

REVIEW
OF THE
UNIVERSITY OF COLORADO REPORT ON UNIDENTIFIED FLYING OBJECTS
BY A
PANEL OF THE NATIONAL ACADEMY OF SCIENCES

Copyright, National Academy of Sciences, 1969. This book, or any parts thereof, may not be reproduced in any form without written permission from the publisher except that reproduction in whole, or in part, is permitted for any use of the United States Government.

Review
of the
University of Colorado Report on Unidentified Flying Objects
by a
Panel of the National Academy of Sciences

The Panel was appointed in the latter part of October and early November 1968. The charge to the Panel was "to provide an independent assessment of the scope, methodology, and findings of the (University of Colorado) study as reflected in the (University's) Report." While the Panel largely restricted its review to this charge, it was thought both appropriate and necessary that the Panel become familiar with various scientific points of view as presented in other publications and reports by technically trained persons.

It was not the task of the Panel to conduct its own study of UFOs or to invite advocates, scientifically trained or not, of various points of view to hearings. The task was to study the University's Report and to assess: First, its scope; namely, did the Report, in the opinion of the Panel, cover those topics that a scientific study of UFO phenomena should have embraced? Second, its methodology; namely, did the Report, in the opinion of the Panel, reveal an acceptable scientific methodology and approach to the subject? Third, its findings; namely, were the conclusions and interpretations warranted by the evidence and analyses as presented in the Report and were they reasonable?

In the course of its review the Panel consulted papers on the same subject by technically trained persons (for example, William Markowitz, "The Physics and Metaphysics of Unidentified Flying Objects," *Science*, 157 (1967), pp. 1274-79. James E. McDonald, "Science, Technology, and UFOs," presented January 26, 1968, at a General Seminar of the United Aircraft Research Laboratories, East Hartford, Connecticut. James E. McDonald, "UFOs - An International Scientific Problem," presented March 12, 1968, at the Canadian Aeronautics and Space Institute Astronautics Symposium, Montreal, Canada. James E. McDonald, "Statement on International Scientific Aspects of the Problems of Unidentified Flying Objects," sent to the United Nations on June 7, 1967. Donald H. Menzel, Flying Saucers, Harvard University Press (Cambridge, 1952). Donald H. Menzel and Lyle G. Boyd, The World of Flying Saucers, Doubleday (New York, 1963). Report of Meetings of Scientific Advisory Panel on Unidentified Flying Objects, January 14-18, 1953. Special Report of the USAF Scientific Advisory Board ad hoc Committee to Review Project "Blue Book", March, 1966. Symposium on Unidentified Flying Objects, Hearings before the Committee on Science and Astronautics, U.S. House of Representatives, Ninetieth Congress, Second Session, July 29, 1968).

The Panel began its review immediately after the Report became available on November 15, 1968, by an initial reading of the Report by each member of the Panel during a two-week period. The Panel convened on December 2 for a discussion of members' initial assessments, for consideration of the Panel's charge (scope, methodology, and findings in the Report), and for delineation of further steps in its review. The latter included the study of other documents presenting views and findings of technically trained persons (e.g., the documents cited above), further examination of the Report's summary and findings, and further directed study of specialized chapters of the Report by appropriate members of the Panel. Extensive discussion, both by correspondence and by telephone, occurred during this period. The Panel met again on January 6, 1969, to conclude its deliberations and to prepare its findings, which are presented below.

I. SCOPE

The study by the University of Colorado commenced in October 1966 and continued for about two years. Case studies of 59 reports of UFOs are presented in detail, with 68 plates; of these, ten reports predated the project, but were so well documented that they were included. A chapter is devoted to UFOs in history, one to UFO study programs in foreign countries, and one to UFOs reported in the 20 years preceding the study. Ten chapters are devoted to perceptual problems, processes of perception and reporting, psychological aspects of UFO reports, optics, radar, sonic boom, atmospheric electricity and plasma interpretations, balloons, instrumentation for UFO searches, and statistical analyses. (Twenty-four appendixes add detailed technical background to the study. Volume 4 concludes with an index of 27 pages.)

In our opinion the scope of the study was adequate to its purpose: a scientific study of UFO phenomena.

II. METHODOLOGY

As a rule, field trips were made to investigate UFO reports only if they were less than a year old. The Report states that nearly all UFO sightings are of short duration, seldom last an hour and usually for a few minutes. Thus most investigations consisted of interviews with persons who made reports. Three teams, usually consisting of two persons each (a physical scientist and a psychologist, were employed in field investigations where telephonic communication with UFO-sighting individuals gave hope of gaining added information. The aim was to get a team to the site as quickly as possible after a reported sighting. (It was found that nearly all cases could be classified in such categories as pranks, hoaxes, naive interpretations, and various types of misinterpretations. A few events, which did not fit these categories, are left unexplained.)

Materials and conditions amenable to laboratory approaches were investigated -- e.g., alleged UFO parts by chemical analysis, automobile ignition failure by simulation studies, and UFO photography by photogrammetric analyses. (Of 35 photographic cases investigated, nine are said to give evidence of probable fabrication, seven are classified as natural

or man-made phenomena, twelve provided insufficient data for analysis, and seven were considered to be possible fabrications; none proved to be "real objects with high strangeness.")

Technically trained personnel were utilized by the University. The University group included a sub-group on field investigations of UFO reports; their narration and interpretations of cases are reasonable and adequate. Leading groups were engaged under contract for specialized work -- e.g., Stanford Research Institute on radar anomalies and a subsidiary of the Raytheon Corporation for photogrammetric analyses. Divergent views of those few scientists who have looked into UFOs were taken into account. The history of the subject was also surveyed, including the experiences in some other nations. Finally, extensive use was made of many specialists in various public and private laboratories.

The Report makes clear that with the best means at our disposal, positive correlation of all UFO reports with identifiable, known phenomena is not possible. No study, past, current or future, can provide the basis for stating categorically that a familiar phenomenon will necessarily be linkable to every sighting. The Report is free of dogmatism on this matter. It is also clear, as one goes through the descriptions of UFO sightings, whether in the Report or in other literature, that while some incidents have no positive identification with familiar phenomena, they also have no positive identification with extraterrestrial visitors or artifacts.

We think the methodology and approach were well chosen, in accordance with accepted standards of scientific investigation.

III. FINDINGS

The study concludes (a) that about 90 percent of all UFO reports prove to be quite plausibly related to ordinary phenomena, (b) that little if anything has come from the study of UFOs in the past 21 years that has added to scientific knowledge, and (c) that further extensive study of UFO sightings is not justified in the expectation that science will be advanced thereby. At the same time it is emphasized in the Report that (c) is an opinion based on evidence now available.

The Report's findings and evaluations -- essentially eight in number, presented in its first section -- are concerned with official secrecy on UFOs, UFOs as a possible defense hazard, the future governmental handling of UFO-sighting reports, and five of them relate to the question of what if any further investigation of UFOs appear warranted in the light of the study. We paraphrase and summarize these findings and evaluations below, appending our comments.

1. On secrecy. Is the subject "shrouded in official secrecy"? The study found no basis for this contention.

We accept this finding of the study.

2. On defense. (a) Is there evidence that UFO sightings may represent a defense hazard? No such evidence came to light in the study. This, however, was not an objective of the study and was properly construed as a Department of Defense matter. (b) The Report states: "The history of the past 21 years has repeatedly led Air Force officers to the conclusion that none of the things seen, or thought to have been seen, which pass by the name of UFO reports, constituted any hazard or threat to national security."

We concur with the position described in (a). As to (b), we found no evidence in the Report or other literature to contradict the quoted statement.

3. On future UFO sightings. "The question remains as to what, if anything, the federal government should do about the UFO reports it receives from the general public?" The Report found no basis for activity related to such sighting reports "in the expectation that they are going to contribute to the advance of science," but the Department of Defense should handle these in its normal surveillance operations without need for such special units as Project Blue Book.

We concur in this recommendation.

4-8. On further investigation. (4) should the federal government "set up a major new agency, as some have suggested for the scientific study of UFOs"? The study found no basis for recommendation of this kind. (5) Would further extensive study of UFO sightings contribute to science? "Our general conclusion is that nothing has come from the study of UFOs in the past 21 years that has added to scientific knowledge. The Report then notes that specific research topics may warrant consideration: (6) "There are important areas of atmospheric optics, including radio wave propagation, and of atmospheric electricity in which present knowledge is quite incomplete. These topics come to our attention in connection with the interpretation of some UFO reports, but they are also of fundamental scientific interest, and they are relevant to practical problems related to the improvement of safety of military and civilian flying. Research efforts are being carried out in these areas by the Department of Defense, the Environmental Science Services Administration, the National Aeronautics and Space Administration, and by universities and nonprofit research organizations such as the National Center for Atmospheric Research, whose work is sponsored by the National Science Foundation."

The Report also observes (7) that UFO reports and beliefs are also of interest to "the social scientist and the communications specialist." In these areas particularly -- i.e., (6) and (7) -- the study suggests (8) that "scientists with adequate training and credentials who do come up with a clearly defined, specific proposal" should be supported, implying that normal competitive procedures and assessments of proposals should be followed here as is customary.

We concur with these evaluations and recommendations.

IV. PANEL CONCLUSION

The range of topics in the Report is extensive and its various chapters, dealing with many aspects of the subject, should prove of value to scholars in many fields. Its analyses and findings are pertinent and useful in any future assessment of activity in this field. We concur in the recommendation suggesting that no high priority in UFO investigations is warranted by data of the past two decades.

We are unanimous in the opinion that this has been a very creditable effort to apply objectively the relevant techniques of science to the solution of the UFO problem. The Report recognizes that there remain UFO sightings that are not easily explained. The Report does suggest, however, so many reasonable and possible directions in which an explanation may eventually be found, that there seems to be no reason to attribute them to an extraterrestrial source without evidence that is much more convincing. The Report also shows how difficult it is to apply scientific methods to the occasional transient sightings with any chance of success. While further study of particular aspects of the topic (e.g., atmospheric phenomena) may be useful, a study of UFOs in general is not a promising way to expand scientific understanding of the phenomena. On the basis of present knowledge the least likely explanation of UFOs is the hypothesis of extraterrestrial visitations by intelligent beings.

--Gerald M. Clemence, chairman; H. R. Crane, David M. Dennison, Wallace O. Fenn, H. Keffer Hartline, E. R. Hilgard, Mark Kec, Francis W. Reschelderier, William W. Rubey, C. D. Shane, Oswald G. Villar, Jr.

Attachments:

--List of Panel Members

MEMBERS OF THE REVIEW PANEL

Gerald M. Clemence, Chairman

Yale University

H.R. Crane

University of Michigan

David M. Dennison

University of Michigan

Wallace O. Fenn

University of Rochester

H. Keffer Hanline

The Rockefeller University

E.R. Hilgard

Stanford University

Mark Kac

The Rockefeller University

Francis W. Reichelderfer

Washington, D.C.

William W. Rubey

University of California

at Los Angeles

C.D. Shane

Santa Cruz, California

Oswald G. Villard, Jr.

Stanford University

Section 4 — SCIENTIFIC, ENGINEERING AND TECHNICAL ORGANIZATIONS

★4845★

AMALGAMATED FLYING SAUCER CLUBS OF AMERICA (Phenomena) (AFSCA)
 P.O. Box 84 Phone: (213) 885-0436
 Northridge, CA 91324 Gabriel Green, Pres.
 Founded: 1959. Members: 5000. Local Groups: 110. "World-wide research organization with members in all 50 states and in 23 foreign countries to inform the general public about the reality of flying saucers (extraterrestrial spacecraft piloted by advanced men and women from other planets and star systems) and of their plan for imparting their advanced knowledge to the people of the Earth in order to resolve present world problems." AFSCA serves as a source of "contactee-oriented" flying saucer information, including books, photographs, contactee reports, and space tapes ("tape recorded messages from space people"). Local units hold public meetings to promote knowledge of the saucer subject and serve as sources for information and literature in their areas. **Publications:** Flying Saucers International, quarterly.

★4846★

INTERNATIONAL FORTEAN ORGANIZATION (Phenomena) (INFO)
 P.O. Box 367 Phone: (703) 920-7120
 Arlington, VA 22210 Paul J. Willis, Dir.
 Founded: 1965. Members: 1500. Scientists, scholars, and laymen concerned with new and unusual scientific discoveries, philosophic problems pertaining to the criteria of scientific validity, and theories of knowledge. Maintains library of 5000 volumes in the physical, biological, and psychological sciences. Named after Charles Hoy Fort (1874-1932), an American journalist who was interested in researching and documenting unusual and unexplained natural phenomena. **Publications:** (1) Fortean Times, bimonthly; (2) The Info Journal, bimonthly; (3) Occasional Papers. **Separetes:** Fortean Society. **Convention/ Meeting:** annual.

★4847★

NATIONAL INVESTIGATIONS COMMITTEE ON AERIAL PHENOMENA (NICAP)
 35 University Blvd., W., Suite 23 Phone: (301) 949-1267
 nsington, MD 20795 John L. Acuff, Pres.
 Founded: 1956. Members: 4000. Staff: 5. Persons interested in aerial phenomena, particularly unidentified flying objects (UFOs); panel of advisers includes scientists, engineers, aviation experts, clergymen, retired military officers, and professors. To gather, analyze, evaluate, and disseminate reliable information on aerial phenomena. Promotes scientific investigation. Field investigations carried out by technically oriented subcommittees (35 U.S.). Provides bibliographic and source materials to students, exchange data to scientific societies and individual scientists, and semi-technical reports to scientists, Congress, and the press. Maintains large library on aerial phenomena, aviation, astronomy, and collection of magazine articles, newspaper clippings, letters, and other documents. Sponsors a lecture program and an exhibit. Involved with a computer study, Project ACCESS. **Publications:** The U.F.O. Investigator, monthly; also publishes UFO Evidence; UFO Wave of 1947; Strange Effects from UFOs. Board of governors meets quarterly.

★4848★

SAUCER AND UNEXPLAINED CELESTIAL EVENTS RESEARCH SOCIETY (Phenomena) (SAUCERS)
 P.O. Box 2228 Phone: (304) 269-2719
 Clarksburg, WV 26301 Gray Barker, Exec. Officer
 Founded: 1954. Members: 6000. Staff: 3. Persons interested in UFO's (unidentified flying objects, popularly called flying saucers). Sponsors monthly lectures in New York City and speeches to colleges and other institutions throughout the United States. Conducts research. Maintains library of several thousand UFO books and periodicals. **Publications:** Newsletter, irregular. Takes part in annual convention known as the Congress of Scientific Ufologists. **Convention/ Meeting:** annual.

★4849★

SMITHSONIAN INSTITUTION CENTER FOR SHORT LIVED PHENOMENA
 185 Alewife Brook Pky. Phone: (617) 868-4793
 Cambridge, MA 02138 Robert Citron, Dir.
 Founded: 1968. Funded by Smithsonian Institution. Serves as a clearing house for receipt and dissemination of information concerning rare or infrequent natural events which might go unobserved or uninvestigated, such as remote volcanic eruptions, birth of new islands, fall of meteorites and large fireballs, sudden changes in biological and ecological systems. Observers all over the world including news media, private citizens, individual scientists, and scientific observatories report on any such short-lived events. Rapid team mobilization will enable research teams, with instruments and equipment, to get into event areas in as short a time as possible to collect data that might otherwise be lost to science. **Publications:** (1) Event Information Reports, daily; (2) Event Notification Reports, daily; (3) Annual Report; (4) Event Reports, irregular.

★4850★

SOCIETY FOR THE INVESTIGATION OF THE UNEXPLAINED (Phenomena) (SITU)
 R.D. One Phone: (201) 496-4366
 Columbia, NJ 07832 Albena Zwerver, Exec. Sec.
 Founded: 1965. Members: 1250. An organization "for the acquisition, investigation and dissemination of information on reports of all tangible items in the fields of chemistry, astronomy, geology, biology and anthropology, that are not readily explained." Encourages field work and on-the-spot investigation by offering advice, helping to raise funds and arranging contacts for members who are planning field trips and expeditions. Field work and research are reviewed by a panel of twenty scientists. Disseminates information on findings through its quarterly journal, papers and reports. Current investigations conducted by Society members include such areas as ancient Egyptian television, ringing rocks, entombed loads and poltergeist manifestations. The Society maintains information files of original material, a map collection and a specialized library. **Committees:** Activities; Library. **Publications:** (1) Pursuit, quarterly; (2) Annual Report; also publishes occasional papers and special reports.

★4851★

UFO INFORMATION RETRIEVAL CENTER (Phenomena) (UFOIRC)
 P.O. Box 57 Phone: (301) 435-0706
 Riderwood, MD 21139 Thomas M. Olsen, Pres.
 Founded: 1966. To collect, analyze, publish and disseminate information on reports of unidentified flying objects. **Publications:** Reference for Outstanding UFO Sighting Reports, irregular.

★4844★

AERIAL PHENOMENA RESEARCH ORGANIZATION (APRO)
 3910 E. Kleindale Rd. Phone: (602) 793-1825
 Tucson, AZ 85712 Coral E. Lorenzen, Sec.-Treas.
 Founded: 1952. Members: 3000. Staff: 5. To conduct investigations and research into the phenomenon of unidentified flying objects (UFOs) and to find a scientifically acceptable solution to this phenomenon. Has special representatives in over 50 countries. Uses services of over thirty staff consultants in fields ranging from biochemistry to astronomy. Maintains COMCAT, computer catalog of all available UFO reports. **Publications:** Bulletin, monthly.