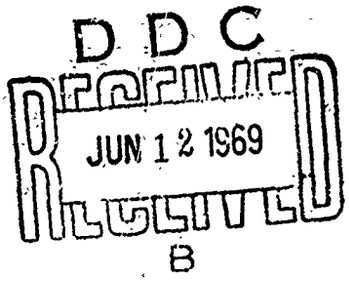
REVIEW

OF THE

UNIVERSITY OF COLORADO REPORT ON UNIDENTIFIED FLYING OBJECTS

BY A

PANEL OF THE NATIONAL ACADEMY OF SCIENCES



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 lasting 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 investigations 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 investigations. (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 came 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 Kac, Francis W. Reichelderfer, William W. Rubey, C. D. Shane, Oswald G. Villard, Jr.

Attachments:

- List of Panel Members
- Letter of Transmittal

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NATIONAL ACADEMY OF SCIENCES

OFFICE OF THE PRESIDENT
2101 CONSTITUTION AVENUE
WASHINGTON, D. C. 20418

January 8, 1969

The Honorable Alexander H. Flax
Assistant Secretary of the Air Force
Washington, D. C. 20330

Dear Dr. Flax:

Following your request of October 29, 1968, the Academy appointed a panel of its members to review the report of the University of Colorado study group on Unidentified Flying Objects.

As you know, a final draft of this report was made available to the panel on November 15, 1968. Under the chairmanship of Dr. Gerald Clemence the panel has devoted substantial time and effort to a careful review of the scope, methodology and findings of the Colorado study group and has prepared and unanimously approved the attached report, which I am pleased to transmit on behalf of the panel.

The Academy accepted this task because of its belief in the importance of making available to the government and the public a careful assessment of the scientific significance of UFO phenomena which have been variously interpreted both in this country and abroad.

Substantial questions have been raised as to the adequacy of our research and investigation programs to explain or to determine the nature of these sometimes puzzling reports of observed phenomena. It is my hope that the Colorado report, together with our panel review, will be helpful to you and other responsible officials in determining the nature and scope of any continuing research effort in this area.

Finally, may I add that the report of the reviewing panel was prepared and is being made available for the sole purpose of assisting the government in reaching a decision on its future course of action. Its use in whole or part for any other purpose would be incompatible with the purpose of the review and the conditions under which it was conducted.

Sincerely yours,

F. Seitz

Frederick Seitz
President

Attachment

UNC

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13. ABSTRACT

The ad hoc committee concurs with the findings of the report of the University of Colorado entitled "Scientific Study of Unidentified Flying Objects," Dr. Edward U. Condon, Scientific Director. Panel agrees that a study of UFOs in general is not a promising way to expand scientific understanding of the phenomena, and adds: "On the basis of present knowledge the least likely explanation of UFOs is the hypothesis of extraterrestrial visitations by intelligent beings." (NOTE: under the provisions of the subject contract, the Government has acquired all necessary rights in the aforementioned report to permit its unlimited reproduction and distribution for any and all Government purposes, notwithstanding the report's copyright notation: "Copyright, National Academy of Sciences, 1969".)

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