

Dr. McDonald, in particular, made it clear that puzzling things are seen by people in all walks of life and under a great variety of conditions. It is also abundantly clear that many incidents have not been completely explained, and probably never will be. This fact, in itself, is not at all surprising. In any body of peculiar data, involving groupings of different types of evidence, there will be a wide range in the ease of explanation. The more difficult cases will only be solved if certain clues are discovered. Statistically, one would expect a percentage where the clues are never found, and the cases remain unsolved.

In reading these hearings I felt that two important points were often missed. Little attention was paid to the subjective nature of the experience of seeing, which includes the psychological effects of previous training and conditioning. The eye-brain combination is extremely complicated, and nonobjective impressions are not necessarily related to the observer's honesty, reliability, or skill. The second point relates to the diverse nature of the unexplained events. There has been a tendency to lump all these together, from starlike moving points in the sky to hazy globes of light on the grass. The fact that something could not be explained is what received primary emphasis, and little thought was given to deciding just why any event suggested this or that hypothesis, or to finding evidence that connected it with some other puzzling event.

In view of the fact that these phenomena have been appearing for centuries, the opinion conveyed in these hearings that an expensively mounted, all-out scientific program will produce adequate evidence for a solution, is not very convincing. Even Dr. McDonald, who has been one of the most vocal in calling for accelerated action, notes two very significant facts. To quote: "I do have the impression that we ought to have more valid UFO photos than the small number of which I am aware"; and "A physical effect that does *not* typically occur under conditions where the description of events might seem to call for it, relates to sonic booms.—This remains inexplicable; one can only lamely speculate that perhaps there are ways of eliminating sonic booms that we have not yet discovered." One can also speculate that rare, image-forming mechanisms in our atmosphere play a larger role than many are willing to admit.

Stenographic recordings of questions and answers rarely read well as literary prose. It is felt, however, that in this case the editing and proofreading leave something to be desired, as numerous errors appear in text. Possibly a compressed printing schedule makes this unavoidable.

Following the official hearings of the Committee, prepared written reports from six additional scientists were received and tabled. Dr. Donald H. Menzel, astronomer, summarizes his views as published in two books. He reaches the general conclusion that the explanation of UFO sightings does not require any assumption of the operation of intelligences from outer space. Dr. Leo Sprinkle, psychologist, expresses a keen interest in the psychological study of the entire field and describes himself as an "unwilling believer." Dr. Garry C. Henderson, geophysicist, would like to see an expanded scientific investigation. Mr. Stanton T. Friedman, physicist, comes out strongly as believing that the earth has been visited by intelligently controlled extraterrestrial vehicles. Dr. Roger N. Shepard, psychologist, writes a particularly interesting paper on the psychological aspects of interviewing the visual observer, and on methods of carrying out a statistical analysis of the resulting data. Dr. Frank B. Salisbury, botanist, reviews the types of sightings recorded and the various possible explanations that have been advanced.

In the opinion of this reviewer it is high time that the whole subject be removed from an area of ridicule and disdain among scientists, on the one hand; and from the aspects of a new religion of visionary enthusiasts, on the other. Let us put it in its proper perspective, as an unemotional recording of interesting, and often unexplained, phenomena. It is the duty of the scientists to keep an open mind, and to consider each new body of data impartially and in the light of what has gone before. In the very nature of the case as it exists at present, the overall picture tells a more reliable story than any single incident or selected group of incidents.

Over the years of history man has encountered a variety of puzzling experiences. It is a mistake to assume, *a priori*, that all the explanations are simple, or that different types of puzzles can be solved using one hypothesis. It is also a mistake to believe that large sums of money, and the equivalent man-hours of labor, will automatically assure us of a satisfactory solution.

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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 of 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 member's 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 a 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.

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**The Condon Report, Scientific Study of Unidentified Flying Objects.** E. P. Dutton & Co., New York, 1969. 967 pp. \$12.95; also Bantam Books, New York, 1969, \$1.95.

The "UFO problem" has, over the past 22 years, aroused strong public concern and stimu-

lated study by many investigators outside the mainstream of science. But, in the view of most scientists, it has been a nonsense problem not to be accorded serious scientific consideration.

The Condon Report and its subsequent strong endorsement by an 11-man *ad hoc* panel of the