

AD650110

**Sources of Unclassified Information on  
U.S. Government Research and Development**

February 1967



OFFICE OF NAVAL RESEARCH  
DEPARTMENT OF THE NAVY  
Washington, D.C. 20360

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**Office of Naval Research  
Department of the Navy  
Washington, D.C. 20360**

**Foreword**

1. This pamphlet contains a summary of readily available sources of unclassified U. S. Government Research and Development information together with a brief discussion of the recently adopted microfiche system designed to reduce the volume, weight and cost of U. S. Government reports and other documents.
2. These sources of information may be procured as described herein; the Office of Naval Research is not authorized to distribute them.
3. This pamphlet was prepared by the Office of Naval Research (Mr. Charles DeVore).



**JOHN K. LEYDON  
Rear Admiral, USN  
Chief of Naval Research**

## **Sources of Unclassified Information on U.S. Government Research and Development**

A basic philosophy of the United States Government has been--and is--that information generated at the taxpayers' expense should be given the widest possible dissemination to those taxpayers, and in fact, to the citizens of the Free World.

Limitations on such dissemination are imposed only when necessary:

- a. to protect the national security, or
- b. to protect proprietary rights not protected by patents, or
- c. to minimize the liability of the U. S. Government or its employees, or
- d. to protect information regarding the relative merits of commercial products.

### **Superintendent of Documents**

Within the Federal Government, the Superintendent of Documents is the sales agent for United States Government publications, most--if not all--of which are printed by the Government Printing Office, the largest and best-equipped printing plant in the world.

One publication available from this source is the Monthly Catalog of United States Government Publications, for sale by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Price, 50 cents per copy (except December--Index issue, which varies in price). Subscription price, \$4.50 per year (including index issue); \$1.50 additional for foreign mailing.

# MONTHLY CATALOG

UNITED STATES  
GOVERNMENT PUBLICATIONS

SEPTEMBER 1966

Entries 12577-14097

SEPTEMBER 1966

NAVAL PERSONNEL BUREAU, Defense Dept.  
Washington, D.C. 20380

- 12598 Curriculum for Naval Reserve Dental Company (with bibliography prepared by Dental Division of Bureau of Medicine and Surgery) May 1966 cover title, 4-249 p. 4 (NAVPERS 10600-10600) (also 10600-10600) [Issued in booklet form.] 1. 0 Item 403-A D 200-6/3 10600
- 12599 Curriculum for Naval Reserve training preparatory for RMT, radioman 34 class (prepared by Curriculum Department, Navy Training Institute Center) Apr. 1966 cover title, 1251 p. 4 (NAVPERS 10100-10100; 0200-101-1008) [Issued in booklet form (Change 1 and 2 incorporated)] 1. 0 Item 403-A D 200-6/3 10100
- 12600 Guide for Naval Reserve training team training guide, v. 1, Basic skills (with bibliography) prepared by Curriculum Department, Navy Training Institute Center, Dept. 1965 cover title, 1971 p. 4 (NAVPERS 10107-A, v. 1, 0900-101-10200) 1. 0 Item 403-A D 200-6/3 10107
- 12601 Handbook for naval occupational analysis (with bibliography) Nov. 1965 (published 1965) cover title, 10-176 p. 4 (NAVPERS 10000-A Personnel System Research Institute, Personnel Research Institute) [Replaces Manual of Instructions for Naval occupational analysis NAVPERS 15008. Issued with performance.] 1. 0 Item 403-A D 200-6/3 10000
- 12602 Hospitalman (with reading list) [1965 edition] 1, 965 cover title, 104-178 p. 4 (Navy Training Course, NAVPERS 10504-B) 1. 0 Item 403-A D 200-6/3 10504  
 gov. \$1.25 0 Item 436  
 L.C. card 66-42218 D 200-11 10504
- 12603 IC education 1 & 2 (with reading list, prepared by Training Publications Division, Naval Personnel Program Support Activity) [1965] cover title, 104-178 p. 4 (Navy Training Course, NAVPERS 10504-B) 1. 0 Item 403-A D 200-6/3 10504  
 gov. \$1.25 0 Item 436  
 L.C. card 66-42218 D 200-11 10504
- 12604 Programmed instruction maintenance course for radio transmitting set AN/WRT-1 [1965] (Text developed by Westinghouse Electric Corp. Army) 1. 0 Item 404 D 200-11 7 10110-117  
 v. 1 cover title, 111-0-117219 U.S. (NAVPERS 02110-117)  
 v. 2 cover title, 111-0-117219 U.S. (NAVPERS 02110-117)  
 v. 3 cover title, 111-0-117219 U.S. (NAVPERS 02110-117)  
 v. 4 cover title, 111-0-117219 U.S. (NAVPERS 02110-117)  
 v. 5 cover title, 111-0-117219 U.S. (NAVPERS 02110-117)  
 v. 6 cover title, 111-0-117219 U.S. (NAVPERS 02110-117)  
 v. 7 cover title, 111-0-117219 U.S. (NAVPERS 02110-117)
- 12605 Handbook 1 & O (with reading list, prepared by Training Publications Division, Naval Personnel Program Support Activity) [1st edition] 1965, revised 1965 [1966] cover title, 1-204 p. 4 (Navy Training Course, NAVPERS 10504-B) 1. 0 Item 404 D 200-11 10504

NAVAL RESEARCH OFFICE, Defense Dept.  
Washington, D.C. 20390

Naval Training Center, Fort Washington, N.Y. Technical report  
NAVTREDCEN (series)

- 12610 1767 Rate of production in training with simulated aerial during team work  
 out of subsections of Charles R. Kelly (and others) Team work  
 cover title, 10-189 p. 4 (Navy Training Center, Fort Washington, Pa.)  
 cover title, Santa Monica, Calif. Contract N6110-1767-10-189  
 p. 2 of cover. 1. 0 D 200-11 1767
- NRL report. (Naval Research Laboratory)
- 12611 0005 NRL cyclotron project. Report of progress Sept. 1, 1965 with cover  
 reference by: E. R. Rabinovich and others. Sept. 1, 1965 cover  
 title, 10-189 p. 4 (Navy Training Center, Fort Washington, Pa.)  
 project. Report on 1. 0 Item 404 D 200-11 10005

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Commerce, Springfield, Va. 22151  
 Subject to Depository Libraries

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As the title indicates, this is a comprehensive listing, including Federal research and development reports, but not limited to such reports. In the following paragraphs, information will be given on publications limited to research and development.

### **Clearinghouse for Federal Scientific and Technical Information**

The Clearinghouse for Federal Scientific and Technical Information of the U. S. Department of Commerce provides a single point of contact in the Federal Government through which current research efforts and the unclassified results of Government-sponsored research in science and technology are made available to industry, commerce and the general public, and provides for a central service for the translation of certain foreign technical documents.

U. S. Government Research and Development Reports, issued twice a month, announce the availability of new reports of U. S. Government-sponsored research and development released by the Department of Defense, the Atomic Energy Commission, National Aeronautics and Space Administration and other agencies. It also lists current Government-sponsored R&D projects. Sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C., 20402. Annual subscription, \$30 (\$7.50 additional for foreign mailing).

A consolidated index, Government-Wide Index to Federal Research and Development Reports, is published monthly by the Clearinghouse. It is sold by the Superintendent of Documents for \$22 a year (\$5.50 additional for foreign mailing).

Technical Translations announces to the public the availability and provides order information for translated scientific and technical reports, periodicals and books. Although most of the literature has been translated into English, some is in other Western European languages. It is issued twice a month by the Clearinghouse in cooperation with the Special Libraries Association Translations Center and the European Translations Centre. It is sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Annual subscription \$12 (\$4 additional for foreign mailing).

U.S. GOVERNMENT  
RESEARCH  
& DEVELOPMENT  
REPORTS

PERKINSON STUDIES. PART XVI. A MECHANISM-SENSITIVE STUDY OF THE PERKINSON OXIDATION OF HYDROXYACETONE.  
By Grant G. Smith and Brian E. Young. 29 Dec. 64. Rep. Contract DA-19-62-762, Proj. AF-1962-1-4076-502.  
AD-631 000

Unclassified report

See also AD-631 374

Available. Published in *Journal of the Chemical Society*, 1965, 1965, 1965, 1965, 1965.

Description: (Pyrolysis; Reaction kinetics; Chemical structure; Thermal analysis; Pyrolysis; Molecular structure; Chemical bonds; Molecular orbitals; Energy; Heat of activation)

The pyrolysis of beta-hydroxy acetone in deflagration and oxidation conditions was shown to be a first-order homogeneous unimolecular reaction. All of the steps of the pyrolysis of beta-hydroxy acetone have much less effect on the rate of pyrolysis than when they are in a structurally similar position of ethyl acetate. This implies that there is less hyperconjugative splitting of the C-H bond in beta-hydroxy acetone in the transition state than in ethyl acetate. A phenyl substituent in beta-hydroxy acetone increases the rate of pyrolysis more than similar substituents in ethyl acetate. Apparently there is greater use of the p-orbitals in the transition state pyrolysis of beta-hydroxy acetone than in ethyl acetate. Tertiary alcohols decompose more readily than secondary and primary alcohols. A comparison of the entropies of activation indicates that tertiary alcohols are a more favorable combination for thermal decomposition than the primary alcohols. (Author)

AD-631 003 PM 7/3  
CPSTI Price: \$1.00 MF 94 30  
NAVAL RESEARCH LAB WASHINGTON DC  
SUBSTITUTIONAL EFFECTS ON PHOSPHONIC ACID ESTERS.  
Quantity: 100. 1 Sep 64. 10 April.  
By J. J. Lewis, M. J. Babin, H. J. Brown, and R. A. D. Pines. 30 April 64. Rep. Contract DA-19-62-AMC-274(A).

Unclassified report

Description: (Phosphonic acids; Displacement reactions; Hydrolytic acids; Displacement reactions; Amides; Displacement reactions; Ester; Organic phosphorus compounds; pH; Reaction kinetics; Nucleophilic compounds)

Data on the reaction of phosphonyl methylphosphonate with a variety of hydrolytic acids is reported and discussed. Various experimental difficulties served to limit the number of successful trials. An attempt to obtain a linear plot for the observed rate constant of a small dependence upon the basicity of the hydrolytic acid. Consideration is also given to the reaction of phosphonyl methyl phosphonate with a series of tertiary amines. A linear plot of  $\log k_{obs}$  vs.  $\log k_{cat}$  (second order rate constant) has a slope of 0.11. It was also observed that only a small rate enhancement was observed with an increase in acid strength (Author)

- AD-631 001 See PM 7/6
- AD-631 002 See PM 20 4
- AD-631 005 See PM 4 7
- AD-631 006 See PM 11 20
- AD-631 005 See PM 7 2
- AD-631 004 See PM 7 4
- AD-631 003 See PM 7 4

- AD-631 007 See PM 7/4
- AD-631 012 See PM 7/2
- AD-631 008 See PM 7/2

7/4. PHYSICAL CHEMISTRY

AD-631 004 PM 7/4, 9/2  
CPSTI Price: \$1.00 MF 94 30  
NAVAL RESEARCH LAB WASHINGTON DC  
A GENERAL PROGRAM FOR THE CALCULATION OF INTERNAL ROTATION SPLITTINGS IN MICROWAVE SPECTROSCOPY.  
Technical report 1001.  
By Robert C. Woods. 1964. Rep. Contract DA-19-62-AMC-274(A).

Unclassified report

Description: (Programming; Computers; Molecular rotation; Microwave spectroscopy; Molecular rotation; Hamiltonian; Molecular spectroscopy; Quantum mechanics; Programming language)

A theoretical basis is presented for a computer program which has been written to calculate the internal rotation splittings in the microwave spectra of molecules possessing a hindered internal symmetric top. This is an extension of the internal axis method and is applicable to a very general case, which includes any high barrier problem which is not a non-spherical top. Any symmetry, any geometry, and any size top can be handled by the program on a stand-alone basis. The method involves the derivation of the eigenfunctions for a rotational part and a short involving internal rotation, the latter including the coupling between internal and overall rotation. The matrix elements of these parts are set up separately, each in the most convenient basis, then transformed to a common basis (symmetric rotor in principal axes), then to the Wang basis, and finally to the basis which diagonalizes the largest rigid rotor part. The small off-diagonal elements which are left are treated by perturbation theory. This procedure has been incorporated in an efficient Fortran program which uses fully the various symmetry properties. (Author)

AD-631 006 PM 7/4, 11/4, 20/3  
CPSTI Price: \$1.00 MF 94 30  
NAVAL RESEARCH LAB WASHINGTON DC  
PARAMETERIZING CONTROLLING SOLUBILITY IN BILAYER LIQUID METAL SYSTEMS.  
Memo. rept.  
By V. W. Swenson. Sep 61, 109. Rept no. NRI-1201.  
Prog. RR 607-01 66-5411.

Unclassified report

See also AD-136-954

Description: (Liquid metals; Solvent systems; Atomic structure; Solubility; Thermodynamic; Bimolecular Crystalline Structures)

Chromatic absorption,  $B$  at  $T$  degrees K,  $\log$  (log volume fraction solvent) versus  $1/T$  degrees K plots for 17 binary systems were correlated with the atomic size factor which was defined as the ratio of the atomic radius of the solvent atom divided by the atomic radius of the solute atom. The results suggest that like the temperature coefficient of solubility, the chromatic absorption is strongly dependent on the diameter of the atomic radius of solute and solvent atoms. On the basis of these results, bearing in mind the self-perturbation nature of the correlations, suggestions were made regarding possible common methods for liquid B1 and B2 systems. (Author)

AD-631 009 PM 7/4  
CPSTI Price: \$1.00 MF 94 30  
NAVAL RESEARCH LAB WASHINGTON DC

CHEMISTRY - Field 7/4

INFRARED AND RAMAN SPECTRA OF CARBON-13 ENRICHED CONDENSED PHENOLS.  
Technical rept.  
By Wm. Hayden Smith and George E. Lewis. Jan. 64. 4 pp. Rept no. TR-2.  
Contract No. DA-19-62-762, Proj. AF-1962-1-4076-502.  
Unclassified report

Prepared for publication in the *Journal of Chemical Physics*.

Description: (Carbon compounds; Spectra; Infrared; Raman spectroscopy; Carbon compounds; Oxoacids; Equilibria; Crystals)

Infrared and Raman spectra of top of acetone and methyl acetate carbon substrate have been obtained in the region 20 to 800 cm<sup>-1</sup>. A previously unreported, hindered, solid structure has been observed at 117 cm<sup>-1</sup> in acetone IR, and possible structures for both existing phases have been inferred from the vibrational results. The first central carbon bending mode in (17) has been identified in the top of phase at 72 cm<sup>-1</sup> in acetone. The problem of disappearing sum bands is discussed, as is a revised vibrational assignment and force constant analysis for carbon substrate experiment. (Author)

AD-631 000 PM 7/4  
CPSTI Price: \$1.00 MF 94 30  
NAVAL RESEARCH LAB WASHINGTON DC  
CORRELATION OF ELECTRONIC STRUCTURE AND BONDING FORCE CONSTANTS IN SOME LINEAR MOLECULES.  
Technical rept.  
By Wm. Hayden Smith and George E. Lewis. Feb 64. 10 pp. Rept no. TR-4.  
Contract No. DA-19-62-762, Proj. AF-1962-1-4076-502.  
Unclassified report

Submitted for publication in the *Journal of Chemical Physics*.

Description: (Polyatomic molecules; Carbon compounds; Carbon dioxide; Molecular structure; Molecular orbitals; Bonding; Molecular spectroscopy; Spectroscopy; Valence; Electronic density)

A qualitative relationship between electronic density about the central carbon atom and ease of bending is described for several transition and post-transition linear molecules, including CO<sub>2</sub>, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub>, and C<sub>2</sub>H<sub>2</sub>. Both valence bond and molecular orbital models are discussed. (Author)

AD-631 003 PM 7/4  
CPSTI Price: \$1.00 MF 94 30  
NAVAL RESEARCH LAB WASHINGTON DC  
INFRARED AND RAMAN SPECTRA OF CARBON-13 ENRICHED PHENOLS.  
Technical rept.  
By Wm. Hayden Smith and George E. Lewis. Jan. 64. 4 pp. Rept no. TR-2.  
Contract No. DA-19-62-762, Proj. AF-1962-1-4076-502.  
Unclassified report

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# TECHNICAL TRANSLATIONS

## ATMOSPHERIC SCIENCES - Field 04

Order from CPFTI or ETC: NC81.00, MFR0.00 as  
TT-66-32200

### E. Animal husbandry

TT-66-30190 Field 22, 11A

CUBAN TRANSLATIONS NO. 252. 30 Jun 66, 17p.  
JPRS-23756.  
Order from CPFTI or ETC: NC81.00, MFR0.00 as  
TT-66-30190

TT-66-32267 Field 22, 2A, 6C, 6D

COMMUNIST CHINESE SCIENTIFIC ABSTRACTS:  
AGRICULTURAL SCIENCES AND TECHNOLOGY NO. 12.  
Collected Papers of Third All-China Symposium on  
Agriculture, Vol. 4, Applications of Agriculture in Agriculture  
and Animal Husbandry, 12 Jun 66, 34p. JPRS-23663.  
Order from CPFTI or ETC: NC81.00, MFR0.00 as  
TT-66-32267

TT-66-32690 Field 27, 6C

Horvath, Z.  
DEVELOPMENT OF VETERINARY INTERNAL MEDICINE  
OVER THE PAST 20 YEARS IN HUNGARY, 27 Jun 66,  
12p. JPRS-36193.  
Order from CPFTI or ETC: NC81.00, MFR0.00  
as TT-66-32690

Trans. of Magyar Allatorvosok Lapja (Hungary)  
63 p67-100 1966.

TT-66-32730 Field 22, 2B, 2A, 6C

EAST EUROPEAN AGRICULTURE, FORESTRY, AND FOOD  
DISTRIBUTION TRANSLATIONS NO. 481. 1 Jul 66, 34p.  
JPRS-36294.  
Order from CPFTI or ETC: NC81.00, MFR0.00 as  
TT-66-32730

TT-66-32170 Field 22

COMMUNIST CHINESE SCIENTIFIC ABSTRACTS: BIO-  
MEDICAL SCIENCES NO. 120. Chinese Veterinary Journal,  
20 Jul 66, 24p. JPRS-36730.  
Order from CPFTI or ETC: NC81.00, MFR0.00 as  
TT-66-32170

### F. Forestry

TT-66-30941 Field 27, 6C

Ovseyenko, V. K., Savits, Ya. R.  
DENSITY OF PINE PLANTATIONS AND ITS BIOLOGICAL  
AND SILVICULTURAL SIGNIFICANCE (Chernia Kishin Buzh  
1 na Biologicheskoye Zooloogicheskoye, 1966, 43p. Kuznetz,  
SFCB-Agr(TT-66-30941).  
Order from CPFTI or ETC: NC81.00, MFR0.00 as  
TT-66-30941

Trans. of Akademiya Nauk SSSR, Institut Lesnitsyevostre-  
nykh Proizvody, K'yo. Trudy, 61: p121-62 1966.

TT-66-31066 Field 27, 6C

Tomshov, A. A.  
INTERRELATIONSHIPS OF TREE AND HERB SPECIES  
IN FIELD-PROTECTIVE FOREST PLANTATIONS  
P. Vostochnonatsionalnykh Lesovozhishch i Kustarnichnykh

Period v Zashchitnykh Lesovozhishchakh. 1966, 7p.  
SFCB-Agr(TT-66-31066).

Order from CPFTI or ETC: NC81.00, MFR0.00 as  
TT-66-31066

Trans. of Agrobiologiya (USSR) 62: p252-7 1966.

## 03 ASTRONOMY AND ASTROPHYSICS

### A. Astronomy

TT-66-31660 Field 2A, 2C

Shorokh, N. A.  
RELATIVE ORIENTATION OF THE EARTH'S  
EQUATOR AND THE LUNAR ORBIT B. THE INSTANT  
PART. 6 May 66, 13p. SFCB-Agr, AD-624 941.  
Order from CPFTI or ETC: NC81.00, MFR0.00  
as AD-624 941

Trans. of Astrofizicheskii Zhurnal (USSR) 6:2  
p1070-4 1966.

### B. Astrophysics

TT-66-32625 Field 22

COMMUNIST CHINESE SCIENTIFIC ABSTRACTS: EARTH  
SCIENCES NO. 51. 11 Jul 66, 18p. JPRS-36222.  
Order from CPFTI or ETC: NC81.00, MFR0.00  
as TT-66-32625

TT-66-31115 Field 27

Kulshresha, G. P.  
THE QUESTION OF THE TECTONIC ORIGIN OF LINEAR  
FORMATIONS ON MARS. Tr. by E. R. Noyes. 15 Jul 66,  
27p. SFCB. DSN-T-645-R. AD-631 666.  
Order from CPFTI or ETC: NC81.00, MFR0.00  
as AD-631 666

Trans. of Vostochnonatsionalnykh Lesovozhishch,  
Leningrad (USSR) 6:1 p173-83 1966.

## 04 ATMOSPHERIC SCIENCES

### A. Atmospheric physics

TT-66-34720 Field 6A, 2C

Alchukin, P. W.  
THE LOWEST ELECTRON DENSITY RECORDS OF THE  
WAVE REFLECTION FROM THE EARTH'S IONOSPHERE.  
1 Dec 66, 7p. SFCB. ATD-66-106. AD-624 662.  
Order from CPFTI or ETC: NC81.00, MFR0.00 as  
AD-624 662

Trans. of Izdaniya Akademiya Nauk SSSR, Fizika,  
v18 p71-81 1966.

Rept. on Surveys of Soviet Scientific and Technical  
Literature.

TT-66-30964 Field 6A

Lobachev, T. V.  
INTERACTION OF THE ELECTRIC FIELD  
OF THE ATMOSPHERE WITH ALIEN PLANETS.  
21 Oct 66, 10p. SFCB. TTU-TT-66-456. AD-624 627.  
Order from CPFTI or ETC: NC81.00, MFR0.00  
as AD-624 627

Qualified rough draft trans. of Vostochnonatsionalnykh  
(USSR) 6:2 p35-64 1966.

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### **National Aeronautics and Space Administration**

Scientific and technical reports of the National Aeronautics and Space Administration and its contractors are covered in Scientific and Technical Aerospace Reports (STAR), published twice a month. It is a comprehensive abstracting and indexing journal covering worldwide report literature on the science and technology of space and aeronautics. It is sold by the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. Annual subscription rate, \$33.00 domestic; \$42.00, foreign.

By agreement between NASA and the American Institute of Aeronautics and Astronautics, the AIAA publication International Aerospace Abstracts is issued in coordination with STAR. Each journal appears on alternate weeks. IAA's worldwide coverage of books and scientific and trade journals complements STAR's worldwide report coverage. It is sold by the American Institute of Aeronautics and Astronautics, 750 Third Avenue, New York, N. Y. 10017. Annual subscription price, \$25 postpaid, United States and possessions; foreign countries, \$33 postpaid.

STAR



### 17-00 AUXILIARY SYSTEMS

12 000 pounds (22 200 28 600 or 53 775 newtons) depending on the wheel configuration. Some tests were also made with a simulated wing flap mounted to the rear of the wheels in the take-off and landing positions. In addition a few tests were made with a spray elevator mounted between the wheels of the dual tandem wheel configuration. Results indicated that ground speed, vertical load, the pressure, fluid density, fluid depth and wheel location affected the fluid displacement drag, the wheel spin down characteristics, the wheel spray patterns and the fluid spray drag developed by the landing gear. Author.

800-312107 National Aeronautics and Space Administration Langley Research Center Langley Station Va  
**EXPERIMENTS ON THE EFFECTS OF ATMOSPHERIC REPRODUCTION AND AIRPLANE ACCELERATIONS ON SONIC BOOM GROUND-PRESSURE PATTERNS**

Domonic J. Maghen and David A. Nelson (NASA Flight Test Center) Washington NASA Jul 1969 33 p refs  
NASA TN D 3520 L-571 HC 52 02/MF 50 50 CSCL D18  
A special series of sonic boom flight tests has been conducted with a fighter airplane in the altitude range from 23 500 to 52 500 feet (7 131 to 16 011 meters) at Mach numbers to 2.0 in an attempt to define better the lateral extent of the sonic boom pressure pattern during steady supersonic flight and the supersonic and multiple-boom regions during accelerated flight. For equivalent atmospheric conditions ground pressure measurements have been obtained for lateral distances up to about 25 miles (40.215 meters) to each side of the flight track during the steady-level flight conditions and for distances of about 22 miles (35.407 meters) along the flight track for the acceleration and low Mach number steady-level flights. The lateral spread phenomena appear to be fairly well understood and predictable for current and future supersonic airplanes. The highest overpressures are measured on the ground track and decrease with increasing lateral distance. Pressure buildup occurs in the supersonic region for longitudinal accelerations of constant altitude and these are followed by a region of multiple booms whenever the pressure are of the order of magnitude predicted for comparative steady level flight conditions. Author.

### 03 AUXILIARY SYSTEMS

Includes fuel cells, energy conversion cells, and solar cells, auxiliary gas turbines, hydraulic, pneumatic and electrical systems, sensors, and computers for related information on the 03 Electronic Equipment, 22 Nuclear Engineering and 13 Propulsion Systems.

800-588880 American Cyanamid Co Stamford Conn. Research Labs

**HYPERBARIC PULSED CELL ELECTRODES** Progress Report, Jul 10, 1969-Jan 10, 1969  
V. Corio A. 22 Apr 1969 52 p refs  
(Contract DA-44-000 AMC 697(T))  
PR 2 AD 632531 CFSTI HC 53 02/MF 50 50

Progress is reported on a program aimed at the development of an electrode system which will produce 20 w/kg at a maximum of 0.6 volt in a phosphoric acid impregnated type cell utilizing a liquid hydrocarbon fuel in-cathode and air with

a total platinum loading of not more than 20 g/sq ft. Emphasis was placed on evaluating the performance in standard and experimental electrodes on normal octane and air at temperatures in the range 110 to 200°C. Author (TAB)

800-388266 Harry Diamond Labs Washington D C

**WADOPAD RADAR ACTUATOR DESIGN AND PERFORMANCE**  
John J. Rauch and Malcolm L. Wisner, in Feb 1969 52 p refs  
(TM 64 2 AD 637672) CFSTI HC 53 02/MF 50 75

A low cost radar actuator for use as a component in a delayed opening parachute airdrop system has been developed. This device is known as WADOPAD (High Altitude Delayed Opening Parachute Actuating Device). The device based on radar principles will open a main recovery parachute at either of two preset heights (1000 or 1700 ft) above the ground. The complete system includes a drogue parachute stabilizing stage for free fall from high altitude followed by a main parachute recovery stage which is initiated at low altitude by the radar actuator. Limited field testing of the radar actuator at Fort Devens, Mass. has shown the feasibility of the device as a parachute actuator but some additional engineering and complete environmental tests are necessary before initiation of quantity production. Forty actuators were constructed by HDL during the research and development phase. Author (TAB)

800-388777 Gulton Industries Inc Melroan N J

**INVESTIGATION OF STERILIZATION OF SECONDARY BATTERIES** Quarterly Progress Report No 1 Oct 26 1969-Jan 26 1969

John Laska (1969) 22 p  
(Contract NAS1 5706)  
NASA CR 65105 CFSTI HC 51 02/MF 50 50 CSCL 10C

Separator materials were evaluated for use in a standard nickel-cadmium cell which will have a power density and cycle life approximately the same as a standard Ni-Cd cell. Very little change in length or width of separator disks was noted after testing (soaking in 145°C for 26 hours) in a sealed container while being immersed in a potassium hydroxide solution. The separator material was lighter in color and more brittle after testing and there was a large decrease in its weight and thickness. Approximately the same results were obtained in both 30% and 40% KOH. Various other separator materials were tested and the resulting shrinkages in polypropylene and polypropylene-nylon separators were sufficiently pronounced to prevent wrapping of plates prior to heat sterilization. It was found that a step-heating procedure can be employed as a pre-treatment for these separators prior to heat sterilization. Fabrication and preliminary testing are reported for cells with separators of asbestos, polypropylene and polypropylene-nylon. MWR

800-301488 Air Force Inst of Tech Wright Patterson AFB Ohio School of Engineering

**A STUDY OF THE EFFECTS OF ENVIRONMENTAL NOISE ON THE PERFORMANCE OF P1110 AMPLIFIERS**  
Charles Joseph Hanson (M S Thesis) Mar 1968 44 p refs  
AD 632395 CFSTI HC 53 02/MF 50 50

The effects of environmental noise on the static performance of two bistable fluid amplifiers were studied. Plots of differential output pressure versus differential input pressure were made by varying input pressure to amplify in addition to sound frequency and pressure level. A comparison included amplifier configuration error and



NATIONAL AERONAUTICS AND

17.03 AUXILIARY SYSTEMS

12 000 pounds (27 200 20 688 or 53 778 newtons) ...

N66 282172 National Aeronautics and Space Administration ...

EXPERIMENTS ON THE EFFECTS OF ATMOSPHERIC REFRACTION AND AIRPLANE ACCELERATIONS ON SONIC BOOM GROUND PRESSURE PATTERNS

Demetri J. Magagnoli and David A. Hagan (NASA Flight Res ...)

Contract NAS 16-0320H (1-57); HC 52 00 06 50 90 CSCC (HS ...)

A special series of sonic boom flight tests has been conducted with a fighter airplane in the altitude range from 23 500 to 52 500 feet (7 231 to 15 911 meters) at Mach numbers up to 2.0 ...

03 AUXILIARY SYSTEMS

Includes fuel cells, energy conversion cells, and other auxiliary power systems, ...

N66 289899 American Cyanamid Co. Stamford Conn. Re ...

HYDROCARBON FUEL CELL ELECTRODES Progress Report, Jul 16, 1966-Jan 18, 1968

Contract DA 44 009 AMC 937 (1-1)

PR 2 AD 612537 (1-57) HC 51 00 06 50 50

Progress is reported on a program aimed at the development of an electrode system which will produce 20 to 30 mW at a minimum of 0.4 volt at a phosphoric acid matrix fuel cell utilizing a liquid transport fuel electrolyte and an air ...

A new plastic coating of ...

N66 308864 Honeywell Inc. St. Louis, Mo. ...

HYDRODYNAMIC ACTUATOR DESIGN AND PERFORMANCE

John J. Reilly and Malcolm L. Wood (Honeywell) ...

Contract NAS 16-0320H (1-57); HC 52 00 06 50 90 CSCC (HS ...)

A new cost-effective actuator for use as a component in a delayed opening parachute recovery system has been developed ...

N66 308772 Durbin Industries Inc. Meriden Conn. ...

INVESTIGATION OF STABILIZATION OF SECONDARY BATTERIES

Quantity Program Report No. 1, Oct 26 1966-Jan 25 1968

Contract NAS 16-0320H (1-57); HC 52 00 06 50 90 CSCC (HS ...)

Substrate materials were evaluated for use in a stabilized nickel-cadmium cell which had a general density and cycle life ...

N66 301422 Air Force School of Air and Space Engineering ...

A STUDY OF THE EFFECTS OF ENVIRONMENTAL WORK ON THE PERFORMANCE OF PYRO APPARATUS

Charles Jesse Hester (AF School of Air and Space Engineering) ...

Contract NAS 16-0320H (1-57); HC 52 00 06 50 90 CSCC (HS ...)

The effects of environmental work on the performance of pyro apparatus ...

02

Acc 39720

Acc 39720  
The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

Acc 39721

Acc 39721  
The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

Acc 39722

Acc 39722  
The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

Acc 39723

Acc 39723  
The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

Acc 39724

Acc 39724  
The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

Acc 39882

Acc 39882  
The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

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The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

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The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

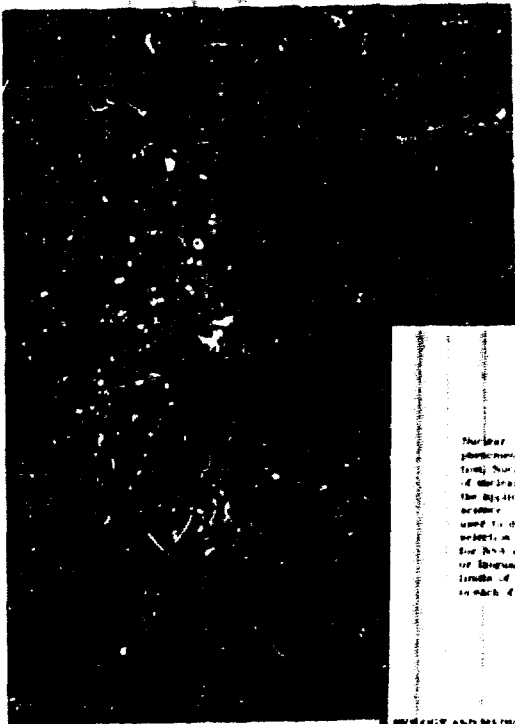
Acc 39885

Acc 39885  
The author discusses the design and construction of a...  
The aircraft is a...  
The engine is a...  
The landing gear is a...  
The wings are...  
The fuselage is...  
The tail is...  
The aircraft is...  
The author concludes that...

### **Atomic Energy Commission**

Nuclear Science Abstracts covers the international literature on nuclear science and technology and provides the only comprehensive abstracting and indexing of this body of information. Published twice each month since 1947, NSA covers technical reports of the U. S. Atomic Energy Commission and its contractors, technical reports of U. S. Government agencies and other governments, universities, industrial and research organizations, as well as patents, books, and journal literature on a world-wide basis. The subject matter covered in NSA is described in TID-4552, Subject Scope of Nuclear Science Abstracts, available free from the U. S. Atomic Energy Commission, Division of Technical Information Extension, P. O. Box 62, Oak Ridge, Tennessee 37830. NSA is available on a subscription basis from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402; for the regular 24 issues a year, \$30.00 domestic; \$37.00 foreign.





## SUBJECT SCOPE OF NUCLEAR SCIENCE ABSTRACTS

The term nuclear science is the study of the production, properties, interactions, and phenomena of atomic nuclei, their products and their gamma and x-ray emission. Nuclear technology is the application of the principles and phenomena of nuclear science to the fields of science and engineering, and, conversely, the application of other sciences and engineering to the problems of nuclear science. These definitions however imply further refinement to permit the user to determine exactly what is covered and also to permit unclassified subjects in the reports of any given literature for which material searches for N.S.A. to be made on the subject element, separation, and form, type, or language. The subject matter for N.S.A. is in 16 major subject fields the limits of which are stated in the following subject index. The specific interest in each of the elements is given in the subject part of the volume.

### Subject Fields of Interest

#### PHYSICS AND MEDICINE

Ecological studies of radioactive materials  
Metabolism, tissue distribution and bioassay of all radioisotopes of the periodic table (excluding actinoids), and of the fission products cesium, strontium, barium, and rubidium. Radioisotopes of the periodic table, all fields of biology, including animal and plant genetic effects  
Mutation hazards and production  
Radiation medicine  
Radiotherapy and radiochemistry only if new equipment or techniques are used or if radiation side effects are discussed  
Trace studies of the isotopes listed in the subject of study or of the radiation in the tracer technique in the

#### CHEMISTRY

All chemistry of actual or simulated fission products and of a restricted number of actinoids, determination and separation of the chemical elements for separating actinoids  
Chemical stability of fission products, fission products, fission products, and structures of fission products, including actinoids, but excluding isotopes of fission products  
Chemistry involved in the preparation and use of radiation sources  
Chemistry of fission products of nuclear energy plants including preparation of fission products  
Chemistry of radioactive waste including storage and disposal

Best Available Copy

### **National Library of Medicine**

The National Library of Medicine of the U. S. Department of Health, Education, and Welfare is the world's largest research library in a single scientific and professional field. NLM's bibliographies, indexes, catalogs, and other guides to medical literature can be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Among NLM's publications is Index Medicus, a monthly bibliographic listing of references to current articles from approximately 2400 of the world's biomedical journals. Each issue contains subject and name sections and a separate Bibliography of Medical Reviews. Price: \$40 annual subscription (\$49 foreign).

### **Science Information Exchange**

The Science Information Exchange, Smithsonian Institution, furnishes reports on current research planned or in progress, thereby bridging the gap between the start of projects and their subsequent publication one to several years later.

More than 100,000 summaries of unpublished research plans reporting who is doing what, where, and how supported reach SIE yearly from Federal, State and private agencies, foundations, associations, industries and individual investigators. The scope embraces all basic and applied fields of the life, social, physical, and engineering sciences.

#### **Notice of Research Project**

Each SIE report contains six items of information: the name of the agency supporting the research, a short title, names of all investigators, location of the work, a 200-word summary of the work in progress, and the level of effort.

Any research worker in a recognized scientific laboratory—government, academic, or industrial—may use the services of the Scientific Information Exchange without charge by writing to the address below. Most individual queries concern who is currently working on problems in the questioner's special field of interest. The address: Science Information Exchange, Smithsonian Institution, Madison National Bank Building, Suite 300, 1730 M Street, N. W., Washington, D. C. 20036.



# Index Medicus

## INDEX MEDICUS

THE MEDICAL NEWS

**INDEX MEDICUS**  
The following is a list of the titles of the articles in this issue of the Index Medicus, arranged in alphabetical order of the first letter of the title. The titles are given in full, and the page number on which each article begins is also given. The titles are given in the original language in which they appear in the Index Medicus, and in English if they are in another language. The titles are given in the original language in which they appear in the Index Medicus, and in English if they are in another language. The titles are given in the original language in which they appear in the Index Medicus, and in English if they are in another language.

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1. This is the first page of the Index Medicus, and it contains the titles of the articles in this issue. The titles are given in full, and the page number on which each article begins is also given. The titles are given in the original language in which they appear in the Index Medicus, and in English if they are in another language.

SUPPORTING AGENCY

NOT FOR PUBLICATION OR PUBLICATION REFERENCE

NOTICE OF RESEARCH PROJECT SCIENCE INFORMATION EXCHANGE  
SMITHSONIAN INSTITUTION  
U. S. Department of HEALTH, EDUCATION, AND WELFARE  
Public Health Service 1 R01

SIE NO.  
MH 10731-01  
AGENCY NO.  
EPB (Nov. 64)

SUPPORTING AGENCY:

TITLE OF PROJECT:

Basic Factors in Human Salivary Conditioning

TITLE

WHO

Names, departments, and official titles of PRINCIPAL INVESTIGATORS and ALL OTHER PROFESSIONAL PERSONNEL engaged on the project.  
Clinton Carl Brown, Ph.D., Assist. Professor of Medical Psychiatry, Pavlovian Laboratory, Johns Hopkins Hospital, Baltimore, Maryland  
George F. Sutherland, M.D., Director of Psychiatric Education, Rosewood State Hospital, Owings Mill, Maryland  
Albert A. Kurland, M.D., Director of Research, Department of Mental Hygiene, Baltimore, State of Maryland

NAME AND ADDRESS OF INSTITUTION:

Friends of Psychiatric Research, Inc.  
Spring Grove State Hospital, Baltimore, Maryland 21228

WHERE

SUMMARY OF PROPOSED WORK - (200 words or less.) - In the Science Information Exchange summaries of work in progress are exchanged with government and private agencies supporting research, and are forwarded to investigators who request such information. Your summary is to be used for these purposes.

This study is a critical evaluation of the potential utility of the conditional salivary response for the evaluation of more complex behavior in human subjects.

While there is a considerable literature concerning the response in various dental, physiological, chemical and pharmacological applications, there is little evidence relating to its basic unconditional aspects, particularly as it reflects the activity of the parasympathetic branch of the autonomic nervous system.

WHAT

The planned research calls for a step-wise progression from the evaluation of the basic aspects of the response to an exploration of its correlates to other established psychophysiological measures of ANS activity.

This laboratory is particularly well equipped to undertake this type of investigation on the basis of having developed a precise and reliable procedure for the measurement of salivary flow in man and because of the availability of personnel who are experienced in conditional reflex investigation and conversant with the related literature.

The results of the projected study should provide conclusive evidence of the utility of the conditional salivary response as an established psychophysiological measurement.

Period for this MRP  
5-65 to 4-66  
mo yr mo yr  
Sub-group 2 1

WHEN

SIGNATURE OF PRINCIPAL INVESTIGATOR  
PROFESSIONAL SCHOOL (medical, graduate, etc.)  
*Clinton C. Brown Ph.D.*

Proj. No.  
MH 10731-1  
-2

Period  
3/65 - 4/66

Amount  
HOW MUCH

## **The National Referral Center for Science and Technology**

The National Referral Center for Science and Technology may be described most simply as an "information desk" for the scientific and technical community. Operating in the Library of Congress with the support of the National Science Foundation, the Center is designed to provide a single place to which anyone with an interest in science and technology may turn for advice on where and how to obtain information on specific topics.

The Center does not provide technical details in answer to inquiries, nor does it furnish bibliographic assistance. Functioning as an intermediary, it directs those who have a question concerning a particular subject to organizations or individuals with specialized knowledge of that subject.

Three directories covering a broad range of information resources have been issued by the Center and may be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402:

**A Directory of Information Resources in the United States: Physical Sciences, Biological Sciences, Engineering (\$2.25)**

**A Directory of Information Resources in the United States: Social Sciences (\$1.50)**

**A Directory of Information Resources in the United States: Water (\$1.50)**

**Correspondence concerning the Center should be addressed to:**

**National Referral Center for Science and Technology  
Library of Congress  
Washington, D. C. 20540**

A Directory  
of  
Information  
Resources  
in the  
United States

National Referral Center

**AMERICAN ASSOCIATION ON MENTAL DEFICIENCY**

1601 West Broad Street  
Columbus, Ohio 43221  
Telephone: 279-4651 (Area code: 614)

The American Association on Mental Deficiency, under contract to the National Clearinghouse for Mental Health Information, is in the process of developing a documentation service in mental retardation and publishing a quarterly journal entitled *Mental Retardation Abstracts*. Each issue of the *Abstracts*, distributed by the U.S. Department of Health, Education, and Welfare, will include 300 abstracts on the world literature dealing with mental retardation. Inquiries concerning the documentation service or subscriptions to *Mental Retardation Abstracts* should be directed to the Association.

The *American Journal of Mental Deficiency and Mental Retardation*, bimonthly publications, are available to nonmembers on subscription.

**AMERICAN ASTRONAUTICAL SOCIETY**

516 Fifth Avenue  
New York, N.Y. 10016  
Telephone: 682-3383 (Area code: 212)

A professional society, the American Astronautical Society maintains a collection of books, journals, and data on various aspects of the space sciences. Subject coverage is astronautics, spacecraft, space flight, space environment, guidance, control, astrodynamics, biostromatics, navigation, propulsion, orbits and trajectories, solar physics, radiation, planetary environment, flight mechanics, and space medicine.

Technical inquiries are answered without charge. Society publications available for purchase are: *Journal of the Astronautical Sciences*, issued quarterly, and *Advances in the Astronautical Sciences*, AAS proceedings issued in about three volumes each year. Back issues of these publications and copies of the *Astronautical Sciences Review*, a discontinued series, are available from Western Periodicals, Inc., 13000 Raymer Street, North Hollywood, Calif., 91605. A bi-monthly *Newsletter* is distributed to members.

**AMERICAN BIO-SYNTHETICS CORP.**

711 West National Avenue  
Milwaukee, Wis. 53201  
Telephone: 381-7017 (Area code: 414)

An industrial research organization, the American

Bio-Synthetics Corp. conducts research in the agricultural, biological and pharmaceutical sciences, general and polymer chemistry, engineering, plastics, and paints. Special areas of interest include automated distillation equipment, proteins, peptides, amino acids, and hormone research. Pilot plants are maintained for the experimental production of commercially unobtainable peptides, enzymes, hormonal preparations, gland extracts, and animal and human body fluids. Chemical, bacteriological, physical, and environmental testing services are provided to Government and industry.

A library of books, journals, reports, patents, and films and photos is maintained on chemistry, biochemistry, and microbiology. There are also complete files of current Government tests and specifications for various materials. Reference and document services are restricted to company personnel, however, inter-library cooperation is encouraged.

**AMERICAN BUREAU OF METAL STATISTICS**

50 Broadway  
New York, N.Y. 10001  
Telephone: 944-1870 (Area code: 212)

A nonprofit trade association supported by producers of copper, lead, and zinc in the United States, Canada, Mexico, Chile, and Peru, the Bureau compiles and releases statistics on the economics of nonferrous minerals and metals.

The *Year Book*, which provides statistical information for market analysis, research, and industry surveys, may be purchased. Monthly and quarterly statistical reports may be obtained on a subscription basis, and are issued as *Copper Series*, *Lead Series*, *Zinc Series*, *Aluminum Series*, *Gold Series*, and *Silver Series*.

**AMERICAN CAMELLIA SOCIETY**

Coastal Plain Experiment Station  
Box 465  
Tifton, Ga. 31794  
Telephone: 382-5561 (Area code: 912)

In collaboration with the Coastal Plain Experiment Station and other research organizations, the Society promotes interest in genus *Camellia*. It conducts scientific research in its culture and test control, effects standardization of its varietal names and classification of new varieties, and disseminates information concerning these activities.

The Society library collections of books, journals, reports, films, photographs, and data are available.

### Report Formats

Reports are normally available in the conventional form of printed pages. Most U. S. Government reports are also available today in a newer format, microfiche, a piece of transparent film, measuring 105 mm x 148 mm (approximately 4 in. x 6 in.), which can contain up to 72 page images (in reduced form) of a printed report. Using this format, the equivalent of millions of sheets of paper can be stored in a few drawers or file cabinets.

Small, portable microfiche readers are available at low cost (\$100 to \$135). These project an image of the report on ground glass; the image is larger than the original. If a "hard copy" (photo reproduction) of a page, table, chart, or the entire report is wanted, then a reader-printer is used. Reader-printers are available in the price range of \$750 to \$1500.

Some representative examples of commercially available readers and reader-printers are listed below. Please remember that the Government does not evaluate the relative merits of these equipments.

#### Portable and Semi-Portable Microfiche Readers

Atlantic Microfilm Corporation Spring Valley, New York 10977	(Model F86)
Bell and Howell Company Microphoto Division 1700 Shaw Avenue Cleveland, Ohio 44112	(several models)
Documat, Incorporated Waltham, Massachusetts 02154	(several models)
Documentation, Incorporated Microdocumentation Division 4833 Rugby Avenue Bethesda, Maryland 20014	(Model 1010)
DuKane Corporation St. Charles, Illinois 60174	(Model No. 576-95)



Using microfiche, a 100-page printed report can be placed on two 4-in. x 6-in. cards.

**Frederick Post Company**  
P. O. Box 803, Department 50  
Chicago, Illinois 60690

(Model No. 620-00)

**Microcard Corporation**  
365 South Oak Street  
West Salem, Wisconsin 54689

(Model FR-5)

**Recordak Corporation**  
770 Broadway  
New York, New York 10003

(several models)

**University Microfilms, Incorporated**  
313 North First Street  
Ann Arbor, Michigan 48107

#### **Heavy-Duty Reader-Printers**

**Bell and Howell Company**  
(address on preceding page)

(several models)

**Documat Incorporated**  
(address on preceding page)

(several models)

**Microfilm Products Division**  
**3 M Company**  
St. Paul, Minnesota 55119

(Filmac 100 to 400)

**Recordak Corporation**  
(address given above)

(several models)