

A LITTLE PHYSICS . . . A LITTLE FRICTION: A CLOSE ENCOUNTER WITH THE CONDON COMMITTEE

BY ROBERT M. WOOD

In 1966 I read a book by Harvard astronomer Donald Menzel that evaluated UFO sightings.¹ The discussion of sightings seemed unnaturally forced to provide a conventional explanation, usually at the price of ignoring the information provided by witnesses. This unsatisfying book caused me to read a wide spectrum of UFO literature. From it I concluded that the simplest explanation for UFOs is: if intelligent life is abundant, and if new physical principles are discovered that will permit inertial control, gravitational control, and superluminal travel, we should expect to see many visitors.²

Confident in the conviction that small rebel groups or individuals often achieve breakthroughs,³ I recommended to my management that a modest company-funded project* be undertaken to explore breakthroughs in gravity propulsion. The project included the exploration of unpopular theories, laboratory evaluation of hypotheses, field observation, witness interviews, and examination of the UFO literature. At one point there were four full-time and three part-time employees involved. The project was terminated in 1969 at my recommendation due to our inability to identify the timing of the payoff. The project was slightly covert to avoid premature discussion. The code name was "BITBR," standing for "Boys In The Back Room," and selected because we had a room in the back of the building under a stairwell with a tumbler lock.

In spite of our desire to keep a low profile, we networked with selected key people. For example, Jim McDonald⁴ knew of our work, Allen Hynek⁵ became a personal friend, I was invited to testify at the Congressional hearings in 1968 (but declined),⁶ and Carl Sagan initially invited me to participate in the to-be-postponed UFO symposium in 1968 sponsored by the American Association for the Advancement of Science (AAAS).⁷

USING THE EARTH'S FIELDS

One of the early analyses our project performed was to

Robert M. Wood was a very early member of the Center for UFO Studies and a member of their Scientific Board, a long-time member of the Mutual UFO Network (1973) and a long-time McDonnell Douglas employee, of which 35 years have been in research and development management.

determine whether, based on conventional physics, one could use the earth's electric field (typically 100 volts/meter at sea level) or magnetic field (typically 0.3 gauss) to support craft that might have an electric charge or a magnetic dipole.

Figures 1, 2, and 3 are presented to summarize this analysis. (The figures shown here are exact copies of the originals used at the Condon meeting to be discussed.) Figure 1 shows the operating parameters for a charged sphere floating in the earth's electric field with a payload inside. The plot shows boundaries where the payload would be too densely packed (heavier than water), so light that a balloon would be easier, and corona breakdown. For all interesting payload cases the high voltages would cause a corona discharge and the charge would not remain on the sphere. Consider the geometry of a magnetic dipole with magnetic moment M , suspended in the Earth's magnetic

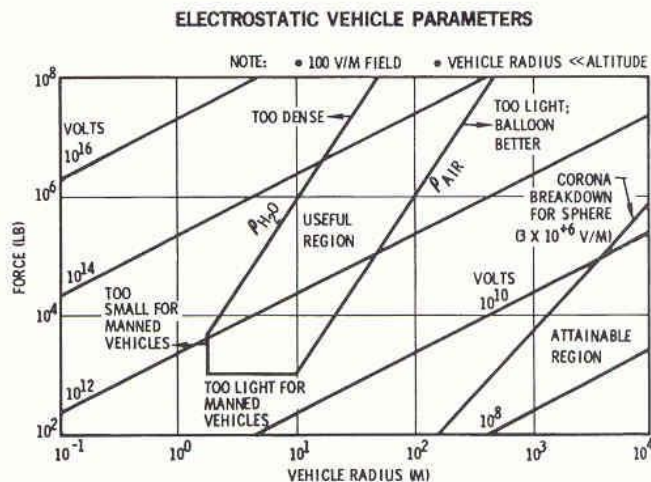


Figure 1. This shows what the voltage would have to be on a charged, hollow sphere to support the total weights shown on the ordinate. If the charge could be kept on instead of sparking or leaking off, a 10-meter radius sphere charged to about 10^{13} volts would support a 100,000-pound payload. 10 TRILLION

*This article was not submitted for review and approval and therefore does not reflect any implied or explicit endorsement by the McDonnell Douglas Corporation. Although the existence of this project is no longer believed to be controversial, the privacy of the other employees involved is respected and their identity is not revealed here.

Twenty questions on UFOs provided to the Condon Committee

Specific

1. What "probability of reality" are you requiring before accepting apparent observations in a tentative data bank?
2. What technical data or estimate magnitudes have been obtained for observations of:
 - Magnetic field strength?
 - Electric field strength?
 - Intensity vs. spectral distribution of EM?
 - Sizes?
 - Temperatures?
 - Flight kinematics (G's, velocity vs. altitude)?
 - Acoustic spectra?
 - Odor classification?
 - Geometry/brightness/acceleration relationship?
3. What industry participation have you received to date and are you looking for any more?
4. Have you verified any cyclical trend of sighting frequency with Mars distance and is such a trend continuing?
5. Do you think that the reported animal reactions, if true, are due to ultrasonic, magnetic, electric, or other energy?
6. Do you think that it clearly follows from Markowitz's five assumptions that the UFOs cannot be extraterrestrial?

General

7. Have you set up a standard set of criteria to keep the logic as consistent as possible, thereby eliminating emotional non-scientific factors such as "guilt by association" and "proof by analogy"?
8. Do you think that a feasible propulsion scheme which would duplicate most UFO alleged performance feats would affect the opinion of scientists about the reality of UFOs? Why should it?
9. If the UFOs are extraterrestrial, are you inclined to feel that their propulsion and/or energy principles are:
 - a) within the capabilities of our science and engineering,
 - b) within our scope of understanding of science but temporarily outside of our engineering capability, or

c) clearly require an extension of our understanding of basic science?

10. Do you think that the "will to believe" for the believers is a more or less important factor than the "will not to believe" for non-believers? In your study so far have you found that a deep-rooted psychological motive, perhaps unknown to the individuals, is the basis for the pro and con argument, and that both sides have failed themselves by either ignoring evidence or escalating the evidence available?

11. Are you concerned that the public, the customer, and fellow scientists might draw preliminary conclusions from your public statement made prior to the completion of the study, thereby resulting in subtle pressures which would in turn influence the outcome?

12. Have you attempted to get the "strangeness"/"credibility" correlation suggested by Hynek?

13. On the basis of the publicly verifiable evidence do you feel that your conclusions differ from those of the past?

14. What specific books or references have you read? What special information do you have access to which is not generally available to the public?

15. Do you think that two carefully worded opinion polls, one aimed at the public and one aimed at scientist could result in important new information or contain any surprises?

Speculative

16. If it were established that the UFOs were extraterrestrial, what actions would you recommend and by whom?

17. Why do you, or do you, think that "The Interrupted Journey" is a hoax, a dream, or a reality? "The Villa-Boas Incident"?

18. If there are as many extraterrestrial craft as are reported, how do they handle their traffic control problem without our knowing it?

19. How many reports do you have of the human mind receiving and detecting direct communications from UFOs and/or occupants?

20. How do you like to answer the question "If they're extraterrestrial, why don't they contact us?"

field B, as shown in Figure 2. Current flowing around a toroid will produce both a force F and a torque T. If the dipole is maintained stable with no torque, the vehicle parameters are as shown on Figure 3, indicating a useful region for manned transportation craft: not too dense, not too small, not too light. Figure 4 shows a charged dipole with a smooth external shape to minimize field strength concentrations. The spiraling motion produced on the electrons and ions by the strong magnetic field might be able to keep the charge from leaving. Current density in the presumed superconducting toroid to permit this design was estimated to be of the order of 10^{14} amps/m².

THE VISIT TO CONDON

Since this shape looked more or less like those in some UFO reports, it was suggested (by both Allen Hynek and Jim McDonald) that it be presented to the Condon Committee, whose study at that time was well underway. Therefore, I wrote a letter to Dr. Condon offering to present these results

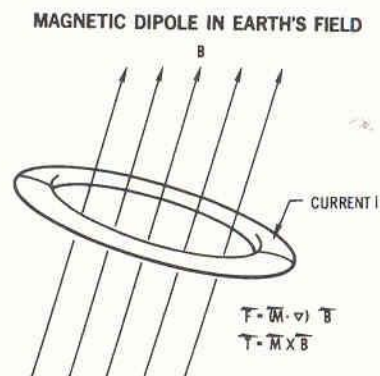


Figure 2. A toroid made of superconducting material circulating millions of amperes can hover in the earth's magnetic field due to the vertical gradient of the field. The torques, however, due to a few microradians misalignment with the field vector will cause overturning moments that will suck the dipole downward instead of supporting it upward. This would require a high-quality precision control system.

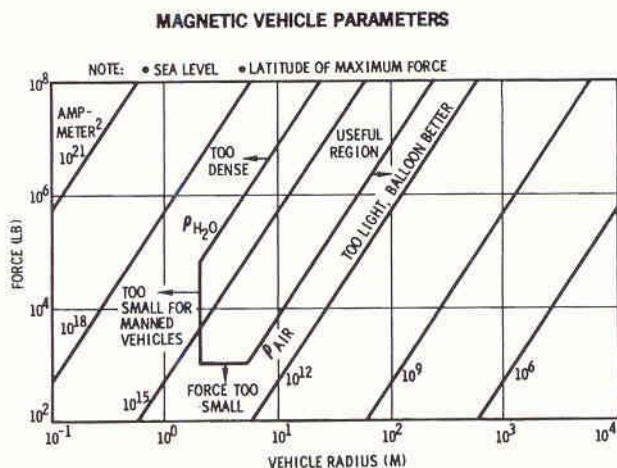


Figure 3. A hovering toroidal magnet with a dipole moment of 10^{15} amp-meter² can support 100,000 pounds of payload for a six-meter radius with 10^{13} amperes flowing around it.

and our conclusions. He invited me to come and do that, and the date agreed was Friday afternoon, October 13, 1967.

While reminiscing about my undergraduate days at the University of Colorado, I entered Woodbury Hall, next to Hale Hall where I had taken freshman physics laboratory 22 years before. There I had done the Millikan oil drop experiment, in which a drop of oil is supported by an electric field.

The Committee was cordially waiting for me, and after introductions (Robert Low, David Saunders, Roy Craig, Mary Lou Armstrong, Edward Condon, Franklin Roach), we sat around the room, with Condon staying at his desk at the far end. I gave them copies of my twenty questions (shown on page 7) for later discussion. They wanted to hear about our technical results. They had a projector and a screen set up. I gave my briefing, giving a little background, and quickly got to evaluating the design limits discussed above. At that time, during the briefing I noted that the current density required (10^{14} amps/m² minimum) was only a factor of ten greater than that achieved by the best superconductors of the day.⁸ Dr. Condon said, "Well, there's your answer! You can't do it." Several committee members looked at him incredulously.

I forget the exact sequence of the entire conversation, but we did talk about many of the twenty questions that I had prepared to promote focused conversation, and I do remember that Condon told one or two hoax stories in a jovial manner. I more or less tried to lead them through the questions, but there were too many for the time agreed upon, and Low was more or less picking and choosing. I don't recall ever getting to the discussion of the article by Markowitz⁹ (question 6). I do recall that at one point I asked question 8, postulating a craft landing outside the building in 10 minutes, and Condon stated that it would not change his opinion of the subject. At that point, his staff again looked toward him incredulously.

MAGNETIC - ELECTROSTATIC MODEL

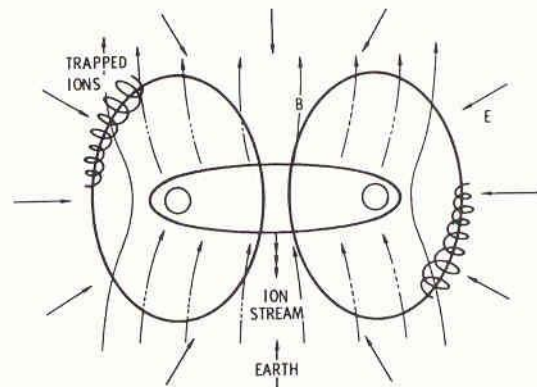


Figure 4. If a toroidal magnet were enclosed by a charged ellipsoidal shell, both the electrons and ions produced by the leakage current might be trapped in the large magnetic field of the magnetic dipole, and leak off comparatively slowly.

We parted most pleasantly, and later I met socially with Dave Saunders, who lived just a block or so from my father. He privately expressed significant concern about the objectivity of the study, and later resigned and wrote a book called *UFOs? Yes!*¹⁰

After returning home to Southern California the following week, I noticed that Bob Low was to be giving a talk entitled "Are UFOs for Real?" at CalTech after a dinner meeting of the IEEE. I attended the meeting, and concluded that he was giving me the impression that he was neither unbiased nor objective, even though I did use the phrase "a very fair treatment of this difficult subject" in a letter to Dr. Condon discussed next.

MY LETTER TO CONDON

After absorbing various statements from the media about what the Committee was thinking or doing, I decided to write a letter a couple of months later, which is shown on the following page. This letter was on company stationery and mailed according to the procedures we were using at that time, which did not require extensive approval for professional correspondence that did not involve any contract work. Accordingly, I do not believe that I sought the approval of my boss to send it, although I think our BITBR staff offered suggestions before the final version. Furthermore, because it seemed unlikely that Condon would have motive to implement my suggestions, I also sent copies to Low, Craig, Roach, and Saunders in separate envelopes. Bob Low responded to my letter to Condon with a not unreasonable rebuttal to my views.

The things that impressed me about the visit are really the first four points in my letter to Dr. Condon. Of these points, their lack of familiarity with the UFO literature really stunned me. Also, the lack of interest in how such craft (if

9 January 1968

Dr. Edward U. Condon
University of Colorado
Boulder, Colorado 80302

Dear Dr. Condon:

Thank you very much for the high degree of courtesy extended to me on the occasion of my visit there.

You might be interested to know that I attended Bob Low's Southern California IEEE talk and had the reaction that he gave a very fair treatment of this difficult subject.

I am still left with some very genuine concerns about the probable conclusions of your study. This sweeping statement is supported by four subsequent concerns as follows:

1. I don't really have the deep-down feeling that the extra-terrestrial hypothesis is receiving your open-minded attention.
2. You gave me the impression, perhaps unintentionally and perhaps inaccurately, that you and your staff may not be familiar with the whole spectrum of UFO literature. For example, when I mentioned the Villias-Boas incident it seemed to me that only one member of your staff had read this one whereas it has been reported in some detail in at least three books. I am enclosing a list of references on UFO's, all of which I would regard as "required reading" were I involved in your contract.
3. Your subcontract effort would appear to be oriented towards "explaining the UFO's away". For example, the S.R.I. contract to study radar anomalies will undoubtedly result in our learning more about radar and not about UFO's. While I am not familiar with the scope of your Raytheon contract, instinct tells me that it is not likely to include the possible premise that UFO's are extraterrestrial craft and hence, unlikely to support such a hypothesis.
4. Whereas your objectives in the study are limited only by the language of the contract, you have elected to limit your objective essentially to the question of whether they are real objects. I would see no reason to believe that such a limited objective would have any greater chance of success than the same objective has had for 20 years, unless the sighting frequency has gone up significantly, thereby offering the opportunity for well instrumented and documented sightings under the control of your study as opposed to instrumented and documented sightings which differ primarily in that they have not been under the control of your study. If they are not real craft, what they are is probably trivial scientifically; if they are real craft, the important objectives that you should be addressing are how do they work, where do they come from, why do they come, when did they start coming, what do they want, and to use Frank Edwards' chapter title, "Who's Driving?"

Figure 5. The letter to Dr. Condon after the visit suggested some concerns and some actions.

there were any) might work pretty clearly indicated that the scope of the study was sharply limited to the reality of the phenomena, not understanding it. Furthermore, from a management viewpoint, it was clear to me that the Committee was not a cohesive team at all. Condon clearly was trying to use his reputation to overpower the others intellectually, and he had lined up Low as his agent to do the real control to keep everyone in their own little assigned slots. I had the impression that my visit was one of the few times that they had convened as a group to deal with the totality of the subject.

Sending copies of my letter to his staff must have incensed Condon because I was told many months later that he had contacted James S. McDonnell, the CEO of McDonnell Douglas at that time (we had been merged with McDonnell Aircraft for less than a year), asking that he get me fired. I do not know the details of this interaction, but my management supported me, and I was blissfully unaware of this contact until much later. The project

continued independent of this attempt to kill it.

FINAL DISCUSSIONS

In retrospect, this interaction with the Condon Committee was consistent with the pattern of the project: Low doing much of the public action-oriented work; Condon using his prestige to set the stage for the non-answer; the members trying to be objective much of the time, while shuddering at the project environment, focused on their specialties; and generally showing nowhere nearly as much knowledge of the literature as I had picked up in a year of part-time reading.

My last interaction with the Committee was with Dr. William K. Hartmann, who interviewed Rex Heflin at the home of Idabel Epperson. Heflin was a California highway maintenance engineer who took four Polaroid

As we all know, to be critical is sometimes easy and to be constructive is often more difficult and usually less frequent; however, I will try with some suggestions intended to be totally constructive.

1. I would recommend dividing your staff into two teams: "A believer team and a disbeliever team". This would have the effect of assuring open mindedness from now until the conclusion of your study, especially if the reports and views of both teams were carried through in the final report.
2. Because I feel we all have a tendency to be swayed by what other people think, it might be very constructive to openly assess this factor by two carefully worded opinion polls - one aimed at the scientist and one aimed at the general populace. Intuition tells me if the polls probe for the basis of the opinions then such information could shed light on underlying issues.
3. I would urge a systematic analysis of the technical and scientific implications of the reports in order to lay the foundation for future action by the engineering and scientific communities.
4. If your conclusions evolve along the lines that "they are probably not extraterrestrial craft" I honestly believe that it would be constructive to make the assumption that you are wrong and to test in detail the alternative logic.

In making the above statements I have some concern that you may feel that I took advantage of your courtesy and am making irritating remarks. However, I firmly believe that even though you may not be as "open-minded" as I would like about the extraterrestrial hypothesis, that you are going to do everything you can to assure the highest scientific standards, which will certainly include listening to and paying attention to, and even seeking out all points of view proposed by rational minds if they could have some useful bearing on the subject. Therefore, I am sending copies of this letter to several of the staff members.

I find it much easier to keep a balanced view myself by cultivating the natural humor associated with this subject; since I think you and your staff do too, I am sending you my set of better cartoons which I have been collecting. The POGO strip in the front of Sagan-Shklovski is an excellent introduction, isn't it?

I have nothing more to contribute along technical or scientific lines at this time that I am very sure of. If, on the other hand, you would like my assistance in any way, I should be pleased to give it.

Thank you again for the audience which you gave me. I hope it may one day bear fruit for all of us.

Very truly yours,

Robert M. Wood

R. M. Wood, Deputy Director
Research and Development
Advance Systems & Technology

RMW:msb

Enclosures - List of References (U)
Set of Cartoons (U)

cc: Robert J. Low
Dr. Roy Craig
Dr. Franklin Roach
Dr. David R. Saunders

photographs of a close daytime UFO encounter. The Condon report wrote it off as a hoax. There was nothing in the interview that I heard that would have led to the conclusion of a hoax. The Heflin testimony and photographs, however, warrant a separate discussion because Heflin's report of a rotating beam of light on its underside was confirmed by a high-contrast print of one of the four photos he took.

It was clear to me that neither Condon nor Low were seriously interested in engaging in any technical analyses that might have been germane to how such vehicles might operate. Since that was the whole point of our company focus, no further contact was promoted with the Condon Committee. We read the results later. One of our staff analyzed the fat report in great detail, providing an analysis of the contents of the report, sharply contrasting with the summary by Condon. Such comparisons have been noted by others. My first-hand interaction with the Condon Committee was a blend of a little physics and the friction normally accompanying ideas in conflict.

REFERENCES

1. Donald H. Menzel and Lyle G. Boyd, *The World of Flying Saucers* (Garden City, N.Y.: Doubleday, 1963).
2. Robert M. Wood, "The Extraterrestrial Hypothesis Is Not That Bad," *Journal of Scientific Exploration* 5, no. 1 (1991): 103-111.
3. Robert M. Wood, "Giant Discoveries of Future Science," *Virginia Journal of Science* 21, no. 4 (1970): 169-177.

BOOK REVIEW

Leah A. Haley, *Lost Was the Key* (Greenleaf Publications, P.O. Box 70563, Tuscaloosa, AL 35407-0563). 1993. 160p. \$22.45 ppd.

Lost Was the Key is the personal account of a woman (using the pseudonym Leah A. Haley) who describes her attempt to understand what she perceives to be an alien abduction experience. What significance this book has rests not with any information it provides about UFOs or aliens, but in the way it encapsulates everything problematic with alien abduction stories and abduction research.

In essence, the book consists of Haley describing her dreams, memory flashes, seemingly real events remembered under hypnosis, and personal experiences that she regards as the sinister workings of nefarious forces. Unfortunately, despite Haley's own conviction that these recollections constitute proof of the reality of her abduction and governmental interest in her knowledge of the alien presence, she fails to provide any convincing evidence that something extraordinary happened to her. Here is the sum total of her evidence: a vaguely remembered childhood sighting, a family interested in UFOs and readily willing to

believe in her abduction, and an abduction researcher convinced that alien intervention is the only explanation for any psychological state or physical condition she experiences.

Lost Was the Key illustrates how one's perception of reality can be subtly influenced—even distorted—by beliefs, family attitudes, popular culture, hypnosis, support groups, and questionable research methodology. Abduction researchers should read this book as an example of how published accounts (especially those which imply a correlation between certain psychological states and event-level reality) or research methods and counseling techniques (especially the use of hypnosis and support groups) can create and promote an abductee subculture—one based largely perhaps on false memories.

Just as "false memory syndrome" is now a controversial feature of cases involving alleged childhood sexual abuse, abduction researchers must consider the possibility that a similar phenomenon is contaminating their data.

Lost Was the Key is a warning—an unintentional one—to all of us who are interested in discovering accurate data and thinking objectively about this modern-day mystery.

—David Boras

4. James E. McDonald was an articulate atmospheric scientist from the University of Arizona. His views are comprehensively summarized in the monograph in note 6.

5. Allen Hynek was the long-time scientific consultant to the Air Force's official project. Of his many publications, perhaps the best encapsulation is *The UFO Experience: A Scientific Inquiry* (Chicago: Henry Regnery Company, 1972).

6. *Symposium on Unidentified Flying Objects*, Hearings before the U.S. House Committee on Science and Astronautics, 90th Cong., 2d Sess., July 29, 1968 (Washington, D.C.: Government Printing Office, 1968), pp. 18-85.

7. Carl Sagan and Thornton Page, eds., *UFO's: A Scientific Debate*, papers presented at a symposium sponsored by the American Association for the Advancement of Science, Boston, December 26-27, 1969 (Ithaca, N.Y.: Cornell University, 1972).

8. W. B. Sampson, P. P. Craig, and M. Strongin, "Advances in Superconducting Magnets," *Scientific American*, March 1967, p. 114.

9. William Markowitz, "The Physics and Metaphysics of Unidentified Flying Objects," *Science* 157 (1966): 1274-79. The main thrust was to show how ridiculous it was to contemplate interstellar travel, making the (largely) undiscussed assumption that it is impossible to travel faster than the speed of light or any other way than the ways we knew about then.

10. David R. Saunders and R. Roger Harkins, *UFOs? Yes!* (New York: World, 1968). ♦