UFO's: fact or fiction?

SCIENTIFIC STUDY OF UNIDENTIFIED FLYING OBJECTS. E. U. Condon, scientific director; Daniel S. Gilmor, ed. E. P. Dutton, New York, 1969. Cloth $12.95, paper $1.95

ALIENS IN THE SKIES. By John G. Fuller. 217 pp. Putnam, New York, 1969. $5.95

UFO's? YES!: WHERE THE CONDON COMMITTEE WENT WRONG. By David R. Saunders and R. Roger Harkins. 256 pp. The New American Library, New York, 1969. $.95

by GERALD ROTHBERG

If I were asked for the most important guideline in studying unidentified flying objects (UFO's), I would undoubtedly say, "Be skeptical of everything!" I do mean *everything*, the con as well as the pro of the UFO controversy. Too many persons find it impossible to delve into the subject without eventually becoming overly zealous supporters of their own points of view. I like to believe this has not yet happened to me, but so the reader can judge I will first indicate my background in the subject.

In the summer of 1967 I worked for the University of Colorado Unidentified Flying Objects Project, directed by Edward U. Condon. The motivation was my belief that evidence of extraterrestial intelligence (ETI), if UFO's could provide it, would be the most important discovery of all time. The first difficulty, however, is, "What constitutes evidence?" At one extreme is Condon's attitude:[1] "I won't believe in outerspace saucers until I see one, touch one, get inside one [and] haul it into a laboratory and get some competent people to go over it with me." At the opposite extreme are the religious fanatics who have gathered around some of the self-proclaimed contactees.

This already delicate question of evidence is further complicated by economics. With its limited resources, $526 000, the Colorado UFO project produced a good, minimal effort. A thorough study would require orders of magnitude more money. For example, James E. McDonald, meteorology professor and senior physicist at the Institute of Atmospheric Physics, University of Arizona, talks of an effort the size of the National Aeronautics and Space Administration. Faced with the economic implications, I would be very confident of my evidence before accepting ETI as a reasonable working hypothesis for recommending a large-scale investigation.

Almost all our information about UFO's is from reports of visual sightings. Some of these are truly startling and mysterious. I am very unhappy about these sightings, because it is so easy to be deceived, and after my work as a field investigator with the Colorado project I am even more skeptical. One night, for example, I was present when about a dozen people in Harrisburg, Pa., reported an object 1000 feet above the city, flashing red, white and blue. It turned out to be the star Capella, which was also later responsible for a report of a flashing object with projecting antennas and a dome.

My reason for working with the Colorado project was to attempt to improve the objectivity of the data by obtaining instrumental observations, or combined instrumental and visual, with a team of scientists who were prepared in advance to go into the field with suitable instruments and who had good mobility. This appeared possible because there occasionally is an outbreak of UFO activity reported in a limited geographical area. There happened to be such an outbreak in the Harrisburg area that summer and, after a month of preparation at project headquarters in Boulder, I spent a month there making what I consider the best attempt so far to see and record a UFO at first hand. A brief description of this effort appears as case 27 in the UFO-project report. I personally investigated about 100 sightings and took 9000 pictures with an all-sky camera, set up in the center of activity, but never saw or recorded a UFO. Three or four of the sightings I investigated are as good as some of the classic cases in the UFO books, and it is this nagging residual that keeps me from dismissing the whole business as ridiculous. When you arrive at the scene of a sighting within 30 minutes and an otherwise normal, respectable family tells you a large luminous disk with a dome and a flashing red light hovered 30 feet

LENTICULAR CLOUDS over São Paulo, Brazil. **(Photo appears in the UFO-project report and is reproduced courtesy of the Aerial Phenomena Research Organization.)**

over their heads, it is hard to believe they did not see something real and strange.

The report of the Colorado project, *Scientific Study of Unidentified Flying Objects*, has to be read by everyone interested in the UFO question. It is almost a thousand pages long, but in the first reading many hundreds of pages containing peripheral technical information can be passed over.

Aliens in the Skies by John G. Fuller is essentially just the transcript of the "Symposium on Unidentified Flying Objects" held on 29 July 1968, before the House Committee on Science and Astronautics. At this meeting six reputable scientists, including McDonald and J. Allen Hynek, professor and head of the astronomy department at Northwestern University and chief scientific consultant of UFO's to the Air Force, presented a case for the continued and expanded study of UFO's in direct opposition to the eventual recommendation of the Colorado project.

Fuller has written two other books on the subject, *Incident at Exeter* and *The Interrupted Journey*, but this latest book is definitely not of their quality. Aside from a number of nasty remarks about Condon and editorial comments on the testimony, there is nothing in this book that can not be obtained from the printed record available from the government.[2] Some of the most important material at the symposium was prepared documents submitted for inclusion but not delivered orally at the meetings. Most of this material is not included in Fuller's book, which also lacks a table of contents and does not identify the congressmen who participated.

David R. Saunders and R. Roger Harkins's book, *UFO's? Yes!: Where the Condon Committee Went Wrong*, is meant to be read before reading the project report itself because, like Fuller's book, it attempts to question the credibility of the report by questioning Condon's objectivity and that of the project administrator, Robert J. Low. In my opinion the report does represent the thinking of a substantial number of the senior staff, perhaps even the majority, and therefore it can not be faulted on grounds of bias. I would have been less negative and recommended a small continuing study.

Although the report suggests that the usual funding agencies accept research proposals in this area, it appears very unlikely that the standard machinery for processing proposals will result in any grants. I would like to know if anyone has submitted a research proposal on UFO's. Whatever one thinks about the controversy between Saunders, on the one hand, and Condon and Low, on the other, which eventually reached the public in Fuller's article in *Look*[3] and resulted in the dismissal of Saunders from the project, this book and Fuller's are in fact important complements to the project report.

Harkins was a reporter for the *Boulder Daily Camera* during the project. Saunders is a psychology professor at the University of Colorado and was one of the principal investigators of the project and its driving force. He put together a catalog of sightings that numbered roughly 2000 by the time I left the project. The prospective reader then, if he is not put off by the lurid title and book covers, will find a very readable account of the inner workings of the project and the conflicts that finally resulted in its schism.

But the book has more in it than that. The title *UFO's? Yes!* means that Saunders now believes there are at least a small number of "real" UFO's, that is, reports of UFO's that lend themselves to thorough investigation and that have been investigated and found inexplicable in terms of known phenomena. This important point is also made repeatedly in the UFO symposium. Saunders also believes that ETI is the least implausible explanation of these real UFO's. This is in marked contrast to the project report, which plays down the few unexplained sightings by burying them in a mass of cases that were plausibly explained. Of the 59 field investigations carried out by the project, none, of course, conclusively support ETI, but a few interesting cases remain unexplained, and these should have been prominently displayed to ensure they would not be passed over. They possibly contain the only worthwhile information in the whole study. Actually the project case against UFO's is much stronger than these numbers indicate. Many sightings are discussed in other sections of the report and satisfactorily explained, and perhaps hundreds of other sightings, most of which have also been explained, do not even appear; for example, the 100 reported in Harrisburg, and the numerous ones investigated by telephone and discarded before field teams were sent.

Saunders discusses what he considers the strongest evidence for real UFO's and also describes his current research on statistical and psychological aspects of UFO's and possibilities for future studies. There are also descriptions of some other UFO sightings that sometimes seem overdrawn when compared with the descriptions of them in the project report.

These three books should appeal to a wide audience. The subject is

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inherently sensational and at times the documents read like first-rate detective stories, but the investigators' scientific training also comes through clearly. None of these books, though, should be read without the others.

One annoying feature of the project report is its deliberate obscurity in witnesses' names and exact sight locations in the case studies. It is not clear why this was done, because the report does not do it consistently, and in many other cases these identifications are made. Furthermore some of these cases are classics in UFO literature. This procedure makes it difficult to compare the results of the project's investigation of a UFO report with the descriptions given in the other books. Two of the more difficult examples are case 5 of the report, which appears on page 126 of *"UFO's? Yes!"* and case 42, which appears on page 197. Paul Julian's discussion of orthoteny, that is the straight-line relationship among different UFO sightings, appears in the report (section 6, chapter 10), but is not listed in the index and is relevant to Saunders's discussions.

The point of view of the project report is that all but a small percentage of UFO reports can be reasonably explained, including some that seem very strange. Therefore it is plausible that the residue of unexplained reports could also be explained if more information were available, and that the hypothesis of ETI is unnecessary and unproductive. Saunders, McDonald and others believe that among this residual are cases that are demonstrably not caused by known natural phenomena, and that ETI is the most plausible hypothesis. We now need some reputable journal to recognize this legitimate scientific controversy and to publish analyses of UFO reports with the ETI proponents also stating their results. Who knows? They may just be right.

References

1. W. Rogers, Look, **31**, 6, 76 (1967).
2. "Symposium on Unidentified Flying Objects." Publication PB 179541. Clearinghouse for Federal Scientific and Technical Information. US Department of Commerce, Institute of Applied Technology, Springfield, Va. 22151.
3. J. C. Fuller, Look, **32**, 10, 58 (1968).

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Precursors of Galileo and modern science

MECHANICS IN SIXTEENTH-CENTURY ITALY: SELECTIONS FROM TARTAGLIA, BENEDETTI, GUIDO UBALDO & GALILEO. Translated and annotated by Stillman Drake and I. E. Drabkin. 428 pp. The Univ. of Wisconsin Press, Madison, Wisconsin, 1968. $12.50

by ROBERT S. SHANKLAND

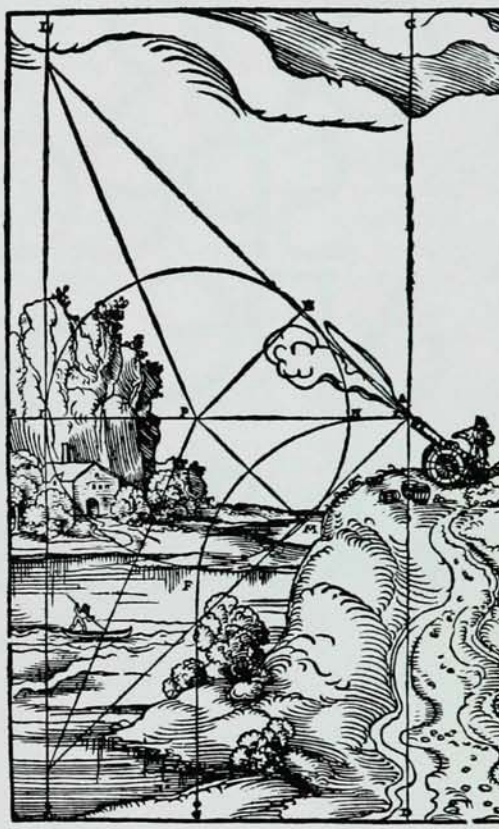
This is a work of the very highest scholarship and in the tradition of Stillman Drake's other distinguished works on Galileo and related subjects in the history of science. The book was prepared in collaboration with the late I. E. Drabkin, and includes introductions written by him for his translations. This selection of writings covers a century that was the final transition period leading from medieval to modern science.

The emphasis at that time was almost exclusively on mechanics, hydraulics and the related mathematics, especially algebra, which was recently introduced into Europe. It is also the period when Aristotle's influence steadily declined and Archimedes of Syracuse's, whose works had recently became available in a useful translation, became more and more dominant. There is also evidence of Hero of Alexandria's influence and faint suggestions of ideas from Leonardo da Vinci.

The editors have prepared a splendid introduction that could hardly be improved upon as model writing in the treatment of the history of science as a rigorous intellectual discipline. The excellent translations present the works of Niccolò Tortaglia, Giovanni Benedetti, Guido Ubaldo and an early hitherto unpublished work of Galileo on motion, prepared during his teaching days at Pisa.

Many of the subjects that the physics student usually associates exclusively with the name of Galileo were considered in great detail by some scientists during the 16th century. Examples are the science of weights that led to important applications in the balance and the investigations of levers and pulleys that led to Fontana's success in erecting the Egyptian obelisks in Rome. Many military machines were studied and perfected and also the screw of Archimedes, which to this day plays an important role in the agriculture of Egypt. Ballistics commanded great attention, and also closely studied before Galileo were falling bodies and projectile motion, including air resistance. During that time scientists investigated many simple and complex machines, both for their inherent scientific interest and for their great practicality in architecture, especially as applied by Alberti, and in shipbuilding and maritime equipment, as shown above all in the great arsenal at Venice.

This is a fascinating book that clarifies the earlier scientific developments that made Galileo's great advances possible: It is also history in a broader and deeper sense than simply a record of scientific progress. There is a fine presentation throughout of the groping and progress needed to develop the scientific concepts so essential to Galileo's synthesis of mechanics. The literary style is excellent, and the scholarship is detailed and authoritative. The book is certainly a contribution to our



TRAJECTORY DIAGRAM by Niccolò Tartaglia, superimposed on a landscape, as shown by Walther Ryff in *Der geometrischen Büxenmeisterey*, in *Der Architectür . . .* (Nürnburg, 1558). Photo courtesy of Burndy Library.