# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection Overview</td>
<td>1</td>
</tr>
<tr>
<td>Administrative Information</td>
<td>1</td>
</tr>
<tr>
<td>Arrangement</td>
<td>2</td>
</tr>
<tr>
<td>Scope and Contents note</td>
<td>2</td>
</tr>
<tr>
<td>Biographical/Historical note</td>
<td>1</td>
</tr>
<tr>
<td>Names and Subjects</td>
<td>2</td>
</tr>
<tr>
<td>Container Listing</td>
<td>3</td>
</tr>
<tr>
<td>Series 1: Correspondence, 1956-1971</td>
<td>3</td>
</tr>
<tr>
<td>Series 2: Personal Papers</td>
<td>4</td>
</tr>
<tr>
<td>Series 3: Research Notes on Artificial Gill</td>
<td>5</td>
</tr>
<tr>
<td>Series 4: Documentation of Success of Gill</td>
<td>7</td>
</tr>
<tr>
<td>Series 5: Patent Ligation</td>
<td>8</td>
</tr>
<tr>
<td>Series 6: Publicity for Gill</td>
<td>9</td>
</tr>
<tr>
<td>Series 7: Ayers Other Projects</td>
<td>10</td>
</tr>
<tr>
<td>Series 8: Related Journals, Magazines, Articles, Brochures, and Catalogs</td>
<td>11</td>
</tr>
</tbody>
</table>
Collection Overview

Repository: Archives Center, National Museum of American History
Title: Waldemar A. Ayres Collection
Identifier: NMAH.AC.0077
Date: 1954-1974
Extent: 3.3 Cubic feet (10 boxes)
Creator: Naval History, Div. of, NMAH, SI
Ayres, Waldemar A., 1909- ((inventor))
Language: English

Administrative Information

Ownership and Custodial History
Transferred from the Division of Naval History, 11/23/83.

Processing Information
Collection processed by David A. Stevens, 1986

Preferred Citation

Restrictions
Collection is open for research.

Conditions Governing Use
Collection items available for reproduction, but the Archives Center makes no guarantees concerning copyright restrictions. Other intellectual property rights may apply. Archives Center cost-recovery and use fees may apply when requesting reproductions.

Biographical Note
Ayres was an inventor who worked independently and for a number of companies. Among his varied research interests were radar, stereo photography, and aircraft navigation systems. In the 1950s-1960s he developed gill-type underwater breathing equipment.
Scope and Contents

Collection deals primarily with Ayres' artificial gill underwater breathing equipment project. Includes correspondence (1956-1971), personal papers, three boxes of research notes, documentation of the success of the invention, and subsequent patents and patent litigation; also publicity for the artificial gill, items from Ayres' other projects, and related periodicals, brochures, articles, etc.

Arrangement

Divided into eight series.

Series 1: Correspondence, 1956-1971
Series 2: Personal Papers
Series 3: Research Notes On Artificial Gills
Series 4: Documentation of Success of Gill
Series 5: Patents and Patent Litigation
Series 6: Publicity For Gill
Series 7: Ayres's Other Projects
Series 8: Related Journals, Magazines, Articles, Brochures, and Catalogs

Names and Subject Terms

This collection is indexed in the online catalog of the Smithsonian Institution under the following terms:

Subjects:
- Gill-type underwater breathing equipment
- Inventors -- 1940-1990
- Naval history
- Periodicals
- Underwater breathing equipment
- Underwater exploration

Types of Materials:
- Correspondence -- 1930-1950
- Patents
- Personal papers
- Research (document genres)
Container Listing

Series 1: Correspondence, 1956-1971

Box 1, Folder 1 Philip V.W. Peck, Patent Attorney, 1957-1965
Box 1, Folder 2 Philip V.W. Peck, Patent Attorney, 1966-1971
Box 1, Folder 3 Miscellaneous Correspondence, 7/1956-9/1959
Box 1, Folder 4 Miscellaneous Correspondence, 1/1961-12/1965
Box 1, Folder 5 Miscellaneous Correspondence, 1/1966-5/1966
Box 1, Folder 6 Miscellaneous Correspondence, 6/1966-12/1969
Box 1, Folder 7 Miscellaneous Correspondence, 1/1970-3-1971
Box 1, Folder 8 Correspondence with Smithsonian Institution, 1966-1967
Series 2: Personal Papers

Box 2, Folder 1  Biographical Materials
Box 2, Folder 2  List of Awards of Ayers' Inventions
Box 2, Folder 3  Lecture "Unsolved Problems of Science", 1954-1955
Series 3: Research Notes on Artificial Gill

Box 2, Folder 4  Bubble Type Gills

Image(s)

[Artificial gills and bubble filter, sketch and notes.], April 9, 1966
1 Item (5.5" x 4.2")

Image(s)

Ayres, Waldemar A., 1909- ((inventor)), Author
On lined paper.

Box 2. folder 4.

Unrestricted research use on site by appointment.

Pencil and ink on paper.

Local Numbers

AC0077-0000001 (AC scan number)

Topic:  Gill-type underwater breathing equipment
        Inventions -- 1960-1970
        Inventors
        Underwater breathing equipment

Box 2, Folder 5  Bubbling

Box 2, Folder 6  Development Program Estimates

Box 2, Folder 7  Published Articles on Artificial Gills

Box 2, Folder 8  Expenses

Box 2, Folder 9  Dow, Corning, & Co.

Box 2, Folder 10  Marine Technology Society

Box 2, Folder 11  Medical

Box 2, Folder 12  Lung Function, Construction, Etc.

Box 2, Folder 13  Helium

Box 2, Folder 14  General Electric-Hamster Silicone

Box 2, Folder 15  Related Published Articles

Box 2, Folder 16  Feasibility

Box 2, Folder 17  Dr. B.R. Bodell

Box 2, Folder 18  "Gills for People" article by Norman Carlisle
Box 2, Folder 19  Miscellaeneous Notes (including magazine and journal articles)
Box 2, Folder 20-25  Membranes
Box 4, Folder 26  Nitrogen Transfer Rate
Box 4, Folder 27-28  Potential In Oceanography (newspaper, magazine clippings)
Box 4, Folder 29  Oxygen Indicator
Box 4, Folder 30  Plaston Respiration, Underwater Insects
Box 4, Folder 31  U.S. Banknote Corp. (U.S. Tech. Dev. Co.)
Box 4, Folder 33-34  Miscellaneous Notes (magazine and journal articles)
Box 5, Folder 35-36  Miscellaneous Notes (magazine and journal articles)
Box 5, Folder 37  Speeches, Lectures by Ayers
Box 5, Folder 38  Miscellaneous, 1965-05-11

Return to Table of Contents
Series 4: Documentation of Success of Gill

Box 6, Folder 1  
Documentation Albums

Box 6, Folder 3  
Successful Test, 1962-08-07

Image(s)


1 Item (5.5" x 4.2")


Ayres, Waldemar A., 1909- ([inventor]), Author
Creelman, George, Photographer

Two photographs by George Creelman stapled to page with typed captions, documenting test of underwater breathing device. Notarized in New York state, seal at bottom left.

Box 6, folder 3.

Unrestricted research use on site by appointment.

Ink on paper.

Local Numbers

AC0077-0000002 (AC scan number)

Topic:  
Gill-type underwater breathing equipment
Inventions -- 1960-1970
Inventors
Notaries
Underwater breathing equipment

Genre/ Form:  
Notar
Photographs -- 1960-1970 -- Black-and-white photoprints
-- Silver gelatin
Typescripts

Box 6, Folder 4  
Photoprints

Return to Table of Contents
Series 5: Patent Litigation

Box 7, Folder 1  Application (Actions/Correspondence), 1956-03-09
Box 7, Folder 2  Continuation in part of Application, 1956-03-09
Box 7, Folder 3  Patent Drawings and Application Foreign Countries
Box 7, Folder 4  Foreign Patents
Box 7, Folder 5  Patent Drawing
Box 7, Folder 6  Gill-Type Diving Equipment, Specification
Box 7, Folder 7  Legal Ownership of Gill-Type Underwater Breathing Equipment
Box 7, Folder 8  Patent t for Artificial Gill
Box 7, Folder 9  Patent Interference Litigation-Vind vs. Ayers, Preliminary Statements
Box 7, Folder 10  Patent Interference Litigation, Preliminary Statement; Exhibitions-Originals and Copies
Box 7, Folder 11  Patent Interference Litigation, Ayers', 1969-12-24
Box 7, Folder 11  Letter to President Nixon
Box 7, Folder 12  Patent Interference Litigation, Miscellaneous
Box 7, Folder 13  Patent Claims Amended
Box 7, Folder 14  Miscellaneous Patent Materials
Box 7, Folder 15  Miscellaneous Patent Materials

Return to Table of Contents
Series 6: Publicity for Gill

Box 8, Folder 1  (Includes correspondence in response to publicity)

Return to Table of Contents
Series 7: Ayers Other Projects

Box 8, Folder 1    The "Navy Bat"

Box 8, Folder 2    Synthetic Emeralds

Return to Table of Contents
Series 8: Related Journals, Magazines, Articles, Brochures, and Catalogs

Box 9  Related Journals, Magazines, Articles, Brochures, and Catalogs

Box 10  Related Journals, Magazines, Articles, Brochures, and Catalogs

Return to Table of Contents