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CHABA

SECOND ANNUAL REPORT

1 JUNE 1954 - 31 MAY 1955

Published By

**ARMED FORCES - NATIONAL RESEARCH COUNCIL
COMMITTEE ON HEARING AND BIO-ACOUSTICS**

CHABA
SECOND ANNUAL REPORT
of the
ARMED FORCES - NATIONAL RESEARCH COUNCIL
COMMITTEE ON HEARING AND BIO-ACOUSTICS

1 June 1954 - 31 May 1955

Prepared by
HALLOWELL DAVIS
DONALD H. ELDREDGE
and STAFF of the
OFFICE OF THE EXECUTIVE SECRETARY

Published By
ARMED FORCES - NATIONAL RESEARCH COUNCIL
COMMITTEE ON HEARING AND BIO-ACOUSTICS

OFFICE OF THE EXECUTIVE SECRETARY
818 South Kingshighway
St. Louis 10, Missouri

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FOREWORD

The activities described in this report were supported by Contract Nonr-1151(01) between the Office of Naval Research and the Central Institute for the Deaf, St. Louis, Missouri. Funds for this contract were provided equally by the Department of the Army, Department of the Navy and Department of the Air Force. The contract was administered by Dr. Henry A. Imus, Head, Physiological Psychology Branch, Psychological Sciences Division, Office of Naval Research from

the inception of the contract until 18 October 1954. Since that date the contract has been administered by Dr. Richard Trumbull of the same office.

This report was prepared for the Committee on Hearing and Bio-Acoustics, by Hallowell Davis, Executive Secretary; Donald H. Eldredge, Technical Aide; Mrs. Shirley K. Hirsh, Administrative Assistant; and Mrs. Quinette Hale, Secretary.

SUMMARY OF SECOND ANNUAL REPORT

During the year 1 June 1954 to 31 May 1955 the Armed Forces-National Research Council Committee on Hearing and Bio-Acoustics held one full meeting. The major topic discussed was "Noise and the Community." The proceedings of this meeting will be published in a separate report.

The CHABA Council met three times during the year and accepted formal or informal reports from nine working groups. It appointed six new working groups and discharged three working groups, their tasks accomplished. On 31 May

1955, six working groups were active although one was merely on a stand-by basis.

The activities of the various working groups are summarized in the body of this report.

The largest new problem to be brought before the CHABA Council during the year seems to be the effects of and protection against "blast." This problem, raised by the Army representative, has much in common with the high-intensity noise problems already considered by CHABA.

Statement of Purposes and Methods of Operation

The Armed Forces - National Research Council Committee on Hearing and Bio-Acoustics (CHABA) was organized early in 1953 to provide consultation and advice to the Armed Forces in the general areas of (1) the effects and control of noise, (2) auditory discrimination, (3) speech communication, (4) the fundamental mechanism of hearing, and (5) auditory standards. The term "bio-acoustics" includes the direct non-auditory effects of high-intensity sound and vibration on man's body, the relevant physical and engineering problems of noise generation, measurement, and control, and the psychological and social reactions of man and of animals to noise. The activities of CHABA are supported equally by the Army, Navy, and the Air Force.

CHABA is not a contracting agency. It does not dispense funds, although it may recommend that research along certain lines be carried out. It is not itself a research organization. Its output is not data but advice.

The Executive Council of CHABA consists of nine members: one representative apiece from the Army, the Navy, and the Air Force, three members appointed by the National Research Council, and three members-at-large chosen by the appointed members of the Council. The full Committee on Hearing and Bio-Acoustics consists of about 80 regular members approximately equally balanced between military representatives and civilians appointed by the National Research Council. The latter appointments include "engineers and scientists . . . in the fields of acoustics, vibration, psychology, physiology, or medicine." There are also several affiliated members who represent other government agencies with interests in the general area.

The major work of CHABA is carried out by "working groups" of consultants. They deal with specific problems brought to the Executive Council by one of the service representatives on the Executive Council, or by the National Research

Council. At least one or two of the members of each working group are already members of CHABA, but often outside consultants are also invited to serve. When a working group has prepared its report, the Executive Council has the responsibility for accepting and transmitting the report, either with or without additional comment or endorsement.

CHABA reports to the Armed Forces through the service representatives on the Executive Council. CHABA reports to the National Research Council Divisions of Physical Sciences, Medical Sciences, Anthropology and Psychology, Engineering and Industrial Research, and Biology and Agriculture. So equally divided are the interests that the committee is responsible directly to the office of the Chairman of the National Research Council, although the administrative details of liaison, distribution of reports, etc., are carried out through the Executive Secretary of the Division of Anthropology and Psychology.

Members of the Armed Forces desiring CHABA consulting services should submit their requests through the appropriate service representatives on the Executive Council. These are:

Army:

James P. Albrite, Major (MC) USA
Director, Audiology and Speech
Correction Center
Walter Reed Army Medical Center
Washington 12, D.C.

Navy:

Clifford P. Phoebus, Captain (MC)
USN
Special Assistant for Bio Sciences
Office of Naval Research
Department of the Navy
Washington 25, D.C.

Air Force:

Dr. Horace O. Parrack
Coordinator of Noise and Vibration
Control
Attn: WCRDO (NVC)
Wright Air Development Center
Wright-Patterson Air Force Base,
Ohio

Others desiring CHABA consulting services should submit their request through the Executive Secretary of the Division of Anthropology and Psychology of the National Research Council. He is:

Dr. Glen Finch
Executive Secretary, Division of
Anthropology and Psychology
National Academy of Sciences -
National Research Council
2101 Constitution Avenue
Washington 25, D.C.

The committee as a whole meets at least annually. The program of each meeting of the full committee is carefully designed to take advantage of the interdisciplinary character of the membership. A thorough presentation of some major problem and its subsequent discussion by the members provides valuable insight for the

specialists into the background and varied complexities of the problem. Opportunity is provided for the informal discussion of any problems that members wish to raise, with resultant clarification of the actual problems and possible recommendations for attacking them.

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**BY-LAWS OF THE
ARMED FORCES - NATIONAL RESEARCH COUNCIL
COMMITTEE ON HEARING AND BIO-ACOUSTICS**

1. The name of this Committee shall be the Armed Forces - National Research Council Committee on Hearing and Bio-Acoustics.
2. The purpose of this Committee shall be to consider problems of a scientific and technical nature in the following areas:
 - A. The effects and control of noise
 - B. Auditory discrimination
 - C. Speech communication
 - D. The fundamental mechanism of hearing
 - E. Auditory standards

In the consideration of these problems the Committee may collect, collate, and distribute information and may recommend such action as shall be in the national interest.

3. There shall be three classes of members of this Committee: Council Members, Members and Affiliated Members.

A. There shall be a Council to consist of nine members appointed as follows: one representative from each of the Armed Forces; three representatives named by the National Research Council; an Executive Secretary chosen by the other Council Members; and such additional members, chosen by the Council, as are required to bring the total to nine. Members of the Council shall normally serve for three consecutive years, or until their successors have been appointed and take office.

B. Members of the Committee shall be such additional persons as are appointed by the Armed Forces or the National Research Council. They shall be persons qualified by the nature of their training and experience, or their

employment, to contribute to the purposes of the Committee. Normally, one or two representatives of each administrative unit in the Armed Forces having direct cognizance of the problems in hearing and bio-acoustics shall be included. Others shall be engineers and scientists who are qualified by training, experience, or employment in the fields of acoustics and vibration, psychology, physiology, or medicine. Members of the Committee shall continue to serve at the pleasure of the appointing agency. The Committee will reimburse the civilian National Research Council appointed members for expenses while serving at designated meetings.

C. Other agencies of the government having cognizance of problems in hearing and bio-acoustics, and professional and industrial organizations having similar interests, may be invited at the discretion of the Council to appoint Affiliated Members to the Committee. Except as such Affiliated Members may happen to be Members under paragraph 3B above, they serve as representatives of the agency or organization which shall have appointed them, and the appointing agency shall be responsible for their term of service, replacement, expenses while serving, etc. The appointing agency shall keep the Executive Secretary informed at all times who its authorized representative is.

4. The Council is empowered to take all actions necessary to carry out the work of the Committee except for those actions delegated to the Committee.

A. The Council shall elect a Chairman and a Deputy Chairman from its own members. The Chairman shall preside at all meetings of

the Council and of the Committee and exercise the usual duties of a chairman. The Deputy Chairman shall perform the duties of the Chairman in the case of his absence or inability to serve. The term of office of the Chairman and Deputy Chairman shall be two years.

B. The Council shall select an Executive Secretary as provided under paragraph 3A above. The Executive Secretary is empowered to receive and disburse funds for the Committee, to employ technical and professional assistance, to answer routine inquiries in the name of the Committee, and to call, with the concurrence of two other members of the Council special meetings of the Council. The Executive Secretary shall carry out such projects as the Council shall direct. He shall report on his interim activities at each regular meeting of the Council and shall prepare and distribute to the Council minutes of their meetings, and, at the direction of the Council, reports or publications of the Committee which are necessary or desirable.

C. The Council shall have two regular meetings per year at a time to be agreed upon not later than the last previous regular meeting of the Council. Special meetings may be called, as provided in paragraph 4B, upon not less than five days notice to all Council Members.

D. A quorum of the Council shall consist of a majority of the qualified members. Each member of the Council may have a deputy serve in his stead at any meeting which he is unable to attend. A quorum shall require the presence of not less than three regularly appointed members of the Council.

5. The work of the Committee may be carried out in any manner approved by the Council including the following:

A. Meetings of the full Committee at which scientific and technical reports may be presented, or problems may be laid before the group for discussion and recommendations.

B. The appointment of working groups to consider specific issues brought to the Committee, such working groups to prepare their findings and recommendations for presentation to the whole Committee.

C. The encouragement and sponsorship of publications and other activities which will result in the more effective distribution of our present knowledge about hearing and bioacoustics.

6. These By-Laws may be amended by two-thirds vote of the regularly appointed members of the Council, following which the changes shall be submitted promptly to the National Research Council and to the Armed Forces for their concurrence.

7. Actions taken at the meeting of representatives of the National Research Council and of the Armed Forces, held at the Bureau of Medicine and Surgery on December 15, 1952, are ratified as enabling action in the formation of this Committee. These By-Laws shall take effect with the appointment of the first six members of the Council.

14 February 1953.

MEMBERSHIP LIST

1 June 1954 — 31 May 1955

COUNCIL

NRC Appointees (Appointments terminate
30 June)

Dr. R. H. Bolt (Chairman) (1953-54; 54-57)
Acoustics Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dr. Harvey Fletcher (1953-56)
Director of Research
Brigham Young University
Provo, Utah

Dr. Edwin B. Newman (1953-55)
Psychological Laboratories
Memorial Hall
Harvard University
Cambridge 38, Massachusetts

Army Representative

Dr. Aram Glorig
(Resigned 15 December 1954)

Major James P. Albrite (MC) USA
(Designated 4 January 1955)
Director, Audiology and Speech Correction Center
Walter Reed Army Medical Center
Washington 12, D.C.

Navy Representative

Dr. Henry A. Imus
(Resigned 18 October 1954)

Captain Clifford P. Phoebus (MC) USN
(Designated 18 October 1954)
Special Assistant for Bio Sciences
Office of Naval Research
Department of the Navy
Washington 25, D. C.

Air Force Representative

Dr. Horace O. Parrack
Coordinator of Noise and Vibration Control
Attn: WCRDO (NVC)
Wright Air Development Center
Wright-Patterson Air Force Base, Ohio

Members at Large (Appointments terminate 30 June)

Dr. Howard P. House (1953-55)
1136 West Sixth Street
Los Angeles 17, California

Dr. Hallowell Davis (Executive Secretary)
Central Institute for the Deaf (1953-56)
818 South Kingshighway
St. Louis 10, Missouri

Technical Aide

Dr. Donald H. Eldredge
Central Institute for the Deaf
818 South Kingshighway
St. Louis 10, Missouri

NATIONAL RESEARCH COUNCIL APPOINTED MEMBERS

One Year Appointments Beginning 1 July 1954

Dr. C. I. Barron (1954)
Medical Director, California Division
Lockheed Aircraft Corporation
Burbank, California

Dr. Raymond Carhart (1953-54)
School of Speech
Northwestern University
Evanston, Illinois

One Year Appointments Beginning 1 July 1954

Dr. Grant Fairbanks (1953-54)
321 Illini Hall
University of Illinois
Urbana, Illinois

Dr. Robert O. Fehr (1953-54)
Electro-Mechanical Engineering
Services Department
General Electric Company
One River Road
Schenectady 5, New York

Dr. Wendell R. Garner (1954)
Department of Psychology
The Johns Hopkins University
Baltimore 18, Maryland

Dr. Victor Guillemin, Jr. (1953-54)
Physical Environment Unit
University of Illinois College of Medicine
853 West Polk Street
Chicago 12, Illinois

Dr. Cyril M. Harris (1953-54)
Director, Acoustics Laboratory
Columbia University
New York, New York

Dr. Gordon D. Hoople (1953-54)
University of Syracuse
1100 East Genesee Street
Syracuse, New York

Mr. W. A. Kuhrt (1953-54)
Chief, Gas Dynamic Projects
United Aircraft Corporation
Research Department
East Hartford 8, Connecticut

Dr. Haldon A. Leedy (1953-54)
Armour Research Foundation of Illinois Institute
of Technology
35 West 33rd Street
Chicago 16, Illinois

Dr. J. C. R. Licklider (1954)
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dr. John R. Lindsay (1953-54)
Department of Surgery
The University of Chicago
Chicago 37, Illinois

Dr. Osman K. Mawardi (1953-54)
Acoustics Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dr. George A. Miller (1953-54)
Psychological Laboratories
Memorial Hall
Harvard University
Cambridge 38, Massachusetts

Dr. W. A. Munson (1953-54)
Bell Telephone Laboratories
Whippany, New Jersey

Dr. William D. Neff (1953-54)
Department of Psychology
University of Chicago
950 East 59th Street
Chicago 37, Illinois

Prof. Walter A. Rosenblith (1953-54)
Acoustics Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dr. Wayne Rudmose (1954)
Southern Methodist University
Dallas 5, Texas

Dr. Isadore Rudnick (1953-54)
Department of Physics
University of California
Los Angeles 24, California

Dr. Abe Silverstein (1954)
Associate Director
Lewis Flight Propulsion Laboratory
21000 Brookpark Road
Cleveland 11, Ohio

Dr. S. S. Stevens (1953-54)
Psycho-Acoustic Laboratory
Memorial Hall
Harvard University
Cambridge 38, Massachusetts

Mr. Karl D. Swartzel (1953-54)
c/o Lear, Inc.
3171 South Bundy Drive
Santa Monica, California

One Year Appointments Beginning 1 July 1954

Dr. E. G. Wever (1953-54)
Department of Psychology
Princeton University
Princeton, New Jersey

Dr. Douglas E. Wheeler (1953-54)
1136 West Sixth Street
Los Angeles 17, California

ARMY DESIGNATED MEMBERS

Dr. Robert A. Butler
(Designated 31 March 1955)
Audiology and Speech Correction Center
Walter Reed Army Medical Center
Washington 12, D.C.

Lt. Paul D. Coleman
(Designated 10 September 1954)
Army Medical Research Laboratory
Fort Knox, Kentucky

Col. Glenn J. Collins, MC
(Relieved 10 September 1954)
Medical Research and Development Board
Office of the Surgeon General
Washington 25, D. C.

Lt. Col. G. J. Conlin, (MC) USA
(Relieved 10 September 1954)
Physical Standards Division
Office of the Surgeon General
Washington 25, D. C.

Dr. Robert Galambos
Neuropsychiatry Division
Army Medical Service Graduate School
Walter Reed Army Medical Center
Washington 12, D. C.

Col. Charles S. Gersoni (MSC) USA
(Designated 10 September 1954)
Chief, Human Resources Research Branch
Research and Development Division
Office of the Surgeon General
Department of the Army
Washington 25, D.C.

Dr. Howard W. Hembree
(Designated 2 March 1955)
Headquarters Quartermaster Research and
Development Command
Natick, Massachusetts

Col. Frederick J. Knoblauch, MC
(Relieved 10 September 1954)
Medical Research and Development Board
Office of the Surgeon General
Washington, D. C.

Dr. M. Loeb
(Designated 10 September 1954)
Army Medical Research Laboratory
Fort Knox, Kentucky

Dr. N. B. Louis
(Relieved 10 September 1954)
Army Medical Research Laboratory
Fort Knox, Kentucky

Dr. David McK. Rioch
Technical Director, Neuropsychiatry
Division
Army Medical Service Graduate School
Walter Reed Army Medical Center
Washington 12, D. C.

Dr. Leonard S. Rubin
(Designated 31 March 1955)
Chemical Corps Medical Laboratories
Edgewood Arsenal, Maryland

Lt. Col. Franklin L. Spann (MC) USA
(Designated 4 January 1955)
Chief, ENT Service
Walter Reed Army Hospital
Washington 12, D.C.

Dr. R. Edwin Shutts
(Designated 4 January 1955)
Chief Supervisor, Audiology and Speech
Correction Center
Walter Reed Army Medical Center
Washington 12, D.C.

Mr. Maurice B. Whitlock, Jr.
(Designated 31 March 1955)
Audiology and Speech Correction Center
Walter Reed Army Medical Center
Washington 12, D.C.

AIR FORCE DESIGNATED MEMBERS

Lt. Col. John E. Boyson (MC) USAF
Office of the Air Surgeon (MCD)
Headquarters Air Materiel Command
Wright-Patterson AFB, Ohio

Mr. Francis A. Brogan
USAF School of Aviation Medicine
Randolph Air Force Base
Randolph Field, Texas

Deputy Member:

Col. Henry M. Sweeney, USAF
USAF School of Aviation Medicine
Randolph Air Force Base
Randolph Field, Texas

Dr. Charles W. Bray
Headquarters Human Resources Research Center
Attn: DCS/O
Lackland Air Force Base
San Antonio, Texas

Mr. Willis J. Brown
Wright Air Development Center
Attn: WCLPO-1
Wright-Patterson Air Force Base, Ohio

Deputy Member:

Capt. E. C. Simpson, USAF
Wright Air Development Center
Attn: WCLPR-1
Wright-Patterson Air Force Base, Ohio

Mr. Julien Christensen
Wright Air Development Center
Attn: WCLPR-1
Wright-Patterson Air Force Base, Ohio

Deputy Member:

Mr. Charles R. McGehee
(Relieved 10 October 1954)

Dr. Harry J. Jerison
(Designated 10 October 1954)
Wright Air Development Center
Attn: WCRDP
Wright-Patterson Air Force Base, Ohio

Mr. D. A. Dickey
Wright Air Development Center
Attn: WCLB
Wright-Patterson Air Force Base, Ohio

Deputy Member:

Major Allen Watton, Jr., USAF
Wright Air Development Center
Attn: WCLBS
Wright-Patterson Air Force Base, Ohio

Dr. H. E. von Gierke
Wright Air Development Center
Attn: WCRDB-5
Wright-Patterson Air Force Base, Ohio

Deputy Member:

Major Elizabeth Guild, USAF
Wright Air Development Center
Attn: WCRDB-5
Wright-Patterson Air Force Base, Ohio

Dr. A. W. Hetherington
Headquarters Air Research and
Development Command
P. O. Box 1395
Attn: RDDH-2
Baltimore 3, Maryland

Deputy Member:

Col. Don Flickinger (MC) USAF
(Relieved 16 May 1955)

Col. John M. Talbot (MC) USAF
(Designated 16 May 1955)
Headquarters Air Research and
Development Command
P. O. Box 1395
Attn: RDDH
Baltimore 3, Maryland

Dr. Karl Kryter
Operational Applications Laboratory
Air Force Cambridge Research Center
Bolling Air Force Base
Washington 25, D. C.

Deputy Member:

Dr. Irwin Pollack
Operational Applications Laboratory
Air Force Cambridge Research Center
Bolling Air Force Base
Washington 25, D. C.

Major Phillip J. Maher, Jr.
Headquarters U. S. Air Force
Attn: AFDRD-HF
Washington 25, D. C.

Lt. Col. Alvin F. Meyer, Jr. (MSC) USAF
Office of the Surgeon
Headquarters, Strategic Air Command
Offutt Air Force Base, Nebraska

Mr. Edward Poth
Chief, Sanitary and Industrial Hygiene
Engineering Branch
USAF Dispensary
Kelly Air Force Base
San Antonio, Texas

Dr. O. R. Rogers
Wright Air Development Center
Attn: WCLSY
Wright-Patterson Air Force Base, Ohio

Deputy Member:
Mr. G. L. Getline
Wright Air Development Center
Attn: WCLSY
Wright-Patterson Air Force Base, Ohio

Major Norman A. Twigger
USAF School of Aviation Medicine
Randolph Air Force Base
Randolph Field, Texas

Mr. Weiant Wathen-Dunn
Air Force Cambridge Research Center
Electronics Research Directorate
230 Albany Street
Cambridge 39, Massachusetts

NAVY DESIGNATED MEMBERS

Mr. Wilbert Annis
Head, Acoustics Branch,
Earth Sciences Division
Office of Naval Research
Department of the Navy
Washington 25, D. C.

Dr. John W. Black
U. S. Naval School of Aviation Medicine
U. S. Naval Air Station
Pensacola, Florida
(Professor of Speech and Director of Speech
Science, Ohio State University, Columbus,
Ohio)

Alternate:
Dr. Gilbert Tolhurst
(Designated 24 November 1954)
U.S. Naval School of Aviation Medicine
Pensacola, Florida

Cdr. S. I. Brody, (MC) USN
Bureau of Aeronautics
Room 1 W45, "W" Bldg.
Department of the Navy
Washington 25, D. C.

Dr. J. T. Dailey
Technical Director, Research Division
Bureau of Naval Personnel
Department of the Navy
Washington 25, D. C.

Alternate:
Mr. Victor Fields
Assistant Head, Classification and
Survey Research Branch
Bureau of Navy Personnel
Department of the Navy
Washington 25, D. C.

Capt. Thomas Ferwerda (MC) USN
Medical Military Specialties Branch,
Research Division
Bureau of Medicine and Surgery
Department of the Navy
Washington 25, D. C.

Mr. William J. Finney
Naval Research Laboratory
Washington 25, D. C.

Mr. Robert S. Gales
Human Factors Division
U. S. Navy Electronics Laboratory
San Diego 52, California

Cdr. David E. Goldman (MSC) USN
Department of Biophysics
Naval Medical Research Institute
Bethesda, Maryland

Dr. J. Donald Harris
Head, Sound Branch
Research Division
U. S. Naval Medical Research Laboratory
U. S. Naval Submarine Base
New London, Connecticut

Mr. Emanuel S. Mendelson
Head, Human Engineering Division
Naval Air Material Center, NAES
Philadelphia 12, Pennsylvania

Dr. Clifford P. Seitz
Special Devices Center
Sands Point, Port Washington, New York

Dr. Arnold M. Small
Human Factors Division
U. S. Navy Electronics Laboratory
San Diego 52, California

Dr. Richard Trumbull
(Designated 15 October 1954)
Head, Physiological Psychology Branch
Office of Naval Research
Department of the Navy
Washington 25, D.C.

Mr. H. A. Thorpe
Applied Science Division
Bureau of Ships, Code 371
Room 3727, Main Navy Bldg.
Washington 25, D. C.

Alternate:

Mr. M. A. Kerr
(Relieved 11 October 1954)

Mr. Walter K. Dau, Jr.
(Designated 11 October 1954)
Ship Technical Division
Bureau of Ships, Code 565e
Room 4425, Main Navy Bldg.
Washington 25, D. C.

AFFILIATED MEMBERS

Organization	Member
British Joint Services Mission	Wing Commander E. Bruce Harvey British Joint Services Mission Air Force Staff 1910 K Street, N.W. Washington, D. C.
	Surgeon Cdr. Frank P. Ellis, RN (Designated 20 July 1954) British Joint Services Mission Medical Staff Room 5302, Bldg. 5 Bureau of Medicine and Surgery, Potomax Annex Department of the Navy Washington 25, D.C.
Canadian Joint Staff	Wing Commander R. H. Lowry Department of National Defense Canadian Joint Staff 1708 Massachusetts Ave. NW Washington 6, D. C.

Civil Aeronautics Administration

Mr. Malcolm Y. McCormack
Department of Commerce
Civil Aeronautics Administration
Washington, D. C.

Alternate:

Mr. S. W. Rolle, Chief
Power Plant Branch
Civil Aeronautics Administration
Washington 25, D. C.

Civil Aeronautics Board

Mr. John M. Chamberlain
Director, Bureau of Safety Regulation
Civil Aeronautics Board
Washington 25, D. C.

National Advisory Committee for Aeronautics

Mr. T. L. K. Smull
National Advisory Committee for Aeronautics
1724 F Street, N.W.
Washington 25, D. C.

National Bureau of Standards

Dr. Richard K. Cook
National Bureau of Standards
Washington 25, D. C.

National Institutes of Neurological Diseases and
Blindness
(Affiliated 7 December 1954)

Dr. Henry A. Imus
National Institutes of Neurological Diseases and
Blindness
Bethesda 14, Maryland

National Research Council Committee on
Highway Safety Research
(Inactivated 31 August 1954)

Dr. T. W. Forbes
Technical Director,
Committee on Highway Safety Research
National Research Council
2101 Constitution Avenue
Washington 25, D. C.

CALENDAR OF MEETINGS

24 October 1954 — Sixth Council Meeting
25-26 October 1954 — Second Committee Meeting
28 January 1955 — Seventh Council Meeting
16 May 1955 — Eighth Council Meeting

SUMMARY OF MEETINGS

SIXTH COUNCIL MEETING: 24 October 1954

The Council accepted status reports of Working Groups 2 and 9. The report of Working Group 14, including the suggestion that the Group remain on a stand-by basis until the recommended tests have been tried under field conditions and evaluated by the Working Group, was endorsed. The program for the CHABA meeting of 25-26 October 1954 was accepted as the report of Working Group 12, and the Group was discharged. Working Groups 15 and 17 were also discharged, their tasks completed.

Dr. E. B. Newman was elected Deputy Chairman to fill the unexpired term of Dr. H. A. Imus who had resigned his position in the Office of Naval Research.

It was decided that the topic of the next meeting of the full Committee would be the measurement of hearing.

In answer to a request from the Office of the Surgeon General for information about the effects of blast on crews operating varied weapons, the Council agreed that the first step would be a survey of the present literature on blast, to be carried out by the staff of the office of the Executive Secretary.

The Air Force representative reported that the Air Force required a standard method for measuring and reporting sound produced by aircraft engines and completed aircraft that could be used by manufacturers for describing to the Air Force the noise produced by their product. He requested CHABA assistance in outlining these standard procedures. In discussion the Council noted that such a task involved complexities beyond the usual scope of CHABA Working Groups, and suggested that the task first be approached directly by the Air Force or a contractor. The standard methods resulting from this effort could then be critically reviewed by a CHABA Working Group.

At the request of the Air Force representative, the Council directed the formation of Working Group 18 to outline the elements of a standard noise survey procedure for Air Force bases. The Air Force representative also reported an urgent need in the Air Force for a standard method for evaluating ear protector devices. Since the Air Force was prepared to accept a provisional standard method pending the time-consuming negotiations required for the final approval of an American Standard, the Council voted to invite the American Standards Association committee working on that subject to become CHABA Working Group 19 to accomplish this purpose.

**PROGRAM OF THE SECOND MEETING
OF THE
ARMED FORCES - NATIONAL RESEARCH COUNCIL
COMMITTEE ON HEARING AND BIO-ACOUSTICS
A Joint Meeting With The
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS
SPECIAL SUBCOMMITTEE ON AIRCRAFT NOISE**

**Armour Research Foundation
Chicago, Illinois**

25-26 October 1954

INTRODUCTORY PRESENTATIONS

Welcome

**R. H. Bolt, Chairman, CHABA Massachusetts
Institute of Technology**

**The Scope and Function of the Armed Forces-
NRC Committee on Hearing and Bio-Acoustics**

**Hallowell Davis, Executive Secretary, CHABA
Central Institute for the Deaf**

**The Scope and Function of the NACA Special
Subcommittee on Aircraft Noise**

**William Littlewood, Chairman, Subcommittee
American Airlines**

PRINCIPAL TOPIC: NOISE AND THE COMMUNITY

Introduction

**H. O. Parrack, Major USAF
Wright Air Development Center**

Human Aspects

**The Assessment of Community Responses to
Noise**

**Walter A. Rosenblith
Massachusetts Institute of Technology**

Community Aspects of Aircraft Annoyance: A Report from the National Opinion Research Center of the University of Chicago and Bolt, Beranek and Newman to the NACA

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| 1. The structure of the opinion polling interviews used in the survey | Paul Borsky and David Ryan
National Opinion Research Center |
| 2. The methods used to measure ambient community noise and aircraft noise reaching the community | K. N. Stevens
(Presented by R. H. Bolt)
Bolt, Beranek and Newman |
| 3. The relation of community response, as measured by opinion polling interviews, to aircraft and other noises in the community | Paul Borsky and David Ryan
National Opinion Research Center |
| Report on 'Some Air Force Experiences with "Noise and the Community" | H. W. Shoup, Colonel USAF
Air Defense Command |
| Physical Aspects | |
| Noise Sources and "Near Source" Propagation Problems | H. T. Oestreicher and H. E. von Gierke
Wright Air Development Center |
| Atmospheric and Terrain Factors in Sound Propagation | K. U. Ingard
Massachusetts Institute of Technology |
| Air Force Planning with Regard to Noise and the Community | H. B. Thatcher, Major General USAF
Assistant Deputy Chief of Staff, Development |
| Other Noises in Communities | H. C. Hardy
Armour Research Foundation |
| Noise Level Data Applied to the Control of Community Response | R. O. Fehr
General Electric Company |
| Summary: Present Status of Research on the Physical Aspects of Sound Propagation | W. L. Nyborg
Brown University |

OTHER CHABA BUSINESS

Report of the Executive Secretary of CHABA Hallowell Davis

(The proceedings of this meeting, in the form of a series of summaries of the presentations of the various speakers, are in preparation as CHABA Report No. 4)

SEVENTH COUNCIL MEETING: 28 January 1955

It was decided to publish the proceedings of the October 1954 meeting of CHABA, after clearing them with the National Advisory Committee for Aeronautics, as CHABA Report No. 3.

A status report of Working Group 2 was accepted, accompanied by discussion of the work still to be done in the area of standards and methods for the measurement of hearing. Status reports of Working Groups 9, 14, 16, 18, and 19 were accepted.

The Council decided that the general topic, which had been designated as the measurement of hearing, of the next full CHABA meeting should deal specifically with the problems of audiometry in the Armed Forces, including the importance of audiometry, and standards and techniques for

audiometry. Working Group 20 was appointed to plan and execute this program.

A preliminary report of the survey of the open literature on blast was presented to the Council. The problems raised have much in common with those raised with regard to high-intensity noise in the BENOX Report. The Executive Secretary was directed to report the progress made to the Office of the Surgeon General, and to request further information from the Army as to indications of injury by blast to the health or efficiency of crews; data on blast available from Army facilities; and the nature of any presently active Army-sponsored research programs that might pertain to the biological or physiological aspects of the problem.

EIGHTH COUNCIL MEETING: 16 May 1955

Interim reports of Working Groups 2, 16, 18, and 19 were accepted without formal action. A tentative draft of a final report from Working Group 9 was accepted and the Council voted to consider the task of the Working Group completed as soon as a final draft of their report has been submitted, but to request the Working Group to stand by to advise further if a small-scale test with naive listeners reveals unsuspected faults in the material. The Council also voted to express to the Subcommittee on Noise in Industry and to the American Academy of Ophthalmology and Otolaryngology a continuing interest in the use of the sentence material, a desire to be informed periodically on progress in the use of the material, and a willingness to appoint other working groups to advise on problems that may arise.

The Council approved the outline of a program drawn up by Working Group 20 on the subject "Standards and Methods for Testing Hearing in the Armed Forces" to be included in the next Committee meeting, but requested that the scope of the program be enlarged to include discussion of present standards of hearing required for various grades and duties in the Armed Forces.

The Council accepted for review a critical review of the present state of knowledge on the *Effects of Blast Phenomena on Man* that had been prepared by the Office of the Executive Secretary, and voted to publish the review for widespread distribution after appropriate editing. The Council agreed to act as a Working Group to answer those questions submitted by the Army representative with regard to ear protectors and to review a forthcoming Army report on blast problems. The chairman was directed to appoint a Working Group or Groups to answer other questions submitted by the Army representative with regard to blast and noise.

The Council voted to establish a Working Group to coordinate methods for acquiring data about the relations of hearing loss to noise from the various hearing conservation programs in industry and in the Department of Defense.

The Council voted to invite T. L. K. Smull of the National Advisory Committee for Aeronautics and W. A. Rosenblith of Massachusetts Institute of Technology to serve as members-at-large on the Council, beginning 1 July 1955, and drew up a list of names to recommend to the National Research Council for appointment to the Committee on Hearing and Bio-Acoustics for the year beginning 1 July 1955.

SUMMARY OF WORKING GROUP ACTIVITIES**

WORKING GROUP No. 2

"Standards and Methods for the Testing of Hearing"

Status: Active

Requested by: CHABA Council at meeting of
5 May 1953

Purpose: Standards and methods for the testing of hearing were officially recognized as a primary interest of CHABA at the first meeting of the CHABA Council. This area had been of concern to the NRC Committee on Hearing. Pursuant to this interest, the CHABA Council voted on 5 May 1953 to initiate a working group whose first task would be to explore the problems of international standards for audiometry.

Membership: Aram Glorig, Chairman
Willis Beasley*
Richard K. Cook
Elizabeth Guild, Major U.S.A.F.
J. Donald Harris
Ira J. Hirsh*
Gordon D. Hoople
Scott N. Reger*

Meetings: None since 1 June 1954.

Activities: On 7 April 1954 the Working Group recommended measurement of threshold and ear-canal pressure for WE-522 and Permoflux PDR-10 earphones on a small sample of subjects with normal hearing. Also, Dr. Beasley agreed to reexamine his survey data to see if the portion of his normal sample below a given criterion age (e.g. 30, 25, or 20 years) yields a significantly lower average threshold than that reported for the whole group. Neither of these projects has been completed.

A research project that should provide material of great interest to Working Group 2 is now in

* By invitation, not a membe. of CHABA.

** See First Annual Report for Working Groups whose tasks were completed prior to 1 June 1954.

progress at the Audiology and Speech Correction Center and at the National Bureau of Standards. The Project includes related measures of pure-tone thresholds, ear-canal pressures and ear-drum impedances. This work was included in the proposal submitted to the Surgeon General of the Army of the National Bureau of Standards and evaluated by CHABA Working Group 15.

In its search for data on which to base a tentative standard, the Working Group will have access to threshold data for approximately 3600 subjects, taken at the Wisconsin State Fair in the summer of 1954.

A meeting of the Working Group has been scheduled for late June 1955, to discuss and clarify the technical details and differences of opinion concerning methodology, and to clarify their philosophy concerning the appropriate reference standards for audiometry. They will try to formulate areas of agreement on the nature of the problems of audiometry including an international reference standard and the present state of the art, including group audiometry. They will also plan for the presentation of some of their material to the October 1955 meeting of CHABA.

Reports: None since 1 June 1954.

Major Conclusions: (1) European countries are in the process of adopting as standard audiometric zero the thresholds reported by Dadson and King and by Wheeler and Dickson. These thresholds approximate those reported by Sivian and White.

(2) The major differences between the present U. S. standards and the proposed European standards may actually reside a) in the calibration method used for the instruments employed by Dr. Beasley in his U. S. Public Health Survey and b)

in the age groups included as normal in this survey.

(3) Since Dr. Beasley's raw data is still available on IBM cards and since the earphones used

in the survey have been retained in the National Bureau of Standards, both the possibilities raised in conclusion (2) should be examined before further work on U. S. standards is undertaken.

WORKING GROUP No. 9

"Review and Evaluation of a Sample of Everyday Speech"

Status: Active.

Requested by: Letter of 12 November 1953 from Dr. Howard House, Chairman of the Sub-Committee on Noise in Industry, Committee on Conservation of Hearing of the American Academy of Ophthalmology and Otolaryngology.

Purpose: The opinion of CHABA was requested concerning the extent to which certain recordings made at the Central Institute for the Deaf constituted a reasonable sample of "everyday speech." It is contemplated that a test based on these or similar recordings might be used as a primary measure of hearing disability.

Membership: Grant Fairbanks, Chairman

John Black
James F. Curtis*
James P. Egan*
Harold Whitehall*

Meetings: None since 1 June 1954.

Activities: Following the submission to Central Institute for the Deaf of an informal preliminary report containing many specific recommendations for improvement of the samples, the Working Group reviewed in written form a new set of sentences prepared at Central Institute for the Deaf according to these recommendations. Central Institute has recorded these sentences and the

recordings have been reviewed by the Working Group. A final critique and recommendations are in preparation.

Reports: (1) An informal preliminary report containing many specific recommendations for improvement of the samples was submitted to the Central Institute for the Deaf on 1 April 1954.

(2) Approval of a revised list of 200 sentences was given Central Institute for the Deaf in July 1954.

(3) An informal draft of a final report was submitted to the Executive Secretary on 9 May 1955.

Major Conclusions: (1) The material is satisfactory as a sample of the American language. The talkers are nearly although not completely satisfactory. The CID effort is very close to its first stated objective.

(2) The problem is about to pass from the development of material to the questions of how to score performance on it, to construct a test from it, and then to validate the test.

(3) The Working Group recommends that it be disbanded but is ready to stand by to advise further if a small-scale test with naive listeners reveals unsuspected faults in the material.

WORKING GROUP No. 12

"Program for Second Meeting of CHABA"

Status: Discharged.

Requested by: CHABA Council at its meeting on 26 January 1954.

* By invitation, not a member of CHABA.

Purpose: At its meeting on 26 January 1954 the CHABA Council agreed that the general subject for the next CHABA meeting would be "Noise in the Community." A working group was appointed to plan the program.

Membership: Horace O. Parrack, Chairman
Richard H. Bolt
Paul Borsky*
Robert O. Fehr
Henning von Gierke
Uno Ingard*
Wesley Nyborg*
K. N. Stevens*

Meetings: None.

Activities: The Working Group arranged for a joint meeting of CHABA and the Special Subcommittee on Aircraft Noise of the National

Advisory Committee for Aeronautics on 25-26 October 1954.

Reports: The program for the CHABA meeting of 25-26 October 1954 was accepted by the CHABA Council on 24 October 1954 as the report of the Working Group. The proceedings of the CHABA meeting constitute an additional report from the Working Group. Publication of a summary of the scientific proceedings of this meeting was approved by the CHABA Council at its meeting of 28 January, subject to approval by the NACA. This approval has recently been received.

Major Conclusions: None.

WORKING GROUP No. 14

"Navy Group Audiometer Development"

Status: Active (stand-by).

Requested by: Letter in April 1954 from Dr. H. A. Imus.

Purpose: A CHABA working group was requested to provide the Navy with specifications for an automatic group audiometer.

Membership: Edwin B. Newman, Chairman
Ira J. Hirsh, Vice-Chairman*
Robert W. Benson*
Mark B. Gardner*
J. Donald Harris
John C. Webster*
Consultants: A. Glorig, F. Brogan,
C. W. Shilling*, F. Harbert*.

Meetings: 3-4 September 1954, New York, N. Y.

Activities: In order to answer the questions raised in the fifth Council meeting in regard to the task of this working group, Drs. Davis, Eldredge, and Hirsh met with Capt. Shilling and Harbert and Dr. Imus in New York on 21 June 1954. At this conference both the audiometric requirements and the task of the working group were defined. The members of the working group considered the task individually during the summer. They met in New York on 3-4 September

1954 and agreed on a course of action that is spelled out in their report. The recommended test procedure has been recorded on magnetic tape and is now being tried out at the Naval Electronics Laboratory and at the Naval School of Aviation Medicine, Pensacola, Florida. The Working Group is on a standby basis, awaiting the reports of these practical trials.

Reports: A report was presented to the CHABA Council on 24 October 1954.

Major Conclusions: (1) A suitable test for the Navy's purposes should include three basic features: a) it should be given to groups of men; b) it should employ pulsed tones; and c) the listeners should respond by choosing a number representing the number of tones heard in a given group.

(2) A careful review of the requirements by competent engineers and potential suppliers is necessary to formulate specifications for the technical means to be employed in giving the tests.

(3) The Navy should undertake field trials of a test incorporating the features specified in the report, and final performance specifications should be drawn up on the basis of experience gained in these field trials.

* By invitation, not a member of CHABA.

WORKING GROUP No. 15

"Evaluation of National Bureau of Standards Research Proposal of the Army Medical Service"

Status: Discharged.

Meetings: None.

Requested by: Colonel C. S. Gersoni by letter of 22 June 1954.

Purpose: CHABA was requested to evaluate the proposal (entitled "Proposal for Research into Methods for Standardization of Hearing Diagnostic Instruments") submitted by the National Bureau of Standards.

Activities: The evaluation was conducted by mail. The CHABA Council by mail ballot endorsed the report of the Working Group.

Reports: A Letter Report was submitted to Colonel Gersoni on 6 October 1954.

Membership: Hallowell Davis, Chairman
Robert W. Benson*
Raymond Carhart
Harvey Fletcher
J. Donald Harris

Major Conclusions: The research proposal is well conceived, technically sound and carefully planned. The project deserves support.

WORKING GROUP No. 16

"Evaluation of AIA Research Proposals for the Air Force"

Status: (Under consideration by the Chairman).

Requested by: Major H. O. Parrack by letter of 22 June 1954.

Purpose: CHABA has been requested to evaluate five proposals for research on the aircraft noise control problem which had been submitted to the Air Force by the Aircraft Industries Association. A complete evaluation, including esti-

mates as to the adequacy of the programs and, in particular, suggestions as to whether or not they should be broken down into smaller programs, was requested.

Progress: This task was discussed by the CHABA Council. Since the proposals as submitted did not contain enough information to allow an adequate evaluation, Major Parrack was so informed and the Chairman instructed to write a short summary of the Council opinion for the record.

WORKING GROUP No. 17

"A Voice Pitch Analyzer Proposal"

Status: Discharged.

Analyzer" which had been submitted to the Office of Naval Research by Professor Gordon E. Peterson.

Requested by: Dr. H. A. Imus, by letter of 18 August 1954.

Membership: Cyril M. Harris, Chairman
Grant Fairbanks
J. C. R. Licklider

Purpose: CHABA was requested to evaluate a research proposal entitled "A Voice Pitch

Meetings: None.

* By invitation, not a member of CHABA.

Activities: The requested evaluation was made by mail.

Reports: A report of the evaluation was submitted to the CHABA Council on 24 October 1954.

Major Conclusions: (1) Additional research employing pitch extraction devices could provide

valuable information relating to the basic nature of speech.

(2) Certain aspects of the proposal need clarification. Dr. Peterson should be asked to resubmit the proposal after modification in accordance with certain suggestions made by the Working Group.

WORKING GROUP No. 18

"Requirements for Air Base Noise Survey"

Status: Active.

Requested by: Major H. O. Parrack at the CHABA Council meeting of 24 October 1954.

Purpose: CHABA was requested to provide a working group to establish a standard noise survey procedure for Air Force bases.

Membership: Wayne Rudmose, Chairman
Donald H. Eldredge
Henning E. von Gierke
Howard C. Hardy*
Samual Labate*
Kenneth N. Stevens*

Meetings: 5 November 1954, Wright Air Development Center; 18-20 November 1954, Austin, Texas.

Activities: The working group agrees unanimously that the present accumulation of basic knowledge is insufficient to permit reasonably economical routine survey procedures to be devised. A report recommending steps the Air Force can take to hasten the accumulation of the necessary information is being prepared through correspondence and informal conversations among the members of the working group.

Reports: Informal progress reports to the CHABA Council, 28 January and 16 May 1955.

Major Conclusions: None.

WORKING GROUP No. 19

"Method for Real-Ear Evaluation of Ear Protectors"

Status: Active.

Requested by: Major H. O. Parrack at the CHABA Council meeting of 24 October 1954.

Purpose: CHABA was requested to provide a tentative standard method for the real-ear evaluation of ear defenders, for use by the Department of Defense pending the development of a final standard by the American Standards Association.

Membership: (This group had already been working on the problem as Subcommittee

Z-24-W-26 of the American Standards Association).

Ira J. Hirsh, Chairman*
Robert S. Gales
Henning E. von Gierke
Elizabeth Guild, Major, USAF
W. A. Shaw*
Martin L. Touger*
Paul S. Veneklasen*
Douglas E. Wheeler
Josef J. Zwislocki*

Meetings: 18 November 1954, Austin, Texas.

* By invitation, not a member of CHABA.

Activities: A tentative standard has been composed and is being reviewed by the members of the Working Group.

Reports: Progress reports to the CHABA Council, 28 January and 16 May 1955.

Major Conclusions: None yet.

WORKING GROUP No. 20

"Program for Third CHABA Meeting"

Status: Active.

Requested by: CHABA Council, 28 January 1955.

Purpose: A working group was requested to plan and execute the program for the October 1955 meeting of CHABA. The major topic of discussion will be "Audiometry in the Armed Forces."

Membership: Edwin B. Newman, Chairman
Aram Glorig
Hallowell Davis
Raymond Carhart
Advisors: H. Fletcher, C. P. Phoebus

Meetings: 14 May 1955, Chicago, Illinois.

Activities: A tentative program has been outlined and several authorities on hearing standards have been invited to participate.

Reports: None.

Major Conclusions: None.

PUBLISHED REPORTS

"HIGH INTENSITY NOISE AND MILITARY OPERATIONS: AN EVALUATION." 25 January 1954. CHABA Report No. 1.

FIRST ANNUAL REPORT OF THE ARMED FORCES — NATIONAL RESEARCH COUNCIL COMMITTEE ON HEARING AND BIO-ACOUSTICS. 1 June 1954. CHABA Report No. 2.

SECOND ANNUAL REPORT OF THE ARMED FORCES — NATIONAL RESEARCH COUNCIL COMMITTEE ON HEARING AND BIO-ACOUSTICS. 1 June 1955.

OTHER ACTIVITIES SPONSORED BY THE OFFICE OF THE EXECUTIVE SECRETARY.

Dr. Robert Galambos and Dr. Henry A. Imus, affiliated member of the National Institute for Neurological Diseases and Blindness, represented CHABA and the National Research Council at a working conference sponsored by the Office of Vocational Rehabilitation, Department of Health, Education, and Welfare. The conference was entitled "Community Attack on the Hearing Problems of Adults" and considered topics related to the needs for vocational rehabilitation for the deaf and hard-of-hearing, and to the methods and organization of facilities for accomplishing vocational rehabilitation. The topic of greatest interest to CHABA was the announcement of tentative U. S. Public Health Service plans to survey samples of the population to establish more accurately the number of deaf and hard-of-hearing people in the country and the extent to which their affliction handicaps them in obtaining employment.

In a letter to the Army Representative dated 2 September 1954, Colonel C. S. Gersoni of the Office of the Surgeon General, Army, requested information in the following areas:

1. The effects of blast on decrement of performance of crews (field artillery crews, rocket launching crews, guided missile crews, etc.)
2. The effect of blast on behavior of crews.
3. The effect of repeated blast for prolonged

periods of time on the body, with particular reference to pathological conditions produced.

At the Council meeting of 24 October 1954, the CHABA Council requested the Office of the Executive Secretary to review the background literature of interest to these problems. A preliminary oral report was given at the Council meeting of 28 January 1955. A draft of a critical review of the present state of knowledge on these subjects was submitted to the Council at its meeting of 16 May 1955.

At the request of the Navy Representative, by letter of 16 December 1954, the Executive Secretary and the Technical Aide attended as consultants a conference on the Noise Control Program of the Bureau of Aeronautics in Washington, D. C., on 4 January 1955.

At the request of the Navy Representative, by letter of 31 March 1955, the Executive Secretary, with the assistance of Drs. Glorig, House, and Eldredge, and Professor Rosenblith, reviewed the script for a set of three training and indoctrination films dealing with high-intensity noise and ear protection, and made specific suggestions for revision in the interest of accuracy. These suggestions, representing the individual opinions of the above consultants, were forwarded to Captain Phoebus as letter reports dated 29 April and 13 May 1955.