

REFERENCE REPORT

PROJECT BLUE BOOK

Textual records of Project BLUE BOOK (the documentation relating to investigations of unidentified flying objects), excluding names of people involved in the sightings, are now available for research in the National Archives Building. The records include approximately 2 cubic feet of unarranged project or administrative files, 37 cubic feet of case files in which individual sightings are arranged chronologically, and 3 cubic feet of records relating to the Office of Special investigations (OSI), portions of which are arranged chronologically, by OSI district, and by overseas command. A cubic foot of records comprises about 2,000 pages.

Finding aids for these records include a file list for the project files and an index to individual sightings, entered by date and location.

Access to BLUE BOOK textual records is by means of 94 rolls of 35mm microfilm (T-1206) in the National Archives Microfilm Reading Room. The first microfilm roll includes a list of contents for all of the rolls and the finding aids. Photographs scattered among the textual records have also been filmed separately on the last two rolls.

Requests for copies of individual rolls of microfilm (\$23 each) should be addressed to the National Archives Trust Fund Board, PO Box 100793, Atlanta, GA 30384. Requests for the 19-page report summarizing Project BLUE BOOK, dated March 1967, may be placed with the Archives II Textual Reference Branch (NNR2), National Archives at College Park, 8601 Adelphi Rd, College Park, MD 20740-6001. The cost of photocopy orders is \$.25 per page, with a minimum order cost of \$6. Remittance should be made payable to the National Archives Trust Fund.

Motion picture film, sound recordings, and some still pictures are maintained by the Motion Picture & Sound & Video Branch (NNSM) and the Still Picture Branch (NNSP).

RG 341, Records of Headquarters United States Air Force

Project BLUE BOOK

National Archives and Records Service
General Services Administration
Washington, D.C.

1976

Project BLUE BOOK
Microfilm Rolls Index

CASE FILES OF INDIVIDUAL SIGHTINGS

<u>Roll No.</u>	<u>File No.</u>	<u>Date</u>	<u>Location</u>
1	Index 1 - 54	Summer 1947 - 7/9/47	Information File - Midland, MI
2	55 - 179	7/9/47 - 7/24/48	Grand Falls, Newfoundland - AL
3	180 - 271	7/26/48 - December 1948	Chamblee, GA - Kirtland AFB, NM
4	271 - 342	December 1948 - 4/9/49	Kirtland AFB, NM - Rockford, IL
5	343 - 443	4/9/49 - 6/26/49	Toledo, OH - Pennsylvania, OH
6	444 - 599	6/27/49 - 11/25/49	Kirtland AFB, NM - Mt. Palomar, CA
7	600 - 848	11/27/49 - 12/6/50	McIntosh, NM - Ft. Myers, FL
8	849 - 1011	12/9/50 - 12/9/51	London, England - Andrews AFB, MD
9	1012 - 1187	12/10/51 - 5/7/52	Riverside, CA - Rio de Janeiro, Brazil
10	1188 - 1376	5/8/52 - 7/1/52	31.20N70.00W(Atlantic) - Phoenix, AZ
11	1377 - 1494	7/2/52 - 7/19/52	Tremonton, UT --Elkins Park, PA
12	1495 - 1673	7/19/52 - 7/28/52	Rock Island, IL - Washington, DC
13	1673 - 1836	7/28/52 - 8/5/52	Washington, DC - Westover AFB, MA
14	1837 - 1999	8/5/52 - 8/27/52	Malaya - Birmingham, AL
15	2000 - 2167	8/27/52 - 10/15/52	Baltimore, MD - Bay of Bengal
16	2168 - 2300	10/16/52 - 12/27/52	Korea - Canadian, TX
17	2301 - 2505	12/28/52 - 3/19/53	Albuquerque, NM - Harmon AFB, Newfoundland
18	2506 - 2615	3/19/53 - 7/2/53	Crystal Lake, OH - Tinker AFB, OK
19	2616 - 2792	7/3/53 - 11/16/53	Fremont, WI - Catalina, CA
20	2793 - 3024	11/7/53 - 5/24/54	New York, NY - Richmond, IN

<u>Roll No.</u>	<u>File No.</u>	<u>Date</u>	<u>Location</u>
41	7129 - 7321	11/23/60 - Spring 1961	Kansas City, KS - Kemah, TX
42	7322 - 7508	3/14/61 - 7/19/61	San Diego, CA - Hamilton, OH
43	7509 - 7641	7/20/61 - 9/20/61	39.30N 125.58W (Pacific) - Lincoln, NH
44	7641 - 7818	9/20/61 - 2/25/62	Lincoln, NH - Kotzebue, AK
45	7819 - 7970	2/26/62 - July 1962	9.14N90.32W(Panama Canal) - North Brunswick, NJ
46	7971 - 8180	July 1962 - 10/22/62	Glenside, PA - 65.20N28.50W(Atlantic)
47	8181 - 8366	10/23/62 - 5/26/63	60.14N13.36W(Atlantic) - Gulf of Mexico
48	8367 - 8512	5/28/63 - 8/13/63	Philadelphia, PA - Borger, TX
49	8513 - 8700	8/13/63 - 2/23/64	Smithland, IA - Philadelphia, PA
50	8701 - 8848	2/24/64 - 5/30/64	California & Oregon - COMANVSUP for Antarctica
51	8849 - 8968	5/30/64 - 7/25-26/64	Orangeville, CA - Hamilton, MT
52	8969 - 9148	7/27/64 - 10/30/64	Norwich, NY - Yorkshire, England
53	9148 - 9312	10/30/64 - 3/12-13/65	Yorkshire, England - Brooklyn, NY
54	9313 - 9462	3/13/65 - 7/4/65	Rochester, NY - Taiwan
55	9463 - 9647	7/4/65 - 8/2/65	Bloomsburg, PA - Albuquerque, NM
56	9648 - 9786	8/2/65 - 8/15/65	Florence, AZ - Thackery, OH
57	9787 - 9902	8/15/65 - 9/4/65	Dayton, OH - Pittsburgh, PA
58	9903 - 10043	9/4/65 - 10/27/65	Ketchikan, AK - Newton Center, MA
59	10044 - 10216	10/27/65 - 3/1/66	Cloverdale, OH - Stafford Springs, CT
60	10217 - 10345	3/1/66 - 3/31/66	Beloit, WI - Utica, NY

<u>Roll No.</u>	<u>File No.</u>	<u>Date</u>	<u>Location</u>
61	10346 - 10479	3/31/66 - 4/22/66	Rehoboth, MA - Middlebury, VT
62	10480 - 10622	4/22-29/66 - 6/5/66	Leeburg, FL - Dexter, OH
63	10623 - 10764	6/6/66 - 7/19/66	Sahanna, OH - Houston, TX
64	10765 - 10870	7/19/66 - 8/18/66	Del Paso Hts, CA - Xenia & Dayton, OH
65	10871 - 10982	8/18/66 - 10/1/66	Deluth, MN - Dayton, OH
66	10983 - 11106	10/2/66 - 10/30/66	Colorado Springs, CO - Youngsville, NY
67	11107 - 11245	10/30/66 - 12/66	West Chester, PA - Additional Sightings
68	11246 - 11357	1967 - 2/12/67	Los Angeles, CA - Deluth, MN
69	11358 - 11468½	2/12/67 - 3/1-4/67	Cheltenham, MD - Additional Sightings
70	11468½ - 11593	3/1-4/67 - 4/1/67	Additional Sightings - Tucson, AZ
71	11594 - 11699	4/1/67 - 4/30/67	South Wellington, TX - Newburg, NY
72	11700 - 11801	4/30/67 - 6/20/67	Austin, TX - Denver, IA
73	11802 - 11909	6/20/67 - 6/31/67	Dayton, OH - Indianapolis, IN
74	11909A - 12010	6/31/67 - 9/21/67	Indianapolis, IN - Nashville, TN
75	12011 - 12082	9/21-29/67 - 10/24/67	Additional Sightings - Blytheville AFB, AR
76	12083 - 12170	10/24/67 - 12/5-11/67	Greenville, OH - Additional Sightings
77	12171 - 12270	12/12/67 - 3/6/67	Tyler, TX - Traverse, City, MI
78	12271 - 12328	March-April - 4/21/67	Additional Sightings - Kettering, OH
79	12329 - 12381-E	4/23/67 - July 1967	San Bernardino, CA - Dayton, OH
80	12381-F - 12452½	July 1967 - 7/15/68	Dayton, OH - Yellow Springs, OH

<u>Roll No.</u>	<u>File No.</u>	<u>Date</u>	<u>Location</u>
81	12452½ - 12545	7/15/68 - 10/26/68	Yellow Springs, OH - Manchester, NH
82	12546 - 12628	10/26/68 - 2/10/69	Boone, NC - St. Louis, MI
83	12629 - 12711	2/10/69 - 8/24/69	Pine Bluff, AR - Dayton, OH
84	12712 - 12750	8/26/69 - December 1969	Dayton, OH - Round Lake, IL

PROJECT (ADMINISTRATIVE) FILES

85 Administrative Files: Box 1

Technical Report, "Unidentified Aerial Objects, Project SIGN,"
Feb. 1949: 74 pp.

Technical Report, "Unidentified Flying Objects, Project GRUDGE,"
Aug. 1949: 408 pp.

Final Report, Project TWINKLE, 27 Nov. 1951: 25 pp.

Status Reports and Special Reports, GRUDGE - BLUE BOOK

Report 1: 33 pp.	Report 7: 28 pp.
Report 2: 29 pp.	Report 8: 40 pp.
Report 3: 11 pp.	Report 9: 46 pp.
Report 4: 19 pp.	Report 10: 81 pp.
Report 5: 17 pp.	Report 11: 34 pp.
Report 6: 20 pp.	Report 12: 35 pp.

(All reports are Status Reports; Report 1 includes Special Report 1)

86 Administrative Files : Box 2

Staff Study - 1952 (Capt. Rupelt): 49 pp.

AISS folder (Miscellaneous dates): 53 pp.

AFCIN Plan on UFO's (May 1957 - Feb. 1958): 11 pp.

Staff Study, Dec. 1958: 36 pp.

FTD UFO Panel (1959-1960): 25 pp.

Review of Motion Picture "Unidentified Flying Objects" (1960):
17 pp. plus newspaper clippings

Staff Study, 28 Sept. 1959: 58 pp.

Proposed Transfer to SAFOI (Dec. 1959 - April 1960): 20 pp.

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Proposed Transfer to ARDC (Feb. 1960 - April 1962): 15 pp.

Deputy Director File Jan. 1961: 39 pp.

Untitled folder containing copies of Air Force Regulation 30-17 w/Revisions (1966-1968): 11 pp.

Summary to Project BLUE BOOK (Jan. 1956): 3 pp.

First Status Report, Project STORK (Preliminary Work for Special Report #14), April 25, 1952: 102 pp.

Special Report No. 14 (May 5, 1955): 315 pp.

Correspondence and miscellaneous file relating to Special Report No. 14: 54 pp.

Administrative Files: Box 3

Dr. Fitts' Reports (April 1949): 17 pp.

USAFE "Aids to Identification of Flying Objects" (1957): 57 pp.

Untitled folder of photographs, containing about 50-60 photos, mostly of USAF personnel, with many duplicates.

Advisory Panel on the Scientific Use of Balloons Meeting - 15 Nov. 1965: 78 pp.

Sub-Committee Hearing, March 1966 (USAF SAB): 40 pp.

S.A.B. and Recommendations 1966: 31 pp.

USAF Test Group: UFO Material 19 Sept. 1966 - 25 Oct. 1969: 30 pp.

Foreign Technology Division: "Soviet Effort to Contact Extraterrestrial Life," 3 Feb. 1967: 67 pp.

87 Project BLUE BOOK (USAF SAB, 3 Feb. 1966): 137 pp.

Administrative Files: Box 4

ATIC UFO Briefing 1 April 1952: 44 pp.

Press Conference - Gen. Samford 1952: 42 pp.

Capt. Ruppelt ADC Briefing 24 Jan. 1953: 29 pp.

Standard BLUE BOOK Briefing, 9 Feb. 1953: 18 pp.

Indoctrination D/I Representatives, 18-19 Feb. 1957: 2 pp.

McClellan Sub-Committee Hearings, Feb. - March 1958: 4 pp.

20 June 1958 Briefing, Representative Henderson: 16 pp.

8 Aug. 1958 McCormack Sub-Committee Briefing: 30 pp.

Proposed Hearing 1961 (Including Mr. Hine's Visit): 17 pp.

11-15 July 1960: Congressional Briefings (Mr. R. Smart): 21 pp.

Eglin AFB Briefing by Dr. Hynek (27 April 1960): 39 pp.

Briefing AFIT by Lt. Col. Friend, 9 Feb. 1961: 6 pp.

UFO Briefing - Troy Ohio, 14 March 1961: 6 pp.

UFO Briefing 29 Oct. 1962 - 30 Jan. 1963; 40 pp.

FTD Correspondence Folder, 10 July - 1 Aug. 1963: 27 pp.

The UFO Program to the American Society of Newspaper Editors,
22 April 1967: 21 pp.

Briefing 7 July 1967 to Gen. Garland: 24 pp.

August 1952 Air Intelligence Digest Article (Ruppelt): 34 pp.

AVRO Car Folder: 8 pp.

UFO Policy Meeting, Feb. 1959: 27 pp. (Note: All materials this
folder marked "For Official Use Only")

ATI School Training Lecture, "The UFO Program" (1957): 54 pp.

Armstrong Circle Theater, "UFO: Enigma of the Skies," Broadcast
of 22 Jan. 1958: 78 pp.

Col. Tacker Radio Interview, Dec. 1960, on "Washington Viewpoint:" 13 pp.

Committee on Science and Astronautics (1961): 150 pp. publications
€ 2 pp. per reproduction; 6 pp. other material

Library of Congress Legislative Reference Service: "Facts About UFO's,"
5 May 1966: 48 pp.

D.O.D. News Releases and Fact Sheet (1952-1968): 185 pp.

INSPECTOR GENERAL, USAF
OFFICE OF SPECIAL INVESTIGATIONS (OSI)

<u>Roll No.</u>	<u>File</u>	<u>Date or Location</u>
88	Chronological Files	9/9/48 - 8/31/49
89	Chronological Files District Files, 1949-67	9/14/49 - 10/5/62 District 1 - Westover AFB, MA District 2 - New York, NY District 3 - Harrisburg, PA
90	District Files, 1949-67	District 3 - Harrisburg, PA District 4 - Bolling AFB, DC District 5 - Wright-Patterson AFB, Dayton, OH District 6 - Robins AFB, Robins Field, GA District 7 - MacDill AFB, Tampa, FL District 8 - Maxwell AFB, AL District 9 - Barksdale AFB, LA District 10 - Kelly AFB, Kelly Field, TX District 11 - Tinker AFB, Oklahoma City, OK District 12 - Scott AFB, IL District 13 - Offutt AFB, Omaha, NE District 14 - Lowry AFB, Denver, CO District 15 - Great Falls, AFB, MT District 16 - Hill AFB, Hill Field, UT District 17 - Kirtland AFB, NM District 18 - USAF Specialized Depot, Maywood, CA District 19 - Fairfield-Suisun AFB, CA District 20 - McChord AFB, WA
91	District Files, 1949-67	District 21 - Langley AFB, Langley Field, VA District 22 - Griffiss AFB, Rome, NY District 23 - Carswell AFB, FT. Worth, TX District 24 - Chicago, IL District 25 - Selfridge AFB, MI District 26 - No Records District 27 - Ramey AFB, PR
92	District Files, 1949-67 Overseas Commands, 1949-68	Alaskan Air Command Caribbean Command Far East Air Forces USAF in Europe Military Air Transport Service Newfoundland Base Command

PHOTOGRAPHS

Roll No.

File No.

Date

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Case File Nos. 10 - 4715

6/24/47 - 5/2/57

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Case File Nos. 4750 - 12615
OSI Files

5/2/57 - February 1969

Artifacts Removed from Project BLUE BOOK Sighting Case Files

Record Group 341

Item Number	Item	File Reference	Location
341-1-465	Project Bluebook 1. Aug. 1954 2. Lafayette, Indiana 3. Observer- 4. Small pieces of metal fused together	File # 1003409	Box 42 12W2 8/5/A
341-2-466	1. May 20, 1955 2. Alexandria, Minn. 3. Civilian observer 4. Rock	File # 1003426	Box 45 12W2 8/5/B
341-3-467	1. May 27, 1955 2. Englewood, Ohio 3. Observer- 4. Large Rock	File # 1003427	Box 45 12W2 8/5/B
341-4-468	1. July 7, 1955 2. Baltimore, Maryland 3. Observer - Multi 4. 2 small bottles of chemical compound	File # 1003430	Box 46 12W2 8/5/B
341-5-469	1. Nov. 27, 1957 2. Middletown, Ohio 3. Observer 4. beads and small pieces of metal	File # 1003488	Box 57 12W2 8/5/D
341-6-470	1. Dec. 5, 1957 2. New Orleans, La. 3. Observer 4. H-131 Parachute Flare	File # 1003491	Box 58 12W2 8/5/D
341-7-472	1. June 3, 1958 2. Marshalltown, Iowa 3. Observer: 4. Volcanic Debris	File # 1003503	Box 62 12W2 8/5/D
341-8-472	1. Aug. 8, 1958 2. Wadsworth, Ohio 3. Observer: 4. Yellow Brass Tubing	File # 1003507	Box 63 12W2 8/5/D
341-9-473	1. Oct. 10, 1958 2. Temple, Oklahoma 3. Observer: 4. Weather balloon	File # 1003514	Box 64 12W2 8/5/E

Record Group 341

Item Number	Item	File Reference	Location
341-10-474	Project Bluebook 1. Feb. 7, 1959 2. Jackson, Tenn. 3. Observer: REDACTED 4. balloon	File # 1003524	Box 66 12W2 8/5/E
341-11-475	1. July 28, 1959 2. S.E. of Dayton, Ohio 3. Observer: REDACTED 4. Coke (pieces)	File # 1003536	Box 68 12W2 8/5/E
341-12-476	1. Dec. 5, 1957 2. New Orleans, La. 3. Observer: REDACTED 4. Part of flare	File # 1003492	Box 58 12W2 8/5/D
341-13-477	1. April 12, 1960 2. LA Camp, La 3. Observer: REDACTED 4. Rocket	File # 1003549	Box 71 12W2 8/6/A
341-14-478	1. Oct. 12, 1960 2. Sweetwater, South Carolina 3. Observer: REDACTED 4. Remains of roll on deodorant stick	File # 1003566	Box 75 12W2 8/6/A
341-15-479	1. Sept. 1961 2. Connoisville, Ind. 3. No recorded observer 4. Large Rock	File # 1003592	Box 79 12W2 8/6/B
341-16-480	1. April, 1962 2. West Manchester, Ohio 3. Observer: REDACTED 4. Granite	File # 1003603	Box 81 12W2 8/6/B
341-17-481	1. Sept. 1962 2. Snolomish, Washington 3. Observer not listed 4. Wire	File # 1003614	Box 84 12W2 8/6/B
341-18-482	1. Sept. 5, 1962 2. Priest Lake, Idaho 3. Observer: REDACTED 4. Cinder Block	File # 1003615	Box 84 ³ 12W2 8/6/B
341-19-484	1. Sept. 13, 1962 2. Newark, Ohio 3. Observer: REDACTED 4. Object from steel processing	File # 1003617	Box 84 12W2 8/6/B

35 mm film

Item Number	Item	Record Group 341	File Reference	Location
341-20-484	Project Bluebook 1. Oct. 20, 1962 2. Bristol Rhode Island 3. Observer: James R. [redacted] 4. Nylon Residue		File # 1003622	Box 85 12W2 8/6/C
341-21-485	1. Aug. 12, 1963 2. Cleveland, Ohio 3. Observer: James R. [redacted] 4. Salt crystals		File # 1003637	Box 88 12W2 8/6/C
341-22-486	1. June 15, 1964 2. St. George De Bouce, P.O., Canda 3. Observer: RCMP 4. Rocks & stones		File # 1003653	Box 12W2 8/6/D
341-23-487	1. Sept. 4, 1964 2. Glassboro, N. J. 3. James R. [redacted] 4. Rocks		File # 1003665	Box 95 12W2 8/6/D
341-24-488	1. Sept. 5, 1964 2. Sacramento, California 3. Observer: James R. [redacted] 4. Arrowhead		File # 1003666	Box 95 12W2 8/6/D
341-25-489	1. Oct. 12, 1964 2. Europe 3. Observer: James R. [redacted] 4. Meteorite Material		File # 1003668	Box 96 12W2 8/6/D
341-26-490	1. April 1, 1966 2. Salem, Arkansas 3. Observer: James R. [redacted] 4. Radar Chaff		File # 1003720	Box 109 12W2 8/7/A
341-27-491	1. July 7, 1955 2. Baltimore, Md. 3. Observer: Multi 4. Pieces of sticks		File # 1003429	Box 46 12W2 8/5/B
341-28-492	1. July 16-19-30, 1956 2. Van Nuys, Cal. 3. Observer: James R. [redacted] 4. Burned sod		File # 1003443	Box 49 12W2 8/5/B

341-29-493

1. Oct. 1-14, 1957
2. Los Angeles, Cal.
3. Observer: [REDACTED]
4. Plugs

File # 1003471

Box 54
12W2
8/5/C

341-30-494

1. Jan. 17-18, 1958
2. Tulsa, Oklahoma
3. Observer: [REDACTED]
4. Pipe Cleaning Anode

File # 1003495

Box 59
12W2
8/5/D

PROJECT

**BLUE
BOOK**

1 MARCH 1967

PROJECT BLUE BOOK

The United States Air Force has the responsibility under the Department of Defense for the investigation of unidentified flying objects (UFOs). The name of this program, which has been in operation since 1948, is Project Blue Book. It has been identified in the past as Project SIGN and Project GRUDGE.

Air Force interest in unidentified flying objects is related directly to the Air Force responsibility for the air defense of the United States. Procedures for conducting this program are established by Air Force Regulation 80-17.

The objectives of Project Blue Book are two-fold: first, to determine whether UFOs pose a threat to the security of the United States; and, second, to determine whether UFOs exhibit any unique scientific information or advanced technology which could contribute to scientific or technical research. In the course of accomplishing these objectives, Project Blue Book strives to identify and explain all UFO sightings reported to the Air Force.

HOW THE PROGRAM IS CONDUCTED

The program is conducted in three phases. The first phase includes receipt of UFO reports and initial investigation of the reports. The Air Force base nearest the location of a reported sighting is charged with the responsibility of investigating the sighting and forwarding the information to the Project Blue Book Office at Wright-Patterson Air Force Base, Ohio.

If the initial investigation does not reveal a positive identification or explanation, a second phase of more intensive analysis is conducted by the Project Blue Book Office. Each case is objectively and scientifically analyzed, and, if necessary, all of the scientific facilities available to the Air Force can be used to assist in arriving at an identification or explanation. All personnel associated with the investigation, analysis, and evaluation efforts of the project view each report with a scientific approach and an open mind.

The third phase of the program is dissemination of information concerning UFO sightings, evaluations, and statistics. This is accomplished by the Secretary of the Air Force, Office of Information.

The Air Force defines an unidentified flying object as any aerial object or phenomenon which the observer is unable to identify.

Reports of unfamiliar objects in the sky are submitted to the Air Force from many sources. These sources include military and civilian pilots, weather observers, amateur astronomers, business and professional men and women, housewives, etc.

Frequently, such objects as missiles, balloons, birds, kites, searchlights, aircraft navigation and anticollision beacons, jet engine exhaust, condensation trails, astronomical bodies, and meteorological phenomena are mistakenly reported as unidentified flying objects.

The Air Force groups its evaluations of UFO reports under three general headings: (1) IDENTIFIED, (2) INSUFFICIENT DATA, and (3) UNIDENTIFIED.

IDENTIFIED reports are those for which sufficient specific information has been accumulated and evaluated to permit a positive identification or explanation of the object.

Reports categorized as INSUFFICIENT DATA are those for which one or more elements of information, essential for evaluation, are missing. Some examples are the omission of the duration of the sighting, date, time, location, position in the sky, weather conditions, and the manner of appearance or disappearance. If an element is missing and there is an indication that the sighting may be of a security, scientific, technical, or public interest value, the Project Blue Book Office conducts an additional investigation and every attempt is made to obtain the information necessary for identification. However, in some instances, essential information is requested from the observer and is never received; therefore, no further action can be taken.

The third and by far the smallest group of evaluations is categorized as UNIDENTIFIED. A sighting is considered unidentified when a report apparently contains all pertinent data necessary to suggest a valid hypothesis concerning the cause or explanation of the report, but the description of the object or its motion cannot be correlated with any known object or phenomena.

TYPES OF UFO IDENTIFICATIONS AND EVALUATIONS

There are various types of UFO sightings. Most common are reports of astronomical sightings, which include bright stars, planets, comets, fireballs, meteors, auroral streamers, and other celestial bodies. When observed through haze, light fog, moving clouds, or other obscurations or unusual conditions, the planets, including Venus, Jupiter, and Mars, have been reported as unidentified flying objects. Stellar mirages are also a source of reports.

Satellites are another major source of UFO reports. An increase in satellites reported as UFOs has come about because of two factors. The first is the increase of interest on the part of the public; the second is the increasing number of satellites in the skies. Positive knowledge of the location of all satellites at all times enables rapid identification of satellite sightings. Keeping track of man-made objects in orbit about the earth is the responsibility of the North American Air Defense Command Space Detection and Tracking System at Ent AFB, Colorado. This sophisticated electronics system gathers complex space traffic data instantly from tracking stations all over the world.

Other space surveillance activities include the use of ballistic tracking and large telescopic cameras. ECHO schedules of the South/North equator crossings are prepared by the Smithsonian Institution at Cambridge, Massachusetts. From the data produced by these agencies, satellites mistakenly reported as UFOs can be identified quickly. Some of these are visible to the naked eye.

Aircraft account for another major source of UFO reports, particularly during adverse weather conditions. When observed at high altitudes and at some distance, aircraft can have appearances ranging from disc to rocket shapes due to the reflection of the sun on their bright surfaces. Vapor or condensation trails from jet aircraft will sometimes appear to glow fiery red or orange when reflecting sunlight. Afterburners from jet aircraft are often reported as UFOs since they can be seen from great distances when the aircraft cannot be seen.

The Project Blue Book Office has direct contact with all elements of the Air Force and the Federal Aviation Agency civil air control centers. All aerial refueling operations and special training flights can be checked immediately. Air traffic of commercial airlines and flights of military aircraft are checked with the nearest control center, enabling an immediate evaluation of aircraft mistakenly reported as UFOs. However, since many local flights are not carried, these flights are probable causes of some reports.

Balloons continue to be reported as UFOs. Several thousand balloons are released each day from military and civilian airports, weather stations, and research activities. There are several types of balloons - weather balloons, rawinsondes, radiosondes, and the large research balloons which have

diameters up to 300 feet. At night, balloons carry running lights which cause an unusual appearance when observed. Reflection of the sun on balloons at dawn and sunset sometimes produces strange effects. This usually occurs when the balloon, because of its altitudes, is exposed to the sun. Large balloons can move at speeds of over 100 miles per hour when moving in high altitude jet windstreams. These balloons sometimes appear to be flattened on top. At other times, they appear to be saucer shaped and to have lights mounted inside the bag due to the sun's rays reflecting through the material of the balloon. The Balloon Control Center at Holloman Air Force Base, New Mexico, maintains a plot on all military upper air research balloons.

Another category of UFO evaluations labeled Other includes missiles, reflections, mirages, searchlights, birds, kites, spurious radar indications, hoaxes, fireworks, and flares.

Aircraft, satellites, balloons, and the like should NOT be reported since they do not fall within the definition of an unidentified flying object.

CONCLUSIONS

To date, the firm conclusions of Project Blue Book are: (1) no unidentified flying object reported, investigated, and evaluated by the Air Force has ever given any indication of threat to our national security; (2) there has been no evidence submitted to or discovered by the Air Force that sightings categorized as UNIDENTIFIED represent technological developments or principles beyond the range of present-day scientific knowledge; and (3) there has been no evidence indicating that sightings categorized as UNIDENTIFIED are extraterrestrial vehicles.

The Air Force will continue to investigate all reports of unusual aerial phenomena over the United States. The services of qualified scientists and technicians will continue to be used to investigate and analyze these reports, and periodic reports on the subject will be made.

The Air Force takes no stand on whether or not extraterrestrial life could or does exist. Scientists believe that it is entirely possible that the universe contains life on planets other than our own. No evidence yet exists that there is other life. The Air Force continues to extend an open invitation to anyone who feels that he possesses any evidence of extraterrestrial vehicles operating within the earth's space envelope to submit his evidence for analysis. Initial contact for this purpose is through the following address:

PROJECT BLUE BOOK INFORMATION OFFICE
SAFOI
WASHINGTON, D.C. 20330

Anyone observing what he considers to be an unidentified flying object should report it to the nearest Air Force Base. Persons submitting a UFO report to the Air Force are free to discuss any aspect of the report with anyone. The Air Force does not seek to limit discussion on such reports and does not withhold or censor any information pertaining to this unclassified program.

The following items are for internal use only and are not available for distribution to the public. These concern internal management and procedures for forwarding UFO reports to the appropriate agency. The Air Force has no objection to persons visiting Air Force bases and reading them:

1. Air Force Regulation 80-17
2. JANAP 146E

The Air Force has no films or photographs that indicate our planet has been visited by extraterrestrial vehicles. Photographs that have been submitted for evaluation in conjunction with UFO reports have undergone intensive photographic analyses and none have provided evidence that substantiate the presence of extraterrestrial vehicles. Many widely circulated photographs have never been submitted to the Air Force for comprehensive analyses. The Air Force returns all original photographs and negatives to the owners upon completion of analyses.

The Air Force possesses only record copies, and thus does not have for distribution outdated reports on Project SIGN, Project GRUDGE, or Blue Book Special Report No. 14. Copies can be made by the Project Blue Book Information Office at the expense of the requester at a rate of twenty-five cents per page. Project Blue Book Special Report No. 14 contains 323 pages; Project SIGN, 44 pages; and Project GRUDGE, 405 pages. Each report must be reproduced in its entirety.

READING MATERIAL

The non-military publications listed below may be obtained from the publishers, not the Air Force. Some may be found in local libraries. They deal with facts and theories about our solar system (the sun, planets, comets, meteorites, the universe, stars, constellations, and galaxies); telescopes; the computation of time as it relates to astronomy; starmaps and charts; the history of astronomy; and information on optics and lights.

SKY & TELESCOPE, by Sky Publishing Corporation, Harvard College Observatory, Cambridge, Massachusetts 02138. Monthly Magazine, 60 cents per copy.

WEATHER ELEMENTS, by BLAIR, THOMAS A., published by Prentice-Hall. Has an excellent chapter on often misidentified weather phenomena.

PLANETS, STARS, AND SPACE, by CHAMBERLAIN, JOSEPH M. & NICHOLSON, THOMAS D. An illustrated, non-technical explanation of the earth, planets, stars, and the universe. Prepared in co-operation with the American Museum of Natural History.

JUNIOR SCIENCE BOOK OF STARS, by CROSBY, PHOEBE. An easy-to-read, exciting story of what scientists know about the stars, planets, and the moon.

CHALLENGE OF THE UNIVERSE, by HYNEK, J. ALLEN & ANDERSON, NORMAN. Discusses the nature of the universe; astronomy, and cosmology, published by Scholastic Press.

THE STORY OF THE STARS, by MALONEY, TERRY. An introduction to the universe; our solar system, our galaxy, and other galaxies. Many interesting illustrated analogies help build concepts of size and distance. Includes references to the Van Allen radiation belts and zodiacal light observation of 1960.

THE WORLD OF FLYING SAUCERS, by MENZEL, DONALD H. & BOYD, LYLE G. A scientific examination of the classic UFO reports.

THE MOON, METEORITES, AND COMETS, 1963, by MIDDLEHURST & KUIPER. Contains analyses of Soviet moon photos, a chapter on a Siberian meteorite, photos of comets, and computation of various comet orbits.

THE NATURE OF LIGHT AND COLOUR IN THE OPEN AIR, by MINNAERT, M., Dover Publications. This is an excellent paperback written in understandable layman's language.

METEORS, by OLIVIER, CHARLES P., a standard text by foremost authority on meteors.

PHOTOGRAPHIC HISTORY OF MARS, 1905-1961, by SLIPHER, E. C., published by Lowell Observatory.

ANATOMY OF A PHENOMENON, by VALLE, JACQUES.

FIRST MAN TO THE MOON, by von BRAUN, WERNHER.

TOTAL UFO (OBJECT) SIGHTINGS

(Compiled 15 Feb 67)

<u>YEAR</u>	<u>TOTAL SIGHTINGS</u>	<u>UNIDENTIFIED</u>	<u>SOURCE</u>
1947	122	12	Case Files
1948	156	7	Case Files
1949	186	22	Blue Book, Page 108
1950	210	27	Case Files
1951	169	22	Case Files
1952	1,501	303	Blue Book, Page 108
1953	509	42	Case Files
1954	487	46	Case Files
1955	545	24	Case Files
1956	670	14	Case Files
1957	1,006	14	Case Files
1958	627	10	Case Files
1959	390	12	Case Files
1960	557	14	Case Files
1961	591	13	Case Files
1962	474	15	Case Files
1963	399	14	Case Files
1964	562	19	Case Files
1965	887	16	Case Files
1966	<u>1,060</u>	<u>30</u>	Case Files
TOTAL	11,108	676	

STATISTICAL DATA FOR YEARS 1953-1965

TOTAL CASES BY CATEGORY

(Compiled 15 Feb 67)

	1953	1954	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	TOTAL
Astronomical	175	137	135	222	341	231	144	235	203	136	85	123	250	2,417
Aircraft	73	80	124	148	218	106	63	66	77	68	73	71	222	1,389
Balloon	78	63	102	93	114	58	31	22	37	19	28	20	36	701
Insufficient Data	79	103	95	132	191	111	65	105	115	94	59	99	85	1,333
Other	62	58	65	61	120	93	75	94	77	65	58	88	126	1,042
Satellite	0	0	0	0	8	18	0	21	69	77	82	142	152	569
Unidentified	42	46	24	14	14	10	12	14	13	15	14	19	16	253
TOTAL	509	487	545	670	1,006	627	390	557	591	474	399	562	887	7,704

ASTRONOMICAL SIGHTINGS

Meteors	70	92	79	88	179	168	100	187	119	95	57	61	101	1,396
Stars and Planets	101	44	52	131	144	56	40	45	78	36	23	55	140	945
Other	4	1	4	3	18	7	4	3	6	5	5	7	9	76
TOTAL	175	137	135	222	341	231	144	235	203	136	85	123	250	2,417

OTHER CASES

Hoaxes, Hallucinations, Unreliable Reports and Psychological Causes	15	6	18	16	37	29	14	13	17	11	16	34	34	260
Missiles and Rockets	2	1	1	3	2	6	14	12	13	9	13	7	10	93
Reflections	4	6	4	3	2	7	11	9	3	3	0	2	7	61
Flares and Fireworks	1	4	8	6	8	3	5	7	4	3	3	7	4	63
Mirages and Inversions	3	2	4	1	5	2	4	5	6	3	0	2	5	42
Search and Groundlights	9	6	14	9	12	8	5	6	1	3	2	6	9	90
Clouds and Contrails	6	3	2	1	9	5	3	4	5	4	5	0	3	50
Chaff	0	2	0	1	2	6	1	4	3	5	2	1	1	28
Birds	4	7	2	6	1	1	0	3	2	2	2	4	11	45
Radar Analyses	15	7	1	8	27	3	8	6	9	0	1	2	3	90
Photo Analyses	1	1	2	4	1	7	4	6	3	2	3	6	6	46
Physical Specimens	1	6	5	3	5	10	3	7	4	15	3	8	12	82
Satellite Decay	0	0	0	0	0	1	0	9	3	3	4	3	8	31
Other	1	7	4	0	9	5	3	3	4	2	4	6	13	61
TOTAL	62	58	65	61	120	93	75	94	77	65	58	88	126	1,042

STATISTICAL DATA FOR 1966

(Compiled 15 Feb 67)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
Astronomical	14	8	44	47	15	12	20	20	12	38	21	4	255
Aircraft	8	4	32	42	31	26	29	28	14	24	22	10	270
Balloon	0	0	2	5	3	2	7	4	2	5	1	1	32
Insufficient Data	8	3	34	27	30	22	19	19	19	34	21	6	242
Other	5	1	19	15	7	5	10	5	7	9	8	3	94
Satellite	2	0	22	5	12	21	5	23	5	11	2	1	109
Unidentified	1	2	5	2	1	4	3	3	4	3	1	1	30
Pending	0	0	0	0	0	0	0	2	4	2	6	14	28
TOTAL	38	18	158	143	99	92	93	104	67	126	82	40	1,060

ASTRONOMICAL

Meteors	8	1	8	19	5	3	10	7	4	8	8	2	83
Stars/Planets	4	6	32	23	7	8	9	10	7	29	12	2	149
Other	2a	1a	4a	5a	3a	1a	1a	3ab	1a	1a	1c	0	23
TOTAL	14	8	44	47	15	12	20	20	12	38	21	4	255

(a) moon (b) unusual sunset (c) unusual meteorological condition

OTHER

Hoaxes, Hallucinations, Unreliable Reports and Psychological Causes	2	1	6	3	2	2	2	1	3	4	3		29
Missiles and Rockets									1		1		2
Reflections				3	1	2	1				2		9
Flares and Fireworks				1				1			1	1	4
Search and Groundlights			1	1	3		2	1		1		1	10
Clouds and Contrails	2		3					1n	2n			1n	9
Chaff				1				1					2
Birds			1	4	1								9
Radar Analyses										2	1		1
Photo Analyses			5bcdeh	2ef			2c		1k				10
Physical Specimens							2rs			1p			2
Satellite Decay	1		1										2
Other			2ag			1i	1j			1q			5
TOTAL	5	1	19	15	7	5	10	5	7	9	8	3	94

(a) swamp gas (b) stellar image (c) no image (d) insuf data (e) processing defect
(f) electric light (g) blown transformer (h) lighthouse (i) blimp (j) plasma (k) anomalous propagation
(n) artificial cloud release (p) time exposure of moon reported to be UFO
(q) electric wires sparking (r) indentations in ground and soil samples (s) unknown animal

FIREBALL REPORT

Persons observing a fireball or meteor should report the information to the American Meteor Society. The information desired is contained below.

A very brilliant meteor or fireball is reported to have passed in your vicinity on at the hour of Will you please answer as fully as possible the following questions, which are asked on behalf of the American Meteor Society in order that permanent records of such phenomena may be obtained. When these reports are published each contributor whose report is fairly complete will be mentioned, if possible, and due credit given. It is only by the help of those who can give personal information that data can be secured for the computation of the orbits of meteors. These data are of great scientific value and all reasonable efforts should be made to obtain them. You will be unable probably to answer all questions below, but answer those you can, as they may be of the greatest importance.

- (1) Give your name and address.
- (2) Where were you when you saw the meteor? (If the town is small please give county as well.)
- (3) Give the date, hour and minute when the meteor appeared; also kind of time used.
- (4) In what direction did it appear (or in what direction was it first seen)? This is not asking in what direction it was going!
- (5) In what direction did it disappear (or in what direction was it last seen)? For questions 4 and 5, simply N, E, S, or W is not accurate enough, unless these were the exact directions. If compass is used, state it; also if magnetic correction has been applied to compass reading.
- (6) At what height did it appear? (Use degrees in answering.)
- (7) At what height did it disappear? (Use degrees in answering.)
- (8) Did it pass directly overhead (i.e., through the zenith)?
- (9) If not, to which side of the zenith did it go, and how far from it? (Use degrees in answering.)
- (10) Did it appear to reach the horizon? What sort of a horizon have you?
- (11) What angle did the path of the meteor make with the horizon and in which direction was it then going?
- (12) If you are familiar with constellations describe the path of the meteor through the sky with reference to stars.
- (13) Did the meteor appear to explode?
- (14) What was the duration of its flight in seconds?
- (15) Describe the train if one was left. If it lasted long enough to show drift, most carefully tell in what direction train drifted. Give sketch, if possible, showing this with regard to horizon.
- (16) What was the duration of the train in seconds?
- (17) Did you hear any sound? How long after seeing the meteor was it before you heard this sound?

Did you hear an actual explosion? How long after seeing the explosion was it before you heard it?

- (18) Of what color was the meteor?
- (19) What was the size of the meteor? (Compare it with the Moon or with a planet or star.)
- (20) Was more than one body seen before the explosion (if any)?
- (21) What was condition of sky at time?
- (22) Give names and addresses of others who saw the meteor.
- (23) Please mail this reply to

CHARLES P. OLIVIER
AMERICAN METEOR SOCIETY
521 N. Wynnewood Ave
Narberth, Pennsylvania 19072

ARRIVING FROM MARS BY UFO?

In recent years there have been many reports of unidentified flying objects (UFO's), especially since the first Soviet Sputnik went up on October 4, 1957. From time to time the question has been raised as to whether the UFO's might have come from Mars or Venus, perhaps bearing intelligent beings. Usually the answer to this question has been simply a guess which depended to a considerable extent on what the individual wanted to believe. Most scientists have been inclined to doubt that the UFO's came from Mars or Venus, preferring to credit the sightings to natural phenomena which are not as well known as they should be.

There is a logical approach to this question as to whether or not UFO's have come from Mars or Venus. It is well known that if some one on the earth wants to send a space vehicle to Mars or Venus, there are specific favorable times, times when a body can be launched so that it will travel along a minimum-energy orbit, arriving at the path of Mars (or Venus) just as that planet comes to the same point. For example, favorable times for launching a rocket to travel to Venus have been listed as Oct. 27, 1965, June 5, 1967 and January 11, 1969, and for Mars, December 23, 1964, January 26, 1967 and February 28, 1969. (SPACE HANDBOOK, Gov't Printing Office 1959.)

Of course, there are similar favorable times for launching a space vehicle from Mars (or Venus) to the earth, and for each of these launching times, there would be a corresponding arrival time at the earth. These favorable arrival times come at intervals of about 584 days for Venus and about 780 days for Mars. Actually, in each case, the interval is a close approximation to the synodic period of the planet; for Venus, the synodic period varies from 579.8 to 587.8 days, and for Mars, from 767 to 803 days.

One could then choose intervals of 20 days, say, ten days on either side of a favorable arrival date, and look to see how many UFO's were sighted in each such "favorable arrival interval", here named fai, (plural fais). If there were no increase in the number of UFO's in these fais, then it would be unlikely that any considerable number of UFO's had been arriving from Mars or Venus.

Someone is certain to raise the question as to whether or not a Martian or a Venutian would elect to travel in a minimum-energy orbit. Here I shall assume that intelligent beings from any part of the universe will choose to travel by means and paths that will minimize the expenditure of energy.

This fai approach to the problem can be carried a step farther. One can make a list of the UFO's observed in the fais, and look at the record of each to see if the UFO was observed travelling in the direction it would have if it came from Mars (or Venus) in a minimum-energy orbit. Roughly speaking, a space vehicle from Mars should overtake the earth from behind and one from Venus should be overtaken by the earth. Thus one could determine whether the path of approach was associated with the proper radiant point in space; here we use the term in the sense in which it is used in connection with meteors.

Now to look at the evidence! A list of UFO's sighted between September 8, 1956 and December 31, 1963 was examined. Nine fais of 20 days were found in this interval, 5 for Venus and 4 for Mars. Circular paths were assumed for Venus, Earth and Mars in computing travel times for space vehicles, but no particular difficulty is encountered if one elects to allow for the eccentricities of the various paths. In table I below, the number of UFO's reported in each fai of 20 days is given, and is to be compared with the average number of UFO's per 20-day interval outside the fais, namely, 1.88.

TABLE I

<u>FAI</u>	<u>PLANET</u>	<u>NUMBER UFO's</u>
1956 Sept. 8-28	Venus	1
1956 Dec. 5-25	Mars	1
1958 Apr. 16 - May 6	Venus	1
1959 Feb. 10 - Mar. 2	Mars	2
1959 Nov. 18 - Dec. 8	Venus	0
1961 Mar. 26 - Apr. 15	Mars	1
1961 June 28 - July 18	Venus	1
1963 Jan. 29 - Feb. 18	Venus	2
1963 May 1-21	Mars	1
1956 Sept. 28 to 1963 Dec. 31 outside fais		242 in 2570 days

Thus the evidence seems to indicate that Martians and Venutians have not been arriving in large numbers if at all. When one goes back to examine the direction from which the UFO's arrived, we find not a single case of the UFO coming in from the proper direction to indicate that it had originated on Mars or Venus.

Charles H. Smiley, Brown University

Extract from Wernher von Braun's book First Men to the Moon,
Copyright 1958, 1959, 1960 by Dr. Wernher von Braun, published
by Holt, Rinehart and Winston of Canada, Ltd.

"Question: What is your opinion on 'U.F.O.'s'?"

"Answer: There is a rational and rather straight-forward explanation for the great majority of 'sightings of unidentified flying objects,' or 'flying saucers,' as they are more familiarly called. During the last ten years, official U.S. investigators have tabulated about six thousand 'sightings.' They could account for all but two per cent as belonging to any of the following categories:

- High-flying balloons of various kinds
- High-flying aircraft illuminated by the sun after the sun had set on the ground
- Nightly 'Fata Morgana' type reflections in the atmosphere of distant light sources on the ground
- Artificial satellites of U.S. or Soviet origin
- Meteorites and fireballs
- Birds
- The planets Venus or Jupiter
- Searchlights illuminating cloud layers
- Hoaxes perpetrated by pranksters

Even the most ardent believers in flying objects of extra-terrestrial origin will usually concede that most reported 'sightings' can be traced back to one of these sources. But it is that unaccounted two per cent that makes enthusiasts cling tenaciously to their conviction.

I cannot account for the mysterious two per cent, either. But a lifetime spent with testing of guided missiles has taught me to be extremely careful with eye-witness accounts on rocket firings running into some in-flight trouble. Of three experienced observers questioned after a typical mishap, one swore that he clearly saw a part coming off before the rocket faltered; a second hotly denied this but claimed that the missile oscillated violently before it veered off the course; while the third trained observer saw neither a part coming off, nor an oscillation, nor any veering off the course but insisted that the rocket was flying perfectly steadily until it was abruptly ripped apart by an internal explosion.

Such contradictions in the eyewitness accounts of old rocket men are by no means an exception; we are almost invariably confronted with this situation. Yet, we are dealing here with experienced observers who not only had seen many firings, but who had the great advantage of being mentally prepared for the imminent test.

For this reason, I am highly skeptical about the objective of any 'sighting' report of a fleeting, mysterious object in the sky submitted by an equally surprised and unexperienced observer. And those unaccounted two per cent of U.F.O.'s absolutely fail to raise my blood pressure. To me, ninety-eight per cent is a mighty good batting average. I wish we could account for ninety-eight per cent of what we observe in many other fields of human endeavor! Yet, ever since the Middle Ages it has not been customary for science to call on ghosts or witches - or little green men from Mars - whenever we are confronted with a phenomenon for which we do not yet have a satisfactory answer.

To those who, either through personal observation or through hearsay based on other people's accounts, still insist that objects of extra-terrestrial origin are roaming through our atmosphere, I can only say that I have never seen such an object and cannot believe in their existence until I do."

NIGHTTIME ASTRONOMICAL SKY SURVEYS AND UNIDENTIFIED FLYING OBJECTS

Carl Sagan

Harvard College Observatory
and
Smithsonian Astrophysical Observatory
Cambridge, Massachusetts

There are several instances of extended observations of large fields of view of the night sky by trained astronomical observers. These observations are usually performed in the context of meteor studies. One such is the Harvard Meteor Project, in which visual and photographic observations were performed (the latter with Super-Schmidt cameras, and a 60 degree field of view) in New Mexico during the period 1954-1958. Note that this is a locale and period characterized by extensive reports of unidentified flying objects. In all, a surface area of $7 \times 10^3 \text{ km}^2$ was observed to 80 km altitude for a total period of 2×10^5 minutes. Observations were good down to magnitude +4. No unexplained objects were detected.

A second example of such an observation program is the photographic and visual Prairie Network of the Smithsonian Astrophysical Observatory. The total area covered is about 10^6 km^2 , but only bright objects - brighter than magnitude -8 - can be photographed. The cameras cover essentially the entire sky, and the network encompasses parts of the states of Iowa, Kansas, Nebraska, South Dakota, Oklahoma, Illinois, Colorado, and Missouri. In 2500 hours observing to date, no unexplained flying objects have been detected. In fact, in the cases of both the Harvard Meteor Project and the Smithsonian Astrophysical Observatory Prairie Network, no bright moving objects other than meteors and occasional aircraft were detected. An even more extensive meteor survey, worldwide in scope, was performed during the I.G.Y. under the direction of Dr. Peter Millman of the National Research Council of Canada. Unfortunately, much of this data is still unreduced.

These sky surveys are much more extensive in area and time than such previous stellar astronomical surveys as the Palomar Sky Atlas, which also showed no unusual objects. Especially considering the experience of the observers in the foregoing observations, it seems likely that the frequent reports of unidentified flying objects observed at night by individuals relatively unfamiliar with the skies are due to misinterpretations of common astronomical objects.

UNIDENTIFIED FLYING OBJECTS

by Carl Sagan

Department of Astronomy, Harvard University;
and Smithsonian Astrophysical Observatory,
Cambridge, Massachusetts

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UNIDENTIFIED FLYING OBJECT, a moving aerial or celestial phenomenon, detected visually or by radar but whose nature is not immediately understood. Interest in unidentified flying objects (UFO's) stems from speculation that some of them are the products of civilizations beyond the earth, and from the psychological insights into contemporary human problems that this interpretation provides.

Observations.-Unidentified flying objects have been described variously as rapidly moving or hovering; disc-shaped, cigar-shaped, or ball-shaped; moving silently or noisily; with a fiery exhaust, or with no exhaust whatever; accompanied by flashing lights, or uniformly glowing with a silvery cast. The diversity of the observations suggests that UFO's have no common origin and that the use of such terms as UFO's or "flying saucers" serves only to confuse the issue by grouping generically a variety of unrelated phenomena.

In the United States, popular interest in unidentified flying objects began on June 24, 1947, when a group of rapidly moving, glistening objects was observed from the air in daytime, near Mount Rainier, Washington. The observer, a Seattle resident, dubbed them "flying saucers." The sighting received extensive publicity. Somewhat similar sightings have been reported ever since. The differences among these observations, however, are as striking as the observations themselves.

Investigations.-Because of its national defense responsibility, the U.S. Air Force investigates reports of unidentified flying objects over the United States. The number of sightings investigated by the Air Force in the period 1947-1965 varied greatly from year to year.

UFO SIGHTINGS INVESTIGATED BY U.S. AIR FORCE

1947-1950	577	1956-1960	3,350
1951-1955	2,880	1961-1965	2,912

Source: Tacker, L.J., *Flying Saucers and the U.S. Air Force* (Princeton 1960) and Library of Congress, *Facts About Unidentified Flying Objects* (Washington 1966).

Evaluation of these reports is difficult. Observations frequently are sketchy, and different reports of the same phenomenon are often dissimilar, or even irreconcilable. Observers tend to exaggerate. Deliberate hoaxes, some involving double-exposure photography, have been perpetrated.

Most UFO's have been identified as belonging to one of the following categories: unconventional aircraft; aircraft under uncommon weather conditions; aircraft with unusual external light patterns; meteorological and other high-altitude balloons; artificial earth satellites; flocks of birds; reflections of searchlights or headlights off clouds; reflection of sunlight from shiny surfaces; luminescent organisms (including one case of a firefly lodged between two adjacent panes of glass in an airplane cockpit window); optical mirages and looming (a mirage in which images of objects below the horizon appear distorted); lenticular cloud formations; ball lightning; sun dogs; meteors, including green fireballs; planets, especially Venus; bright stars; and the aurora borealis.

Radar detection of unidentified flying objects has also occurred occasionally. Many of these sightings have been explained as radar reflections from temperature inversion layers in the atmosphere and other sources of radar "angels."

Considering the difficulties involved in tracking down visual and radar sightings, it is remarkable that all but a few percent of the reported UFO's have been identified as naturally occurring-if sometimes unusual-phenomena. It is of some interest that the UFO's which are unidentified do not fall into uniform categories such as motion, color, and lighting, but rather run through the same range of these variables as the identified UFO's. In October 1957, Sputnik I, the first earth-orbiting artificial satellite, was launched. Of 1,178 UFO sightings in that year, 701 occurred between October and December. The clear implication is that Sputnik and its attendant publicity was responsible for many UFO sightings.

Earlier, in July 1952, a set of visual and radar observations of unidentified flying objects over Washington, D.C., caused substantial public concern. Government concern was reflected in the creation in November of that year of a special panel to evaluate these reports. The panel was established by the Office of Scientific Intelligence of the Central Intelligence Agency, and was headed by H.P. Robertson of the California Institute of Technology. The Robertson panel, after a thorough investigation of the UFO reports to that date, concluded that all were probably natural phenomena, wrongly interpreted.

The most reliable testimony is that of the professional astronomer. Jesse L. Greenstein of

Mount Wilson and Palomar observatories pointed out that a vehicle 100 feet (30.5 meters) in diameter, at an altitude of 50 miles (80.5 km), would leave a broad track on photographic plates of the sky taken with large telescopes. This track could be differentiated easily from those of ordinary astronomical objects, such as stars, meteors, and comets. Nevertheless, it appears that such tracks or unambiguous visual observations of classical UFO's have never been made by professional astronomers.

In the Harvard Meteor Project performed in New Mexico during the period 1954-1958, extensive photographic observations were made by Super-Schmidt cameras, with a 60° field of view. In all, a surface of about 3,000 square miles (7,700 sq km) was observed to a height of about 50 miles (80 km) for a total of some 3,000 hours. Visual and photographic observations were made which could detect objects almost as faint as the faintest objects visible to the naked eye. These observations by professional astronomers were made in a locale and period characterized by extensive reports of unidentified flying objects. No unexplained objects were detected, despite the fact that rapidly moving objects were being sought in a study of meteors. Similar negative results, obtained by large numbers of astronomers, help to explain the general skepticism of astronomers toward flying saucer reports.

A series of puzzling and well-publicized flying saucer sightings in the mid-1960's again led to the appointment of a government investigating panel, this time under the aegis of the Air Force Scientific Advisory Board. It is significant that this panel was convened not at the request of the operational or intelligence arms of the Air Force, but in response to a request by the Air Force public relations office. The panel, under the chairmanship of Brian O'Brien, a member of the board, met in February 1966 and restated the general conclusions of the Robertson panel. It recommended that the Air Force make a more thoroughgoing effort to investigate selected UFO reports of particular interest, although the probability of acquiring significant scientific information (other than psychological) seemed small. The O'Brien panel suggested that the Air Force establish a group of teams at various points within the United States in order to respond rapidly to UFO reports. Each team would consist of (1) a physical scientist familiar with upper atmospheric and astronomical phenomena, (2) a

clinical psychologist, and (3) a trained investigator. In October 1966 the University of Colorado was selected by the Air Force Office of Scientific Research to manage this program and to prepare a thorough analysis of the UFO problem. The National Academy of Sciences agreed to appoint a panel to review the Colorado report.

Hypotheses of Extraterrestrial Origin.-Repeated sightings of UFO's, and the persistence of the Air Force and the responsible scientific community in explaining away the sightings, have suggested to some that a conspiracy exists to conceal from the public the true nature of the UFO's. Might not at least a small fraction of the unexplained few percent of the sightings be space vehicles of intelligent extraterrestrial beings observing the earth and its inhabitants?

It now seems probable that the earth is not the only inhabited planet in the universe. There is evidence that many of the stars in the sky have planetary systems. Furthermore, research concerning the origin of life on earth suggests that the physical and chemical processes leading to the origin of life occur rapidly in the early history of the majority of planets. From the point of view of natural selection, the advantages of intelligence and technical civilization are obvious, and some scientists believe that a large number of planets within our Milky Way galaxy—perhaps as many as a million—are inhabited by technical civilizations in advance of our own.

Interstellar space flight is far beyond our present technical capabilities, but there seem to be no fundamental physical objections to it. It would be rash to preclude, from our present vantage point, the possibility of its development by other civilizations. But if each of, say, a million advanced technical civilizations in our galaxy launched at random an interstellar spacecraft each year (and even for an advanced civilization, such a launching would not be a trivial undertaking), and even if all of them could reach our solar system with equal facility, our solar system would, on the average, be visited only once every 100,000 years.

UFO enthusiasts have sometimes castigated the skeptic for his anthropocentrism. Actually, the assumption that earth is visited daily by interstellar spacecraft is far more anthropocentric—attaching as it does some overriding significance to our small planet. If our views on the frequency of intelligence in the galaxy are correct, there is no reason why the earth should

be singled out for interstellar visits. A greater frequency of visits could be expected if there were another planet populated by a technical civilization within our solar system, but at the present time there is no evidence for the existence of one.

Related to the interstellar observer idea are the "contact" tales--contemporary reports of the landing of extraterrestrial space vehicles on earth. Unlike the UFO reports, these tales display a striking uniformity. The extraterrestrials are described as humanoid, differing from man only in some minor characteristic such as teeth, speech, or dress. The aliens--so the "contactees" report--have been observing earth and its inhabitants for many years, and express concern at "the present grave political situation." The visitors are fearful that, left to our own devices, we will destroy our civilization. The contactee is then selected as their "chosen intermediary" with the governments and inhabitants of earth, but somehow the promised political or social intervention never materializes.

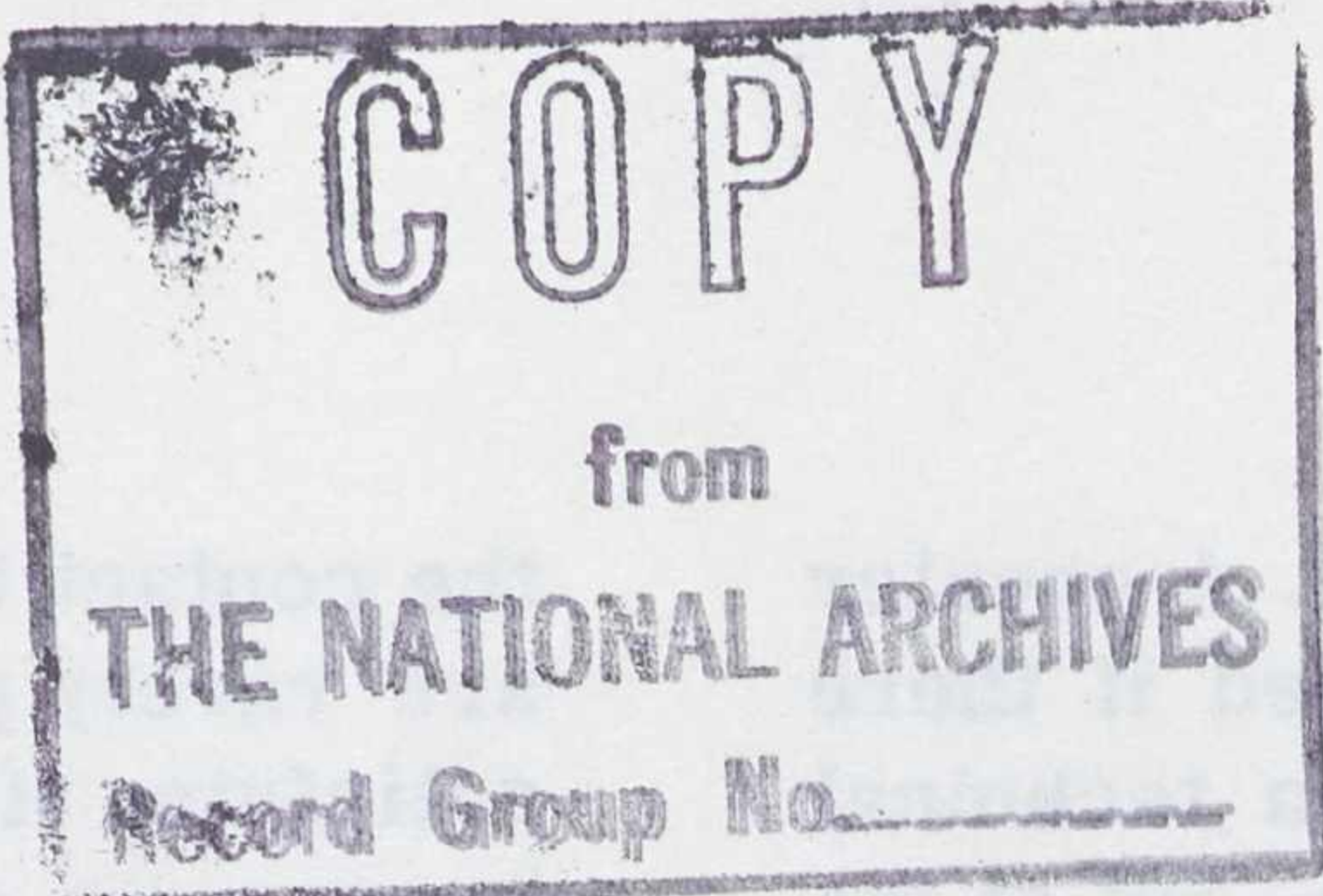
Psychological Factors.--The psychologist Carl Jung has pointed out that the frequency and persistence of these contact tales--not one of which has been confirmed by the slightest objective evidence--must be of substantial psychological significance. What need is fulfilled by a belief that unidentified flying objects are of extraterrestrial origin? It is noteworthy that in

the contact tales, the spacecraft and their crews are rarely pictured as hostile. It would be very satisfying if a race of advanced and benign creatures were devoted to our welfare.

The interest in unidentified flying objects derives, perhaps, not so much from scientific curiosity as from unfulfilled religious needs. Flying saucers serve, for some, to replace the gods that science has deposed. With their distant and exotic worlds and their pseudoscientific overlay, the contact accounts are acceptable to many people who reject the older religious frameworks. But precisely because people desire so intensely that unidentified flying objects be of benign, intelligent, and extraterrestrial origin, honesty requires that, in evaluating the observations, we accept only the most rigorous logic and the most convincing evidence. At the present time, there is no evidence that unambiguously connects the various flying saucer sightings and contact tales with extraterrestrial intelligence.

CARL SAGAN, *Smithsonian Institution Astrophysical Observatory, Cambridge, Mass.*

Further Reading: Jung, Carl G., *Flying Saucers* (New York 1959); Menzel, D.H., and Boyd, L.G., *The World of Flying Saucers* (New York 1963); Ruppelt, Edward, *The Report on Unidentified Flying Objects* (New York 1956); Shklovskii, Iosif, and Sagan, Carl, *Intelligent Life in the Universe* (San Francisco 1966); Tacker, Lawrence, *Flying Saucers and the U.S. Air Force* (Princeton 1960); Vallee, Jacques, *Anatomy of a Phenomenon* (Chicago 1965).



~~No 341, Records of the Headquarters United States Air Force~~
~~No 341, Records of the Headquarters United States Air Force~~

Project Blue Book



Fact Sheet

United States Air Force

Public Affairs Division, Wright-Patterson AFB, Ohio 45433 (AC513) 257-4248

UFOs & PROJECT BLUE BOOK

On December 17, 1969, the Secretary of the Air Force announced the termination of Project Blue Book, the Air Force program for the investigation of UFOs.

From 1947 to 1969, a total of 12,618 sightings were reported to Project Blue Book. Of these, 701 remained "unidentified."

The project was headquartered at Wright-Patterson Air Force Base, whose personnel no longer receive, document or investigate UFO reports.

The decision to discontinue UFO investigations was based on an evaluation of a report prepared by the University of Colorado entitled, "Scientific Study of Unidentified Flying Objects"; a review of the University of Colorado's report by the National Academy of Sciences; past UFO studies and Air Force experience investigating UFO reports during the '40s, '50s, and '60s.

As a result of these investigations and studies and experience gained from investigating UFO reports since 1948, the conclusions of Project Blue Book are: (1) no UFO reported, investigated, and evaluated by the Air Force has ever given any indication of threat to our national security; (2) there has been no evidence submitted to or discovered by the Air Force that sightings categorized as "unidentified" represent technological developments or principles beyond the range of present-day scientific knowledge; and (3) there has been no evidence indicating that sightings categorized as "unidentified" are extraterrestrial vehicles.

With the termination of Project Blue Book, the Air Force regulation establishing and controlling the program for investigating and analyzing UFOs was rescinded. Documentation regarding the former Blue Book investigation has been permanently transferred to the Modern Military Branch, National Archives and Records Service, Eighth Street and Pennsylvania Avenue, N.W., Washington, D. C. 20408, and is available for public review and analysis.

News media inquiries regarding the Blue Book files at the National Archives may be made to the National Archives Public Affairs Office; telephone, (202) 523-3089. Other public inquiries about these records may be made to the Modern Military Branch; telephone, (202) 523-3340).

(MORE)

Since Project Blue Book was closed, nothing has happened to indicate that the Air Force ought to resume investigating UFOs. Because of the considerable cost to the Air Force in the past, and the tight funding of Air Force needs today, there is no likelihood the Air Force will become involved with UFO investigation again.

There are a number of universities and professional scientific organizations, such as the American Association for the Advancement of Science, which have considered UFO phenomena during periodic meetings and seminars. In addition, a list of private organizations interested in aerial phenomena may be found in Gale's Encyclopedia of Associations (edition 8, vol. 1, pp. 432-3). Such timely review of the situation by private groups ensures that sound evidence will not be overlooked by the scientific community.

A person calling the base to report a UFO is advised to contact a private or professional organization (as mentioned above) or to contact a local law enforcement agency if the caller feels his or public safety is endangered.

Periodically, it is erroneously stated that the remains of extraterrestrial visitors are or have been stored at Wright-Patterson AFB. There are not now, nor ever have been, any extraterrestrial visitors or equipment on Wright-Patterson Air Force Base.

(January 1985)

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INSIDE THE BELTWAY

Alien invasion

There've been stories recentl about documents that walked away from the National Archives. This story, though, is about a document that may have been planted in the Archives. Supposedly, it's a secret memo from Robert Cutler, special assistant to

President Eisenhower, to Gen. Nathan Twining, dated July 14, 1954. It's about a briefing on the recovery of a crashed flying saucer and four alien bodies near Roswell, N.M., in July of 1947.

Several prominent UFO researchers, including nuclear physicist Stanton Friedman, say the document was found in declassified Archives files. They were challenged this week by the Committee for the Scientific Investigation of Claims of the Paranormal. That group labeled the document — and other related documents — “clumsy counterfeits,” a “hoax” and a “forgery.”

William Moore, one of the UFO researchers, told us his group “never said the documents are authentic. We believe they are.” He denounced the committee that denounced him, saying they “have never taken a rational approach.” And he accused the primary accuser, Philip J. Klass, of being “a sloppy researcher who pirates other people's work.”

The National Archives staff studied the Cutler memo and found 10 indications that it was not a legitimate document. Mr. Moore has counterarguments to most of their findings. And he says he has more documents re-

lated to the UFO crash that he will release soon.



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Textual records of Project BLUE BOOK (the documentation relating to investigations of unidentified flying objects), excluding names of people involved in the sightings, are now available for research in the National Archives Building. The records include approximately two cubic feet of unarranged project or administrative files, 37 cubic feet of case files in which individual sightings are arranged chronologically, and three cubic feet of records relating to the Office of Special Investigations (OSI), portions of which are arranged chronologically, by OSI district, and by overseas command. A cubic foot of records comprises about 2000 pages.

Finding aids for these records include a file list for the project files and an index to individual sightings, entered by date and location.

Access to BLUE BOOK textual records is by means of 94 rolls of 35mm microfilm (T-1206) in the National Archives microfilm reading room (Room 400). The first microfilm roll includes a list of contents for all of the rolls and the finding aids. Photographs scattered among the textual records have also been filmed separately on the last two rolls.

Requests for copies of individual rolls of microfilm (\$20. each) should be addressed to the Publication Sales Branch (NEPS), National Archives, Washington, D. C. 20408. Orders for the 10 page list of roll contents or the 19 page report summarizing Project BLUE BOOK, dated March 1967, may be placed with the Military Reference Branch (NMFR), National Archives, Washington, D. C. 20408. The cost of photocopy orders is \$.35 per page, with a minimum order cost of \$5. Remittance should be made payable to the National Archives Trust Fund.

Motion picture film, sound recordings, and some still pictures are maintained by the Motion Picture & Sound & Video Branch (NNSM) and the Still Pictures Branch (NNSP).

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Artifacts Removed from Project BLUE BOOK Sighting Case Files

Record Group 341

Item Number	Item	File Reference	Location
341-1-465	Project Bluebook 1. Aug. 1954 2. Lafayette, Indiana 3. Observer XXXXXXXXXX 4. Small pieces of metal fused together	File # 1003409	Box 42 12W2 8/5/A
341-2-466	1. May 20, 1955 2. Alexandria, Minn. 3. Civilian observer 4. Rock	File # 1003426	Box 45 12W2 8/5/B
341-3-467	1. May 27, 1955 2. Englewood, Ohio 3. Observer XXXXXXXXXX 4. Large Rock	File # 1003427	Box 45 12W2 8/5/B
341-4-468	1. July 7, 1955 2. Baltimore, Maryland 3. Observer - Multi 4. 2 small bottles of chemical compound	File # 1003430	Box 46 12W2 8/5/B
341-5-469	1. Nov. 27, 1957 2. Middletown, Ohio 3. Observer XXXXXXXXXX 4. beads and small pieces of metal	File # 1003488	Box 57 12W2 8/5/D
341-6-470	1. Dec. 5, 1957 2. New Orleans, La. 3. Observer XXXXXXXXXX 4. H-131 Parachute Flare	File # 1003491	Box 58 12W2 8/5/D
341-7-472	1. June 3, 1958 2. Marshalltown, Iowa 3. Observer: XXXXXXXXXX 4. Volcanic Debris	File # 1003503	Box 62 12W2 8/5/D
341-8-472	1. Aug. 8, 1958 2. Wadsworth, Ohio 3. Observer: XXXXXXXXXX 4. Yellow Brass Tubing	File # 1003507	Box 63 12W2 8/5/D
341-9-473	1. Oct. 10, 1958 2. Temple, Oklahoma 3. Observer: XXXXXXXXXX 4. Weather balloon	File # 1003514	Box 64 12W2 8/5/E

Record Group 341

Item Number	Item	File Reference	Location
341-10-474	Project Bluebook 1. Feb. 7, 1959 2. Jackson, Tenn. 3. Observer: REDACTED 4. balloon	File # 1003524	Box 66 12W2 8/5/E
341-11-475	1. July 28, 1959 2. S.E. of Dayton, Ohio 3. Observer: REDACTED 4. Coke (pieces)	File # 1003536	Box 68 12W2 8/5/E
341-12-476	1. Dec. 5, 1957 2. New Orleans, La. 3. Observer: REDACTED 4. Part of flare	File # 1003492	Box 58 12W2 8/5/D
341-13-477	1. April 12, 1960 2. LA Camp, La 3. Observer: REDACTED 4. Rocket	File # 1003549	Box 71 12W2 8/6/A
341-14-478	1. Oct. 12, 1960 2. Sweetwater, South Carolina 3. Observer: REDACTED 4. Remains of roll on deodorant stick	File # 1003566	Box 75 12W2 8/6/A
341-15-479	1. Sept. 1961 2. Connoisville, Ind. 3. No recorded observer 4. Large Rock	File # 1003592	Box 79 12W2 8/6/B
341-16-480	1. April, 1962 2. West Manchester, Ohio 3. Observer: REDACTED 4. Granite	File # 1003603	Box 81 12W2 8/6/B
341-17-481	1. Sept. 1962 2. Snodgrass, Washington 3. Observer not listed 4. Wire	File # 1003614	Box 84 12W2 8/6/B
341-18-482	1. Sept. 5, 1962 2. Priest Lake, Idaho 3. Observer: REDACTED 4. Cinder Block	File # 1003615	Box 84 ³ 12W2 8/6/B
341-19-484	1. Sept. 13, 1962 2. Newark, Ohio 3. Observer: REDACTED 4. Object from steel processing	File # 1003617	Box 84 12W2 8/6/B

35 mm film

Item Number	Item	Record Group 341	File Reference	Location
341-20-484	Project Bluebook 1. Oct. 20, 1962 2. Bristol Rhode Island 3. Observer: Samuel J. ... 4. Nylon Residue		File # 1003622	Box 85 12W2 8/6/C
341-21-485	1. Aug. 12, 1963 2. Cleveland, Ohio 3. Observer: Samuel J. ... 4. Salt crystals		File # 1003637	Box 88 12W2 8/6/C
341-22-486	1. June 15, 1964 2. St. George De Bouce, P.O., Canda 3. Observer: RCMP 4. Rocks & stones		File # 1003653	Box 12W2 8/6/D
341-23-487	1. Sept. 4, 1964 2. Glassboro, N. J. 3. Samuel J. ... 4. Rocks		File # 1003665	Box 95 12W2 8/6/D
341-24-488	1. Sept. 5, 1964 2. Sacramento, California 3. Observer: Samuel J. ... 4. Arrowhead		File # 1003666	Box 95 12W2 8/6/D
341-25-489	1. Oct. 12, 1964 2. Europe 3. Observer: Samuel J. ... 4. Meteorite Material		File # 1003668	Box 96 12W2 8/6/D
341-26-490	1. April 1, 1966 2. Salem, Arkansas 3. Observer: Samuel J. ... 4. Radar Chart		File # 1003720	Box 109 12W2 8/7/A
341-27-491	1. July 7, 1955 2. Baltimore, Md. 3. Observer: Multi 4. Pieces of sticks		File # 1003429	Box 46 12W2 8/5/B
341-28-492	1. July 16-19-30, 1956 2. Van Nuys, Cal. 3. Observer: Samuel J. ... 4. Burned sod		File # 1003443	Box 49 12W2 8/5/B

341-23-473

1. Oct. 1-14. 1957
2. Los Angeles, Cal.
3. Observer: ~~James~~
4. Plugs

File # 1003471

Box 54
12W2
8/5/c

341-30-494

1. Jan. 17-18, 1958
2. Tulsa, Oklahoma
3. Observer: ~~James~~
4. Pipe Cleaning Anode

File # 1003495

Box 59
12W2
8/5/d





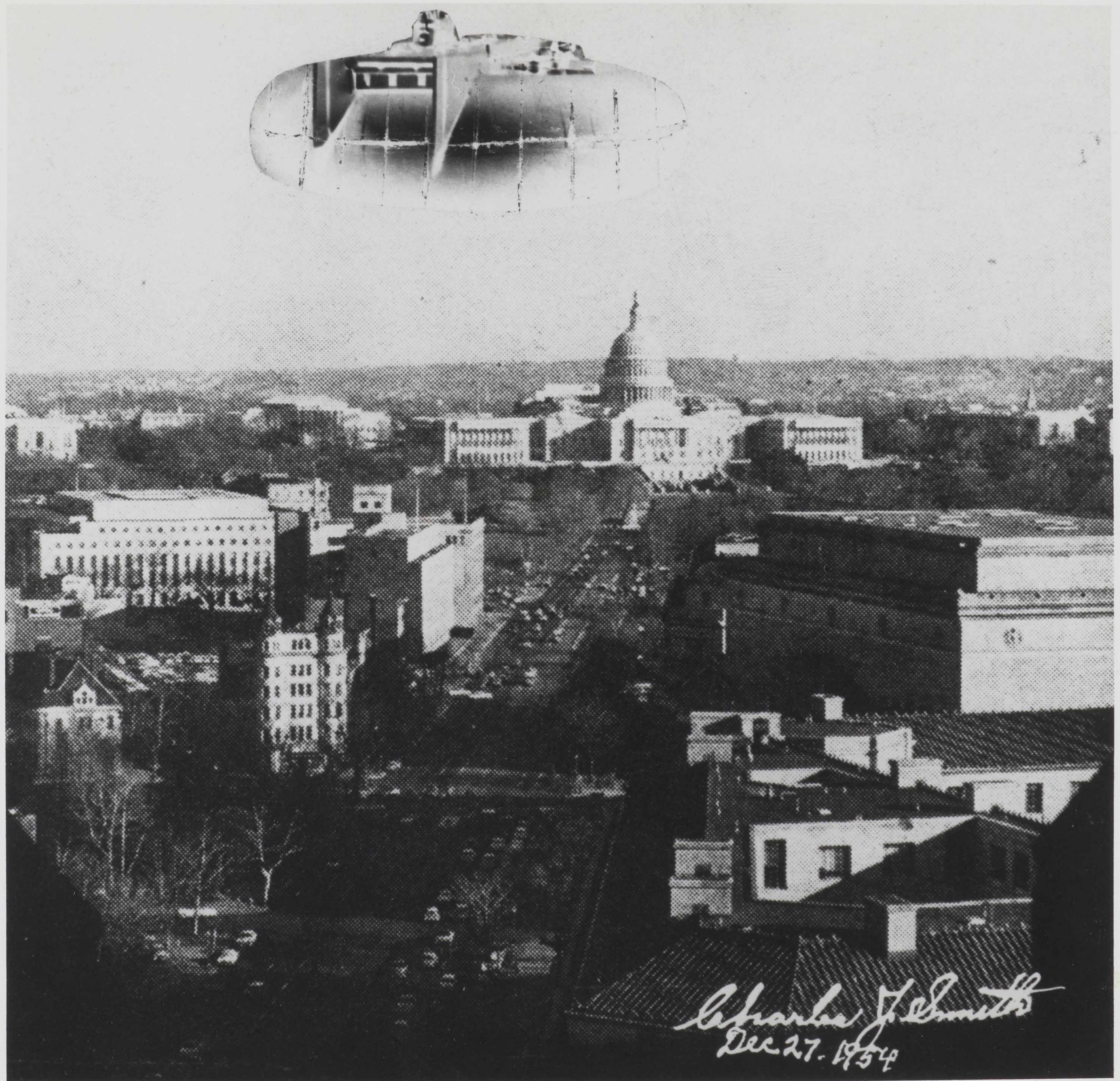
Charles F. Smith
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Charles J. Smith
Dec 27. 1954

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Photograph from case files of Project Blue Book, the Air Force investigation of Unidentified Flying Objects, 1947 to December 1969, recently released for public research by the National Archives. Case file 2605, dated June 18, 1953, includes this view of a radar screen with a number of signals being tracked.



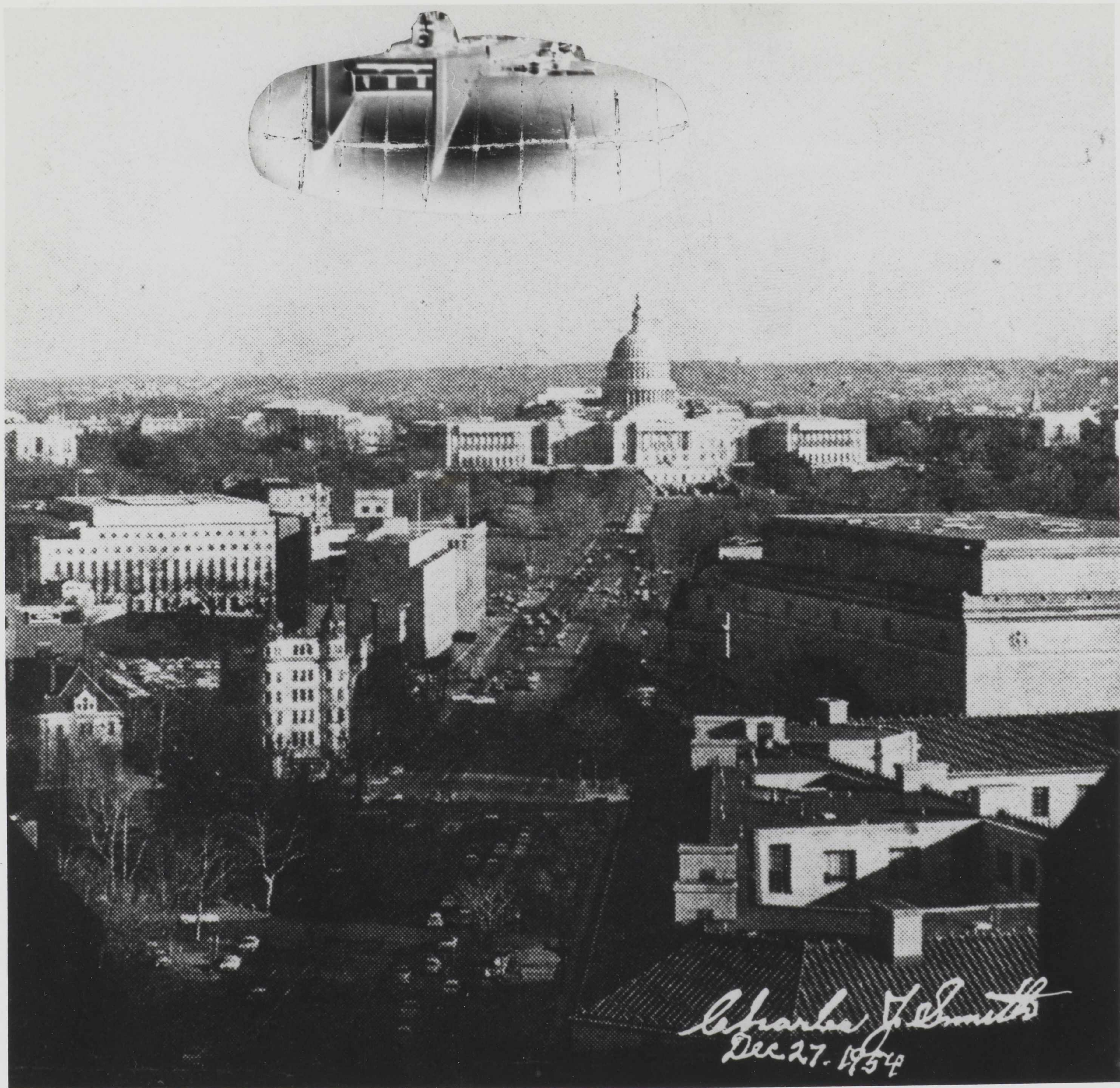
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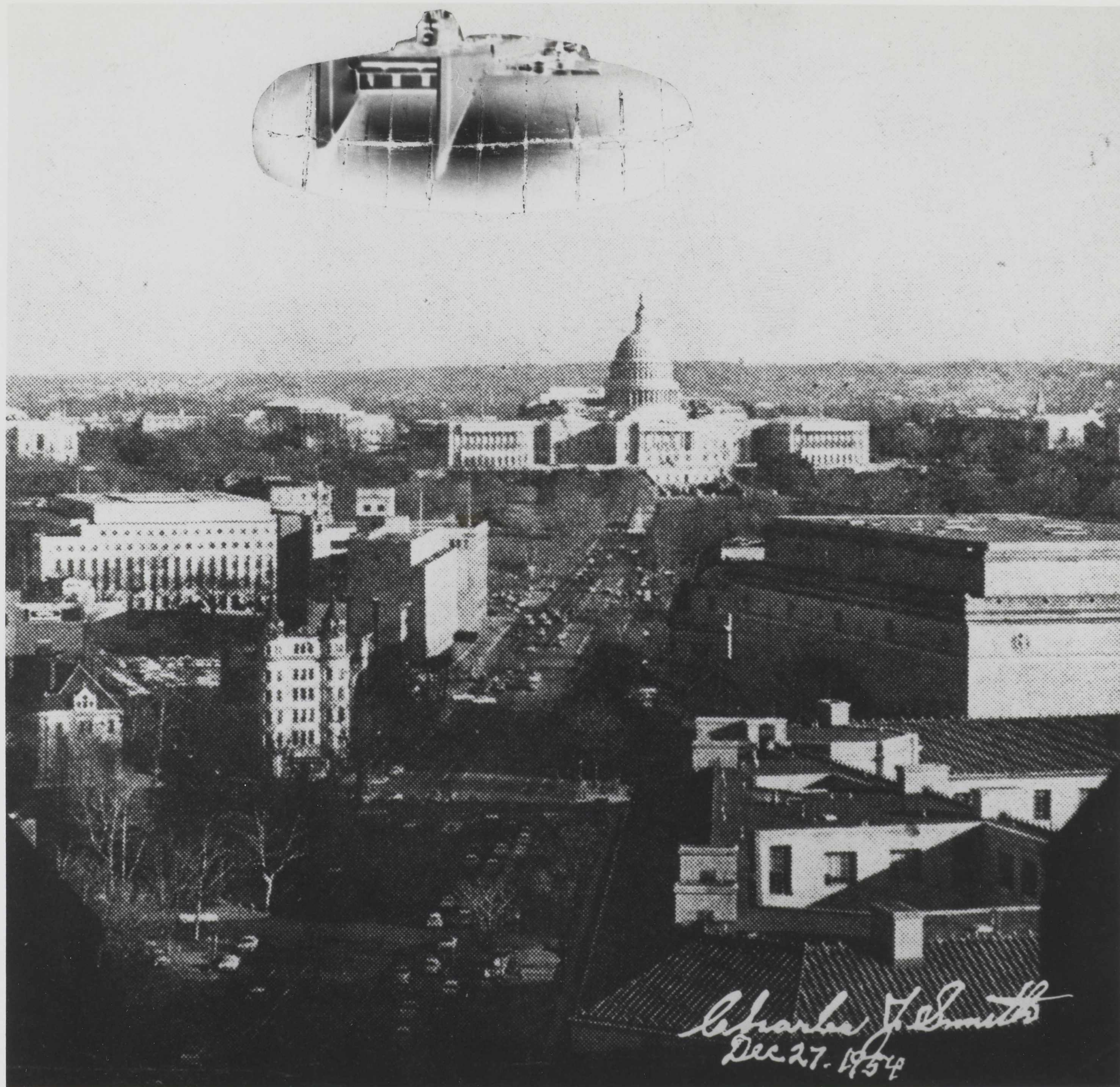
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Photograph from case files of Project Blue Book, the Air Force investigation of Unidentified Flying Objects, 1947 to December 1969, recently released for public research by the National Archives. Case file 1501, dated July 16, 1952.





Charles J. Smith
Dec. 27. 1954



Charles J. Smith
Dec 27. 1954



Charles J. Smith
Dec 27. 1954



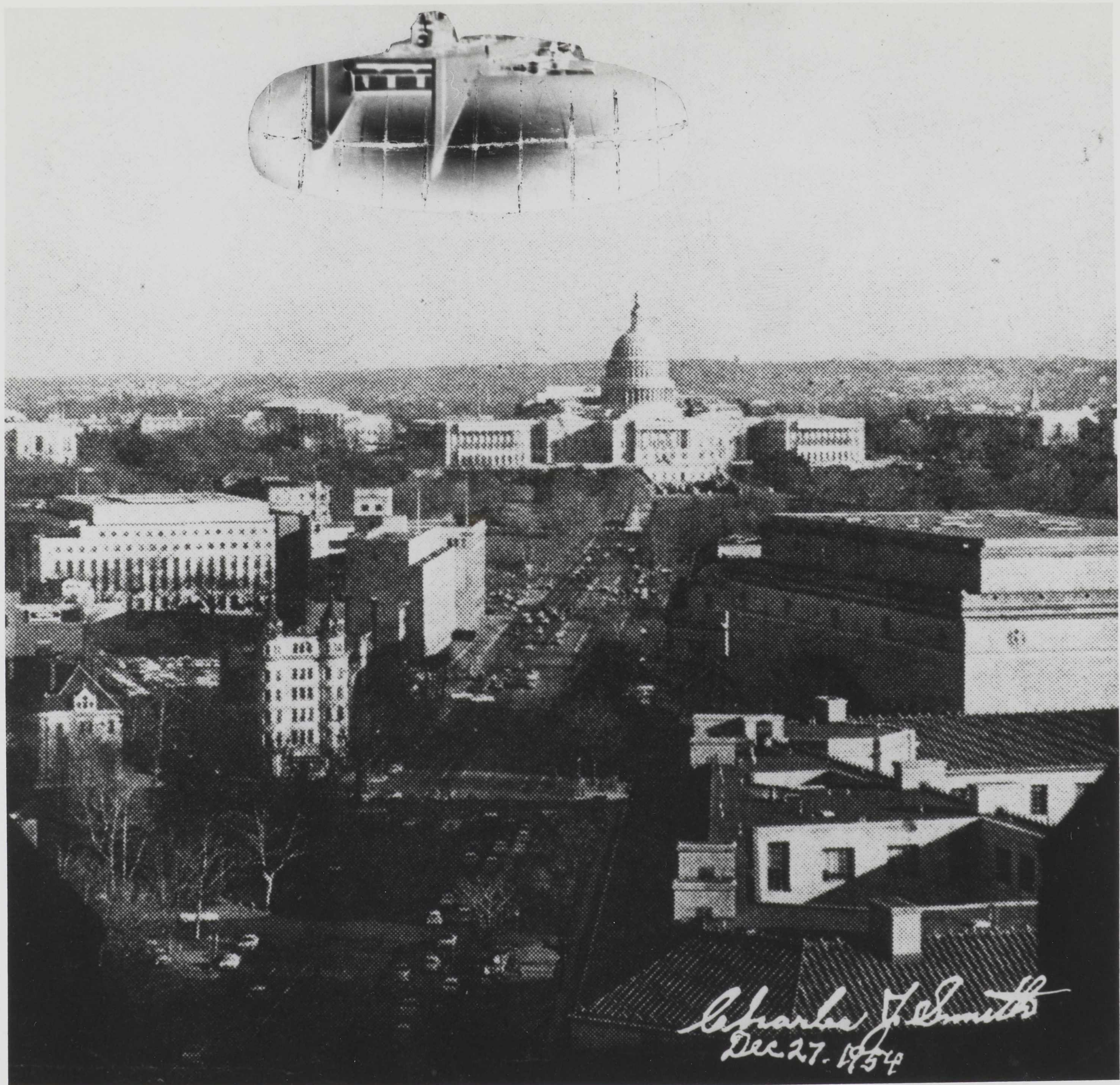
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