cover date is 1954. S. O. code no. 23-2733. Appendix: Effect of delta-3 hinge.

1. Helicopters - Stability, Longitudinal - Gt. Brit. 2. Helicopters - Stability - Effect of slipstream - Gt. Brit. 3. Helicopter blades - Autorotation - Theory - Gt. Brit. 4. Helicopter blades - Pitch - Gt. Brit. 5. Helicopter blades - Hinge effect - Gt. Brit. 6. Helicopters - Rotors - Pitching moments - Gt. Brit. 7. ARC RM 2733.

Performance of a multi-engine helicopter following failure of one engine during take-off or landing, by A. L. Oliver. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Oct 1953. 15p diagr, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.50. PB 115867

Cover date is 1954. S. O. code no. 23-9007-75.

1. Helicopters - Rotors - Theory - Gt. Brit. 2. Helicopters - Rotors - Failure - Gt. Brit. 3. ARC CP 175.

### Training and Training Devices

ML-1A, ML-1B and ML-3A course mechanisms, by C. M. Connelly and J. B. Higley. Massachusetts Institute of Technology. Radiation Laboratory. Nov 1945. 32p photos, diags (part fold) Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115603

Contract OEMsr-262.

1. Trainers, Aviation - Equipment 2. ML-1A (Course mechanism) 3. ML-1B (Course mechanism) 4. ML-3A (Course mechanism) 5. MIT Rad Lab 645-9 6. NDRC Div 14.

Teaching radar scope interpretation with motion pictures. I: Radar navigation, the Ellington study, by William A. McClelland, Preston S. Abbott, and William H. Stobie. U. S. Air Force. Air Research and Development Command. Air Force Personnel and Training Research Center. Aircraft Observer Research Laboratory, Mather Air Force Base, Calif. Jul 1954. 27p photos, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 115815

Project no. 506-006-0002.

1. Motion pictures, Educational 2. Radar - Training devices 3. Radar - Scopes - Interpretation 4. AAF PTRC TR 54-25.

### Airport and Airways

Some measurements and power spectra of runway roughness, by James H. Walls, John C. Houbolt and Harry Press. U. S. National Advisory Committee for Aeronautics. Nov 1954. 31p drawing, graphs (1 fold), tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115766

1. Loads, Landing - Impact 2. Runways - Construction 3. Runways - Roughness - Power spectra 4. Airports - Pavements - Design 5. NACA TN 3305.

### Aerodynamics

Aerodynamic derivatives for a delta wing oscillating in elastic modes, by D. L. Woodcock. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Jul 1952. 33p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.75. PB 115865

Cover date is 1954. S. O. code no. 23-9007-70.

1. Downwash (Aerodynamics) - Theory - Gt. Brit. 2. Flow, Incompressible - Theory - Gt. Brit. 3. Wings, Triangular - Vibration - Calculation - Gt. Brit. 4. Wings, Triangular - Aerodynamics - Gt. Brit. 5. ARC CP 170 6. RAE TN Struc 132.

Application of camber and twist to swept wings in incompressible flow, by G. G. Brebner. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Mar 1952. 59p graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.25. PB 115866

Cover date is 1954. S. O. code no. 23-9007-71.

1. Wings, Swept - Taper ratio - Gt. Brit. 2. Wings, Swept - Downwash - Gt. Brit. 3. Wings, Swept - Camber - Gt. Brit. 4. Prandtl-Glauert theory (Aerodynamics) - Gt. Brit. 5. Flow, Incompressible - Theory - Gt. Brit. 6. ARC CP 171 7. RAE TN Aero 2458.

Arrangement of fusiform bodies to reduce the wave drag at supersonic speeds, by Morris D. Friedman and Doris Cohen. U. S. National Advisory Committee for Aeronautics. Nov 1954. 23p diags, graphs Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115780

Formerly NACA RM A51120.

1. Sears-Haack minimum-drag bodies 2. Airplanes - Protuberances - Drag - Theory 3. Interference, Nacelle - Theory 4. Flow, Supersonic - Theory 5. Bodies of revolution - Theory 6. NACA TN 3345.

Comparison of flutter calculations using various aerodynamic coefficients with experimental results for some rectangular cantilever wings at Mach number 1.3, by Herbert C. Nelson and Ruby A. Rainey. U. S. National Advisory Committee for Aeronautics. Nov 1954. 22p diags, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115908

1. Rayleigh principle (Mathematics) 2. Wings, Rectangular - Aspect ratio 3. Wings, Rectangular - Flutter - Calculations 4. Mach number - Effect 5. NACA TN 3301.

Control-surface flutter with the stick free, by H. Templeton. Gt. Brit. Ministry of Supply. Aeronautical Research Council. May 1950. 22p table, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.40. PB 115964

Cover date is 1954. S. O. code no. 23-2824.

1. Elevators, Aircraft - Inertia - Gt. Brit. 2. Control surfaces - Gt. Brit. 3. ARC RM 2824.

Exploratory investigation of some types of aero-elastic instability of open and closed bodies of revolution mounted on slender struts, by S. A. Clevenston, E. Widmayer, Jr. and Franklin W. Diederich. U. S. National Advisory Committee for Aeronautics, Nov 1954. 44p photos, drawings, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115767

1. Loads - Aeroelasticity 2. Equations of motion 3. Flutter - Theory 4. Bodies of revolution - Flutter 5. Bodies of revolution - Vibration 6. Bodies of revolution - Wind tunnel tests 7. NACA TN 3308.

Flight measurements of drag and base pressure of a fin-stabilized parabolic body of revolution (NACA RM-10) at different Reynolds numbers and at Mach numbers from 0.9 to 3.3, by H. Herbert Jackson, Charles B. Rumsey and Leo T. Chauvin. U. S. National Advisory Committee for Aeronautics. Nov 1954. 20p photos, drawings, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115912

Formerly RM L50G24.

1. Bodies of revolution - Fineness ratio 2. Bodies of revolution - Drag 3. Bodies of revolution - Wind tunnel tests 4. Flow, Supersonic - Theory 5. Mach number - Effect 6. Reynolds number - Effect 7. NACA TN 3320.

Initial experiments on flutter of unswept cantilever wings at Mach number 1.3, by W. J. Tuovila, John E. Baker and Arthur A. Regier. U. S. National Advisory Committee for Aeronautics. Nov 1954. 19p photos, drawing, diags, graphs, tables Available from National Advisory Committee for Aeronautics,

1512 "H" St., N. W., Washington 25, D. C.

PB 115911

Formerly RM L8J11.

1. Wing theory 2. Wings, Unswept - Flutter - Theory 3. Wings, Unswept - Wind tunnel tests 4. Flow, Supersonic - Theory 5. NACA TN 3312.

Investigation of the aerodynamic characteristics of a model wing-propeller combination and of the wing and propeller separately at angles of attack up to 90°, by John W. Draper and Richard E. Kuhn. U. S. National Advisory Committee for Aeronautics. Nov 1954. 72p photos, drawings, diags, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115909

1. Angle of attack - Effect on lift coefficient 2. Wings - Aerodynamics 3. Wings - Wind tunnel tests 4. Propellers - Pitch 5. Propellers - Slipstream 6. Propellers - Wind tunnel tests 7. Airplanes - Models - Wind tunnel tests 8. NACA TN 3304.

Investigation of a lifting 10-percent-thick symmetrical double-wedge airfoil at Mach numbers up to 1, by Milton D. Humphreys. U. S. National Advisory Committee for Aeronautics. Nov 1954. 35p photos, diags, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115910

1. Airfoils, Two dimensional - Pressure 2. Airfoils, Two dimensional - Drag 3. Airfoils, Two dimensional - Wind tunnel tests 4. Mach number - Effect 5. Flow, Mixed - Theory 6. NACA TN 3306.

Proposed theory to cover water impacts of sea-planes in which the craft has constant attitude and a tangential-to-keel velocity relative to the water, by P. R. Crewe. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Dec 1946. 54p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$3.25. PB 115960

Cover date is 1954. S. O. code no. 23-2513.

1. Seaplanes - Hulls - Impact pressures - Theory - Gt. Brit. 2. Planing surfaces - Hydrodynamics - Theory - Gt. Brit. 3. Loads, Landing - Impact - Theory - Gt. Brit. 4. ARC RM 2513.

Stress distribution in a swept-back box-beam with perpendicular ribs, by P. B. Hovell. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Dec 1950. 18p drawings, graphs, tables Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$1.25. PB 115966

Cover date is 1954. S. O. code no. 23-2837.

1. Beams, Box - Stress analysis - Gt. Brit. 2. Wings, Sweptback - Stress analysis - Gt. Brit. 3. Ribs, Wing - Stiffness - Effect on load distribution - Gt. Brit. 4. ARC RM 2837.

Subsonic edges in thin-wing and slender-body theory, by Milton D. Van Dyke. U. S. National Advisory Committee for Aeronautics. Nov 1954. 26p diagrs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 115715

1. Bodies of revolution - Theory 2. Wing theory 3. Velocity, Subsonic - Theory 4. Flaps, Aircraft - Leading edges - Flow 5. Flow, Compressible - Theory 6. Flow, Incompressible - Theory 7. Flow, Subsonic - Theory 8. Lighthill's rule (Speeds on round-nosed airfoils) 9. NACA TN 3343.

Swept wings in supersonic flight, by S. B. Gates. Gt. Brit. Ministry of Supply. Aeronautical Research Council. Dec 1946. 10p diagrs, graphs Available from British Information Services, 30 Rockefeller Plaza, New York 20, N. Y. \$.75. PB 115963

Cover date is 1954. S. O. code no. 23-2818.

1. Ackeret's theory (Wing lift coefficient) - Gt. Brit. 2. Wings, Swept - Aerodynamics - Gt. Brit. 3. Wings, Swept - Drag - Gt. Brit. 4. Flow, Supersonic - Theory - Gt. Brit. 5. ARC RM 2818.

Theoretical calculations of the lateral stability derivatives for triangular vertical tails with subsonic leading edges traveling at supersonic speeds, by Percy J. Bobbitt. U. S. National Advisory Committee for Aeronautics. Dec 1954. 68p photos, diagrs, graphs, tables Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116004

1. Stability, Lateral - Theory 2. Stability, Directional - Theory 3. Damping derivatives - Stability 4. Flow, Supersonic - Theory 5. Tail surfaces - Loads - Mathematical analysis 6. Tail surfaces - Stability - Mathematical analysis 7. NACA TN 3240.

Theoretical investigation of the short-period dynamic longitudinal stability of airplane configurations having elastic wings of 0° to 60° sweepback, by Milton D. McLaughlin. U. S. National Advisory Committee for Aeronautics. Dec 1954. 39p diagrs, graphs, table Available from National Advisory Committee for Aeronautics, 1512 "H" St., N. W., Washington 25, D. C. PB 116005

1. Stability, Longitudinal - Theory 2. Damping derivatives - Stability 3. Lagrange equations 4. Wings, Sweptback - Elasticity 5. NACA TN 3251.

### Rockets and Jet Propulsion

Photographic investigation of combustion in a two-dimensional transparent rocket engine, by Donald R. Bellman, Jack C. Humphrey and Theodore Male. U. S. National Advisory Committee for Aeronautics. 1953. 14p photos, drawings, diagrs, tables Available from Superintendent of Documents, Government Printing Office, Washington 25, D. C. \$.20. PB 115843

Formerly RM E8F01.

1. Rocket motors - Fuels - Combustion - Photographic analysis 2. Combustion - Photographic analysis 3. NACA 1134.

Rocket fire protection, by Milton C. Harrold. Aerojet Engineering Corporation, Azusa, Calif. May 1952. 260p photos, drawings, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$32.75. PB 115497

Contract no. AF 33(038)-11975, Supplemental agreement no. 4. Appendix I. Tables. - Appendix II. Determination of rocket propellants likely to be used in rocket-powered aircraft. - Appendix III. Characteristics of rocket-powered aircraft. - Appendix IV. Aircraft rocket power plants. - Appendix V. Experimental apparatus and procedures used in determination of minimum spontaneous ignition temperatures. - Appendix VI. Experimental apparatus and procedures used in determining the flammability limits of rocket propellants. - Appendix VII. Propellant combustion tests in a simulated rocket compartment. - Appendix VIII. Determination of maximum pressure resulting from combustion of JP-3 and air mixtures at any initial temperature. - Appendix IX. Effect of oxidizer combustion of JP-3 pressurized with air.

1. Airplanes, Rocket assisted - Fire hazards 2. Rocket motors - Fuels - Fire prevention 3. Rockets - Fire extinguishing systems 4. Nitric acid, White fuming - Combustion 5. Propellants, Rocket - Combustion tests 6. Propellants, Rocket - Flammability 7. Ignition, Spontaneous - Temperature - Testing apparatus 8. Power plants, Rocket 9. JP-3 (Rocket fuel) 10. AAF TR 5876.

### Marine Transportation

Area and volume study of Puget Sound, Washington, by Peter M. McLellan. Washington. University. Dept. of Oceanography, Seattle, Wash. Feb 1954. 42p maps, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 116031

Technical report no. 21. Contract N8onr-520/III, Project NR 083 012.

1. Physical geography - Puget Sound 2. Tides - Puget Sound 3. Puget Sound - Measurement 4. WU OR 54-5.

Circulation near the Washington coast, by Clifford A. Barnes and Robert G. Paquette. Washington. University. Dept. of Oceanography, Seattle, Wash. Jan 1954. 34p maps, graph, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 115788

Technical report no. 17 under Contract N8onr-520/III, Project NR083 012 and Contract Nonr-477(01), Project NR 083 072.

1. Currents, Ocean - Pacific Ocean 2. Currents, Ocean - Measuring equipment 3. Currents, Ocean - Velocity - Measurement - Pacific Ocean 4. Geomagnetic - Electro - Kinetograph 5. WU OR 54-1.

Eastern North Pacific offshore physical and chemical data observed during 1952, by Robert G. Paquette, Eugene E. Collias, and Cuthbert M. Love. Washington. University. Dept. of Oceanography, Seattle, Wash. Feb 1954. 31p maps, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.50, Photocopy \$5.25. PB 116032

Technical report no. 22. Contracts N8onr-520/III, Project NR 083 012 and Nonr-477(01), Project NR 083 072.

1. Sea water - Salinity - Pacific Ocean 2. Sea water - Temperature - Pacific Ocean 3. Sea water - Chemical analysis - Pacific Ocean 4. WU OR 54-6.

Eastern North Pacific offshore physical and chemical data, April-June 1953, by Robert G. Paquette, Eugene E. Collias, and Cuthbert M. Love. Washington. University. Dept. of Oceanography, Seattle, Wash. Feb 1954. 22p maps, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.25, Photocopy \$4.00. PB 116033

Technical report no. 23. Contracts N8onr 520/III, Project NR 083 012 and Nonr-477(01) Project NR 083 072.

1. Sea water - Salinity - Pacific Ocean 2. Sea water - Temperature - Pacific Ocean 3. Sea water - Chemical analysis - Pacific Ocean 4. WU OR 54-7.

Flow over reefs and structures by wave action, by Osvald Sibal. California. University. Institute of Engineering Research. Wave Research Laboratory, Berkeley, Calif. Jan 1954. 13p drawing, graphs, table Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115787

Contract N7onr-295(28). Presented at the Pacific southwest meeting, American Geophysical Union, 29-30, Jan 1954.

1. Waves, Ocean - Measuring equipment 2. Breakwaters - Flow 3. UC IER Series 3, Issue 361.

Investigations of the physics and chemistry of the air-sea boundary layer. Final report, 15 Dec 1950-15 Mar 1954, under Contract no. AF 19(122)-413, by Rober Revelle. California. University. Scripps Institution of Oceanography. Apr 1954. 14p Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.00, Photocopy \$2.75. PB 115931

For other reports on this contract see SIO 52-61, PB 112694, 114372, 108579, 113234. Abstracts of these publications included in final report.

1. Waves, Ocean - Measurement 2. Ocean surface - Effects of wind stress 3. Boundary layer, Sea-air - Momentum transfer 4. Boundary layer, Sea-air -

Photographic analysis 5. Light - Reflection - Measurement 6. UC SIO Ref 54-20.

Manual for free divers, with especial reference to the aqua-lung, by D. M. Owen. Woods Hole Oceanographic Institution, Woods Hole, Mass. Dec 1953. 46p photos, drawing, fold graph Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$2.75, Photocopy \$6.50. PB 115887

Interim report no. 1 under Contract Nonr-769(00), Project NR-083-069.

1. Diving - Manuals 2. Aqua-lung 3. WHOI Ref 53-94.

Marine meteorology: Erosion of cumulus towers, by Joanne Starr Malkus and R. S. Scorer. Woods Hole Oceanographic Institution, Woods Hole, Mass. Jan 1954. 85p photos, diagrs, graphs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$4.00, Photocopy \$11.50. PB 115782

Technical report no. 26 under Contract N6onr-27702 (NR-082-021). Unpublished manuscript.

1. Bubbles, Air - Erosion - Theory 2. Bubbles, Air - Motion 3. Clouds, Cumulus - Formation 4. WHOI Ref 54-5.

## MISCELLANEOUS

Boreal fringe areas of marsh and swampland, a general background study, by John W. Morris. Oklahoma. University. Research Institute. Jan 1954. 281p photos (part col), maps (part fold), tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$36.50. PB 115830

Technical report no. 1. Contract no. Nonr-982(01) Project NR 387-008. Color in photos will not reproduce. Appendix 1. Plant successions, by Elroy L. Rice. - Appendix 2. Brief description of forest types of Latvia, by Egolfs V. Bakuzis. - Appendix 3. Polesia, the land of great swamps and marshes, by Vladimir Bereziuk.

1. Photography, Aerial - Interpretation 2. Forests and forestry 3. Forests and forestry - Latvia 4. Marshes - Vegetation.

Defense against CBR attack. U. S. Army and U. S. Air Force. Aug 1954. 299p photos, drawings, diagrs, tables Available from Library of Congress, Publication Board Project, Washington 25, D. C. Microfilm \$9.25, Photocopy \$37.75. PB 115956

Supersedes edition of 6 Sep 1946.

1. Biological warfare - Defenses 2. Chemical warfare agents - Countermeasures 3. Radiological defense 4. WD FM 21-40 5. AAF M 355-9.

# 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 the U. S. GOVERNMENT RESEARCH REPORTS. As PB numbers 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

Emergency crew training and medical decontamination facility at the Livermore Research Laboratory, by G. A. Blanc, W. A. Clark, and G. T. Saunders. Livermore Research Lab., Calif. Research and Development Co. June 1954. Contract No. AT(11-1)-74. 17p. \$.20. (LRL-142)

X irradiation of the frog embryo: Gross effects, by Roberts Rugh. Radiological Research Laboratory, Columbia University. September 1, 1954. Contract No. AT-30-1-GEN-70. 27p. Microfilm \$2.25, Photocopy \$4.00. (NYO-474)

Annual report on research project, by G. Failla and H. H. Rossi. Radiological Research Laboratory, Columbia University. April 1, 1954. Contract No. AT-30-1-GEN-70. 149p. \$.95. (NYO-4582)

## Chemistry and Chemical Engineering

U<sup>235</sup> thermal neutron fission yields at masses 90 and 91, by George W. Reed. Argonne National Laboratory. March 1954. Contract W-31-109-eng-38. 10p. Microfilm \$1.50, Photocopy \$1.50. (ANL-5306)

Spot tests for contaminants on aluminum, by H. S. Hilborn and R. C. Pugh. E. I. du Pont de Nemours & Co. November 1954. Contract At(07-2)-1. 19p. Microfilm \$2.00, Photocopy \$2.75. (DP-88)

Fiberglass air filters for hot laboratories, by L. E. Kattner and J. F. Guford. Engineering Department, Hanford Atomic Products Operation. June 18, 1954. Contract No. W-31-109-eng-52. 17p. \$.25. (HW-30781)

The mechanism of uranium extraction by tributyl phosphate, by H. T. Hahn. Hanford Atomic Products Operation. July 20, 1954. Contract #W-31-109-Eng-52. 26p. Microfilm \$2.25, Photocopy \$4.00. (HW-32626)

A titrimetric determination of thorium, by John J. Ford and James S. Fritz. Ames Laboratory. June 1954. Contract No. W-7405-eng-82. 47p. Microfilm \$2.75, Photocopy \$6.50. (ISC-520)

The kinetics of the hydrogen peroxide oxidation of selenious acid, by Francis J. Hughes and Don S. Martin. Ames Laboratory. June 1954. Contract No. W-7405-eng-82. 40p. Microfilm \$2.50, Photocopy \$5.25. (ISC-521)

The microwave spectrum and molecular structure of bromine trifluoride, by D. W. Magnuson. K-25 Plant, Carbide and Carbon Chemicals Company. December 9, 1954. 12p. Microfilm \$2.00, Photocopy \$2.75. (K-1179)

Microwave dielectric constant measurements on hydrogen fluoride vapor, by D. W. Magnuson. K-25 Plant, Carbide and Carbon Chemicals Company. December 9, 1954. 28p. Microfilm \$2.25, Photocopy \$4.00. (K-1180)

Liquid solution scintillators, by F. Newton Hayes and others. Los Alamos Scientific Laboratory. October 1953. Contract W-7405-eng-36. 75p. \$.60. (LA-1639)

Collected radiochemical procedures, by D. P. Amer and others. Los Alamos Scientific Laboratory. December 4, 1954. Contract W-7405-Eng-36. 222p. Microfilm \$8.25, Photocopy \$29.00. (LA-1721)

Waste disposal — decontamination and decontamination laundry facilities, by W. A. Clark. Livermore Research Laboratory, Calif. Research and Development Co. May 1954. Contract AT(11-1)-74. 25p. \$.25. (LRL-120)

Air cleaning studies. Progress report for July 1, 1952 to June 30, 1953, by Melvin W. First and others. Air Cleaning Laboratory, School of Public Health, Harvard University. August 5, 1954. Contract No. AT(30-1)-841. 31p. \$.35. (NYO-1591)

Analysis for long-lived products in soil, by N. I. Sax, J. J. Gabay, D. Revinson, and B. Keisch. Analytical Branch, Health and Safety Laboratory. September 1, 1954. 24p. Microfilm \$2.25, Photocopy \$4.00. (NYO-4604)

Distribution of rare-earth nitrates between tributyl phosphate and nitric acid, by A. C. Topp and Boyd Weaver. Oak Ridge National Laboratory. October 15, 1954. Contract no. W-7405-eng-26. 25p. Microfilm \$2.25, Photocopy \$4.00. (ORNL-1811)

The photometric determination of aluminum in phosphate materials with ferron, by Maryse Delevaux, Roberta Smith, and F. S. Grimaldi. United States Geologic Survey. August 1954. 19p. \$.25. (TEI-450)

Retention of uranium during oxidative ashing of selected naturally occurring carbonaceous substances, by Frank Cuttitta and Edward Brittin. United States Geological Survey. September 1954. 8p. \$1.10. (TEI-461)

Recent references to thermodynamic data, by Wendell M. Latimer. Radiation Laboratory, University of California, Berkeley, Calif. August 1954. Contract No. W-7405-eng-48. 27p. \$25. (UCRL-2680)

A method for preparing codeinone, by Henry Rapoport and Helen N. Reist. Radiation Lab., Univ. of Calif., Berkeley. August 27, 1954. Contract W-7405-eng-48. 5p. \$1.10. (UCRL-2683)

## Engineering

Pyrolytic reactions of diphenyl under high heat flux conditions, by Kermit Anderson. Argonne National Laboratory. Contract W-31-109-eng-38. August 19, 1954. 35p. Microfilm \$2.50, Photocopy \$5.25. (ANL-5304)

Thermal stresses in hollow cylinders, by R. A. Powell and H. Poritsky. General Engineering Lab., General Electric Co. October 22, 1954. Contract W-31-109-Eng-52. 50p. Microfilm \$2.75, Photocopy \$6.50. (GEL-90)

An electro-magnetic pump and heating transformer for high temperature liquid metals, by G. R. Winders and R. W. Fisher. Ames Laboratory. December 6, 1954. Contract W-7405-eng-82. 14p. Microfilm \$2.00, Photocopy \$2.75. (ISC-547)

Portsmouth Technical Services Building. An Industrial Atomic Laboratory, by Richard W. Ulm, Walter J. Hamer, Lewis H. Rogers, and Gene P. Rutledge. K-25 Plant, Carbide and Carbon Chemicals Co. November 29, 1954. 21p. Microfilm \$2.25, Photocopy \$4.00. (K-1148)

Free convection in fluids having a volume heat source, by D. C. Hamilton, H. F. Poppendiek, R. F. Redmond, and L. D. Palmer. Oak Ridge National Laboratory. December 3, 1954. Contract No. W-7405, eng 26. 39p. Microfilm \$2.50, Photocopy \$5.25. (ORNL-1769)

High-voltage problems, by J. D. Trimmer and Harry Pearlman. Edited by H. Wesley Savage. Clinton Engineer Works—Tennessee Eastman Corporation. 1951. Contract No. W-7405-eng-26. 226p. \$1.85. (TID-5211)

## Geology and Mineralogy

The isotopic composition and distribution of lead, uranium, and thorium in a pre-cambrian granite, by George R. Tilton and others. California Inst. of Tech. June 25, 1954. Contract AT(11-1)-208. 27p. \$25. (AECU-2840)

Solution to a simple drilling problem, by Howard Jespersen. Statistical Laboratory, Iowa State College. July 24, 1953. 15p. Microfilm \$2.00, Photocopy \$2.75. (RME-3055)

Uranium occurrence at the Cherokee Mine, Queen Mineral Ranch, Gilpin County, Colorado, by Raymond C. Derzay. Division of Raw Materials, AEC. January, 1953. 8p. Microfilm \$1.50, Photocopy \$1.50. (RME-4041)

Review of airborne radioactivity survey techniques in the Colorado Plateau, by J. A. Tavelli. Division of Raw Materials. September 21, 1951. 12p. \$1.10. (RMO-397)

Practices and results obtained with sample collectors for wagon-drill cuttings, by E. D. Gordon, C. F. Withington, and V. T. Dow. Geological Survey. January 1953. 23p. Microfilm \$2.25, Photocopy \$4.00. (TEI-213)

Geologic investigations of radioactive deposits. Semiannual progress report, December 1, 1953 to May 31, 1954. United States Geological Survey. June 1954. 250p. \$1.75. (TEI-440)

## Health and Safety

Determination of efficiency of Kanne Chamber for detection of radiogases, by J. J. Fitzgerald and B. W. Borelli. Knolls Atomic Power Laboratory. November 8, 1954. Contract No. W-31-109 Eng-52. 22p. Microfilm \$2.25, Photocopy \$4.00. (KAPL-1231)

Size distribution of particles produced by fission product source pilot plant, by J. J. Fitzgerald and C. G. Detwiler. Knolls Atomic Power Laboratory. November 11, 1954. Contract No. W-31-109 Eng-52. 18p. Microfilm \$2.00, Photocopy \$2.75. Contract W-7401-eng-49. (KAPL-1232)

On the mechanism of skeletal fixation of radium, by W. F. Neuman, J. B. Hursh, E. S. Boyd, and H. C. Hodge. The University of Rochester. November 16, 1954. 22p. Microfilm \$2.25, Photocopy \$4.00. (UR-365)

A universal spectrophotometer for the measurement of the relative spectral distribution of the carbon arc source, by L. J. Krolak and T. P. Davis. The University of Rochester. November 10, 1954. Contract W-7401-eng-49. 37p. Microfilm \$2.50, Photocopy \$5.25. (UR-367)

## Instrumentation

Automatic control of power reactors, by M. A. Schultz. Westinghouse Atomic Power Division. November 6, 1950. Contract No. AT(11-1)-gen-14. 40p. \$20. (AEC-3163)

Scintillation counters for slow neutrons, by John A. Dooley and Harrison Shull. Ames Laboratory. December 1953. Contract No. W-7405-eng-82. 116p. Microfilm \$5.00, Photocopy \$15.25. (ISC-497)

A scintillation-type alpha hand and foot counter, by R. A. Sulit and G. T. Saunders. Livermore Research Lab., Calif. Research and Development Co. June 1954. Contract No. AT(11-1)-74. 16p. \$20. (LRL-141)



Production of high speed liquid jets by means of a propellant, by Brian Dunne, Jr., Herbert Gass, and Benedict Cassen. Atomic Energy Project, School of Medicine, Univ. of Calif., Los Angeles. 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, School of Medicine, Univ. of Calif., Los Angeles, Calif. October 15, 1954. Contract No. AT-04-1-GEN-12. 14p. \$.20. (UCLA-309)

Techniques for handling and processing emulsion stacks, by Robert W. Birge, Leroy T. Kerth, Chaim Richman, Donald H. Stork, and Stanley L. Whetstone. Radiation Lab., Univ. of Calif., Berkeley, Calif. September 8, 1954. Contract No. W-7405-eng-48. 14p. \$.20. (UCLA-2690)

### Metallurgy and Ceramics

Report on the physical behavior of zircaloy-2 plate material produced by the Park Works of the Crucible Steel Company of America from ingot no. 710D640P72BK, by L. F. Bledsoe. Engineering Technical Department, Newport News Shipbuilding and Dry Dock Company. June 8, 1954. Contract No. W-7405-eng-26. 26p. Microfilm \$2.25, Photocopy \$4.00 (AECU-2779)

Uranium oxide phase equilibrium systems: V, UO<sub>2</sub>-Nd<sub>2</sub>O<sub>3</sub>; VI, U<sub>3</sub>O<sub>8</sub> - MgO; VII, U<sub>3</sub>O<sub>8</sub> - TiO<sub>2</sub>, by W. A. Lambertson and M. H. Mueller. Argonne National Laboratory. Contract W-31-109-eng-38. 20p. Microfilm \$2.00, Photocopy \$2.75. (ANL-5312)

Production of nitrogen dioxide during heliarc welding in an atmosphere of nitrogen, by W. E. Gill. Hanford Works. August 10, 1953. Contract No. W-31-109-eng-52. 3p. \$.10. (HW-29071(Rev.))

Caustic treatment of zircon sand, by G. H. Beyer, D. R. Spink, J. B. West, and H. A. Wilhelm. Ames Laboratory. August 17, 1954. Contract No. W-7405-eng-82. 15p. \$.20. (ISC-437(Rev.))

X-ray scattering by neutron irradiated single crystals of boron carbide. Part I, by C. W. Tucker, Jr. and P. Senio. Knolls Atomic Power Laboratory. August 16, 1954. Contract W-31-109-Eng-52. 27p. Microfilm \$2.25, Photocopy \$4.00. (KAPL-1180)

An exploratory investigation of glasses exposed to intense neutron radiations, by H. G. Sowman and J. S. Lukesh. Knolls Atomic Power Laboratory. November 15, 1954. Contract No. W-31-109 Eng-52. 14p. Microfilm \$2.00, Photocopy \$2.75. (KAPL-1242)

The effect of neutron flux on the mechanical properties of aluminum alloys, by R. V. Steele and W. P. Wallace. Livermore Research Laboratory, Calif. Research and Development Co. May 1954. Contract No. AT(11-1)-74. 20p. \$.25. (LRL-145)

Remote radioactivity materials testing laboratory at Livermore Research Laboratory, by R. V. Steele. Livermore Research Laboratory, Calif. Research and Development Co. June 1954. Contract AT(11-1)-74. 12p. \$.20. (LRL-150)

A remotely controlled welding device for joining stainless steel tubes, by Martin Mueller and Eugene Hecker. North American Aviation, Inc. November 15, 1954. Contract AT-11-1-GEN-8. 35p. Microfilm \$2.50, Photocopy \$5.25. (NAA-SR-1014)

Study of metal-ceramic interactions at elevated temperatures. Quarterly progress report for the period ending October 1, 1954, by W. D. Kingery and F. H. Norton. Mass. Inst. of Tech. November 1954. Contract No. AT(30-1)-1192. 12p. Microfilm \$2.00, Photocopy \$2.75. (NYO-6296)

Application of chemical thermodynamics to the study of alloy formation. Progress report for July 1, 1954 to October 1, 1954, by W. E. Wallace, R. S. Craig, T. D. Brotherton, W. V. Johnston, S. Kamath, and C. A. Krier. Dept. of Chemistry, University of Pittsburgh. October 14, 1954. Contract No. AT(30-1)-647. 11p. Microfilm \$2.00, Photocopy \$2.75. (NYO-6323)

The measurement of thermal conductivity of refractory materials. Quarterly progress report for the period ending October 1, 1954, by W.D. Kingery and F. H. Norton. Mass. Inst. of Tech., Cambridge, Mass. November 1954. Contract No. AT(30-1)-960. 6p. Microfilm \$1.50, Photocopy \$1.50. (NYO-6446)

Lattice imperfections and grain boundaries. Progress report for January - July 1954, by R. Smoluchowski, C. Coleman, Y. Y. Li, W. H. Robinson, E. W. Toor, and L. Vassamillet. Dept. of Physics, Carnegie Inst. of Tech. September 13, 1954. Contract No. AT-30-1-Gen-359. 5p. Microfilm \$1.50, Photocopy \$1.50. (NYO-6595)

Solid solutions and grain boundaries. Progress report no. 23, by B. L. Averbach, M. Cohen, F. Herbstein, J. Hilliard, and P. S. Rudman. Dept. of Metallurgy, Mass. Inst. of Tech., Cambridge, Mass. September 30, 1954. Contract No. AT(30-1)-1002. 6p. Microfilm \$1.50, Photocopy \$1.50. (NYO-7042)

Fundamentals of cold working and recrystallization. Progress report no. 16, by B. L. Averbach, M. Cohen, S. Allen, M. F. Comerford, and C. Houska. Dept. of Metallurgy, Mass. Inst. of Tech., Cambridge, Mass. September 30, 1954. Contract No. AT(30-1)-1002. 5p. Microfilm \$1.50, Photocopy \$1.50. (NYO-7072)

### Physics

The materials testing reactor as an irradiation facility, by John R. Huffman. Phillips Petroleum Company. July 6, 1953. Contract No. AT(10-1)-205. 20p. \$.25. (AECD-3587)

- Physics Division. Quarterly report March and April, 1954, by Louis A. Turner. Argonne National Laboratory. September 1954. Contract W-31-109-eng-38. 115p. Microfilm \$5.00, Photocopy \$15.25. (ANL-5317)
- A microsecond shutter for use in separating neutrons of various speeds, by F. G. P. Seidl. Brookhaven National Lab. July 1954. 60p. \$.55. (BNL-278)
- Research in nuclear physics. Progress report no. 4. Purdue Research Foundation. June 15, 1954. Contract AT(11-1)-122. 88p. Microfilm \$4.00, Photocopy \$11.50. (COO-171)
- Radioactive disintegration spectra of some short-lived nuclides, by Warren A. Hunt and D. J. Zaffarano. Ames Laboratory. March 1954. Contract No. W-7405-eng-82. 48p. Microfilm \$2.75, Photocopy \$6.50. (ISC-469)
- Device for detection and identification of charged particles from photonuclear reactions, by Albert William Snyder and D. J. Zaffarano. Ames Lab. December 1953. Contract No. W-7405-eng-82. 35p. Microfilm \$2.50, Photocopy \$5.25. (ISC-499)
- Radiations from cerium<sup>141</sup>, by James Jones, Jr. and Erling Jensen. Ames Laboratory. January 15, 1954. Contract No. W-7405-eng-82. 41p. Microfilm \$2.75, Photocopy \$6.50. (ISC-515)
- Thermal conductivity of nickel, by Paul Oliver Davey and G. C. Danielson. Ames Laboratory. June 1954. Contract No. W-7405-eng-82. 24p. Microfilm \$2.25, Photocopy \$4.00. (ISC-518)
- The transition from localized to mobile adsorption, by W. C. DeMarcus and J. N. Dyer. K-25 Plant, Carbide and Carbon Chemicals Company. December 1, 1954. 26p. Microfilm \$2.25, Photocopy \$4.00. (K-1182)
- Adaptation of multigroup methods to cylindrical geometries, by G. M. Roe. Knolls Atomic Power Lab. September 27, 1954. Contract W-31-109-Eng-52. 33p. Microfilm \$2.50, Photocopy \$5.25. (KAPL-950)
- Diffusion of gases through metals. I. Diffusion of hydrogen through palladium, by W. D. Davis. Knolls Atomic Power Lab. October 1, 1954. Contract No. W-31-109 Eng-52. 28p. Microfilm \$2.25, Photocopy \$4.00. (KAPL-1227)
- Mathematical analysis of galvanic corrosion. Part I: Potential evaluations for coplanar electrodes with one electrode infinitely large and with equal polarization parameters, by James T. Waber and Marshall Rosenbluth. Los Alamos Scientific Lab. April 1954. Contract W-7405-eng-36. 21p. Microfilm \$2.25, Photocopy \$4.00. (LA-1651)
- Mathematical analysis of galvanic corrosion. Part III: Effect of polarization on the potential distribution evaluated for finite coplanar electrodes, by James T. Waber, Allan I. Benson, and Max Goldstein. Los Alamos Scientific Lab. November 24, 1954. Contract W-7405-eng-36. 21p. Microfilm \$2.25, Photocopy \$4.00. (LA-1668)
- Mathematical analysis of galvanic corrosion. Part 4. Effect of polarization and liquid thickness on the total corrosion current, by James T. Waber. Los Alamos Scientific Lab. June 1954. Contract W-7405-eng-36. 7p. Microfilm \$1.50, Photocopy \$1.50. (LA-1686)
- Diffusion equation for radioactive species in thin-plate nuclear reactors, by L. M. Litz. Livermore Research Lab., Calif. Research and Development Co. March 1954. Contract No. AT(11-1)-74. 13p. \$.20. (LRL-97)
- Operating characteristics of the water boiler, by J. W. Flora, J. W. Shortall, and E. J. Strain. Livermore Research Lab., Calif. Research and Development Co. June 1954. Contract AT(11-1)-74. 44p. \$.45. (LRL-151)
- Experimental facilities of the water boiler, by J. W. Flora and J. W. Shortall. Livermore Research Lab., Calif. Research and Development Co. June 1954. Contract No. AT(11-1)-74. 34p. \$.25. (LRL-152)
- A study of multi-Bev linear electron accelerators, by R. L. Kyhl. Microwave Lab., Stanford Univ. June 1954. Contract No. AT(04-3)-21. 28p. \$.25. (ML-240)
- Decay and growth tables for the naturally occurring radioactive series, by H. W. Kirby. Mound Lab. July 1, 1953. Contract AT-33-1-GEN-53. 30p. Microfilm \$2.25, Photocopy \$4.00. (MLM-859)
- A recalculation of the absolute velocity of the Po<sup>214</sup> alpha particle, by R. J. Clark. Mound Laboratory. July 16, 1953. Contract No. AT-33-1-GEN-53. 13p. Microfilm \$2.00, Photocopy \$2.75. (MLM-876)
- Theory of the reaction between alkali metal and alkali halides with application to the system K-KC1, by Donald R. Westervelt. North American Aviation, Inc. December 15, 1954. Contract AT-11-1-GEN-8. 34p. Microfilm \$2.50, Photocopy \$5.25. (NAA-SR-1050)
- Neutron penetration in hydrogen, by R. Aronson. Nuclear Development Associates, Inc. June 11, 1954. Contract No. AT(30-1)862. 23p. Microfilm \$2.25, Photocopy \$4.00. (NDA-15C-39)
- Distribution of fission neutrons in water at the indium resonance energy, by J. Certaine and R. Aronson. Nuclear Development Associates, Inc. June 15, 1954. Contract No. AT(30-1)862. 17p. Microfilm \$2.00, Photocopy \$2.75. (NDA-15C-40)
- A solution of the neutron transport equation. Introduction and Part I, by J. Certaine. Nuclear Development Associates, Inc. July 25, 1954. Contract AT-(30-1)862. 24p. Microfilm \$2.25, Photocopy \$4.00. (NYO-3081)
- Radiation effects in solids. Progress report for January 1 to July 1, 1954, by R. Smoluchowski, W. Leivo, H. Ingham, P. Mitchell, E. A. Pearlstein, and W. Vaughan. Dept. of Physics, Carnegie Inst. of Tech. September 24, 1954. Contract No. AT-(30-1)-1193. 7p. Microfilm \$1.50, Photocopy \$1.50. (NYO-3131)

## NOTE TO SUBSCRIBERS

The PB reports are one of the world's largest collections of nonconfidential technical information. There are now close to 250,000 reports in this series.

Many of these reports are extremely specialized and therefore have not been in sufficient demand to warrant reproduction of printed copies. Instead, the original documents are deposited at the Library of Congress.

The original documents may be inspected without charge at the Library of Congress Annex Reading Room. Otherwise, copies may be purchased from the Library in either photocopy or microfilm form. **Microfilm requires the use of a special reading machine.** If you do not have such a machine, you may be able to use one at a Library in your area.

Unfortunately, not all documents photograph well. When it is known that copies will be difficult to read, a warning note to this effect appears with the entry in **U. S. Government Research Reports**. OTS cannot, however, guarantee the legibility of any report, and the Library of Congress will furnish a replacement only if the quality of the photocopy or microfilm is below the standard obtainable on their equipment.

Please note that not all PB reports must be purchased in photocopy or microfilm form. Printed copies of the most important technical reports are furnished when demand warrants the making of such copies. These reports are listed on Order Blank A in each issue of **U. S. Government Research Reports** and may be purchased directly from OTS.

Since 1945, thousands of U. S. firms have used PB reports with interest and profit. Your inspection of these materials is cordially invited. For information on ordering, see inside front cover. Please write us if we can be of service.

### U. S. DEPARTMENT OF COMMERCE—FIELD OFFICES

Albuquerque, N. Mex.  
208 U. S. Courthouse  
Phone: 7-1411, Ext. 386

Atlanta 5, Ga.  
Room 336  
Peachtree and Seventh St. Bldg.  
Phone: Elgin 3311

Boston 9, Mass.  
Room 1416  
U. S. Post Office & Courthouse  
Phone: Liberty 2-5600  
Ext. 478

Buffalo 3, N. Y.  
504 Federal Bldg.  
117 Ellicott Street  
Phone: Madison 4216

Charleston 4, S. C.  
Area 2 Sergeant Jasper Bldg.  
West End Broad Street  
Phone: 2-7771

Cheyenne, Wyo.  
307 Federal Office Bldg.  
Phone: 8-8931, Ext. 101 & 102

Chicago 6, Ill.  
226 West Jackson Blvd.  
Phone: Andover 3-3600

Cincinnati 2, Ohio  
442 U. S. Post Office & Court-  
house  
Phone: Cherry 5820, Ext. 440

Cleveland 14, Ohio  
1100 Chester Avenue  
Phone: Cherry 1-7900

Dallas 2, Tex.  
1114 Commerce Street  
Phone: Sterling 5611

Denver 2, Colo.  
142 New Custom House  
Phone: Keystone 4-4151,  
Ext. 598

Detroit 26, Mich.  
438 Federal Bldg.  
Phone: Woodward 3-9330

El Paso, Tex.  
Chamber of Commerce Bldg.  
Phone: 4-1411, Ext. 235

Houston 2, Tex.  
430 Lamar Avenue  
Phone: Capitol 7201

Jacksonville 1, Fla.  
425 Federal Bldg.  
Phone: 4-7111

Kansas City 6, Mo.  
2001 Federal Office Bldg.  
Phone: Baltimore 7000

Los Angeles 15, Calif.  
Rm 450 Western Pacific Bldg.  
1031 South Broadway  
Phone: Prospect 4711

Memphis 3, Tenn.  
229 Federal Building  
Phone: 8-3426

Miami 32, Fla.  
947 Seybold Bldg.  
36 NE. First Street  
Phone: 9-7533

Minneapolis 2, Minn.  
607 Marquette Avenue  
Phone: Main 3244

New Orleans 12, La.  
333 St. Charles Avenue  
Phone: Express 2411, Ext. 6117

New York 17, N. Y.  
Grand Central Annex, U.S. Post Of.  
110 E. 45th St.  
Phone: Murray Hill 4-5130

Philadelphia 7, Pa.  
Jefferson Bldg.  
1015 Chestnut Street  
Phone: Walnut 2-8770

Phoenix, Ariz.  
137 North Second Avenue  
Phone: Alpine 2-2381,  
Ext. 318 & 319

Pittsburgh 22, Pa.  
817 Fulton Bldg., 107 Sixth St.  
Phone: Grant 1-5370, Ext. 394

Portland 4, Oreg.  
217 Old U. S. Courthouse  
Phone: Broadway 8471, Ext. 151

Reno, Nev.  
1479 Wells Avenue  
Phone: 2-7133

Richmond 20, Va.  
900 North Lombardy St.  
The Annex, Room 264  
Phone: 3-6841, Ext. 280

St. Louis 1, Mo.  
910 New Federal Bldg.  
Phone: Main 1-8100

Salt Lake City 1, Utah  
Room 105  
222 S. W. Temple St.  
Phone: 4-2552  
Ext. 341 & 342

San Francisco 11, Calif.  
419 Customhouse  
555 Battery St.  
Phone: Yukon 6-3111

Savannah, Ga.  
235 U. S. Courthouse  
& Post Office Bldg.  
Phone: 2-4755

Seattle 4, Wash.  
805 Federal Office Bldg.  
909 First Avenue  
Phone: Mutual 3300, Ext. 496

UNITED STATES  
GOVERNMENT PRINTING OFFICE  
DIVISION OF PUBLIC DOCUMENTS  
WASHINGTON 25, D. C.  
OFFICIAL BUSINESS

PENALTY FOR PRIVATE USE TO AVOID  
PAYMENT OF POSTAGE, \$300  
(GPO)

Are you taking full advantage of the . . .

## 250,000 Research Reports

. . . now in the PB Collection?

The 300 to 400 research reports listed in each issue of *U. S. Government Research Reports* represent only those added to our collection the previous month. Best estimates place the total number of individual documents now in our collection at about 250,000—all available to the public. A large number of these reports are listed under one or more categories in OTS's series of bibliographies entitled *Catalog of Technical Reports*.

If you would like to locate an earlier report in a series, or if you just want to know what is available in a given technical field, the proper *Catalog* will be invaluable to you. Over 150 are available, representing as many industrial or technical fields. You can get a price list of these merely by writing OTS. Here, for example, are some of the more popular *Catalogs*.

CTR	Title	Price
300	Adhesives.....	25 cents
119	Asphalt and Asphalt Pavements.....	10 cents
278	Circuit Breakers.....	10 cents
179	Cosmetic Manufacture.....	10 cents
191	Dehydration of Food.....	10 cents
141	Edible Fats and Oils.....	10 cents
287	Fabrication of Quartz Crystals.....	10 cents
150	Flameproofing of Textiles.....	10 cents
207	Fungus Proofing.....	10 cents
193	Hydraulic Presses.....	10 cents
188	Manufacture of Board From Wood Wastes.....	10 cents
72	Packaging and Packaging Materials.....	10 cents
96	Precision Casting.....	10 cents
249	Printed Electronic Circuits.....	10 cents
194	Quartermaster Corps Textile Series Reports.....	10 cents
198	Silicones.....	10 cents
113	Synthetic Fuels.....	10 cents
288	Ultrasonics.....	10 cents
177	Utilization of Industrial Waste.....	10 cents
298	Wire and Tape Recorders.....	10 cents

Send order or request for price list to Office of Technical Services,  
U. S. Department of Commerce, Washington 25, D. C.