
RADIO SIGNALS FROM SPACE, ALIEN PROBES, AND BETTY HILL

BY MICHAEL D. SWORDS

This article is built around three earlier articles, each remarkable in its own way. The core concerns odd radio signals that have seriously been considered, by persons outside the UFO research community, as possibly involving alien technology. Yet the SETI community, which supposedly is centrally interested in the concept of an alien signal, essentially ignores them.

These three articles are:

C. D. Jackson and Robert E. Hohmann, “An Historic Report on Life in Space: Tesla, Marconi, Todd,” a paper presented at the American Rocket Society, 17th annual meeting, November 13–18, 1962, Los Angeles.

Oswald G. Villard Jr., Antony C. Fraser-Smith, and R. P. Cassam, “LDEs, Hoaxes, and the Cosmic Repeater Hypothesis,” *QST* 55 (May 1971): 54–58.

Robert A. Freitas Jr., “Interstellar Probes: A New Approach to SETI,” *Journal of the British Interplanetary Society* 33 (1980): 95–100.

This material is convoluted enough that I will take the papers one after the other rather than immediately fold the whole story together.

JACKSON AND HOHMANN: 1962

Someone in lofty levels of the IBM Corporation had heard a talk by Walter R. G. Baker of the Syracuse University Research Corporation, who suggested it was prudent not to forget the advances of past geniuses just because those breakthroughs didn’t find application at the time—sort of the engineering equivalent of Charles Fort’s attitude about not sweeping odd scientific facts under the rug. This message came down through the IBM ranks to Jackson and Hohmann. They were interested in electrical inventors Nikola Tesla (1856–1943) and Guglielmo Marconi (1874–1937), and out of that came their paper.

Their article described Tesla’s and Marconi’s beliefs that each had acquired signals from outer space. Jackson and Hohmann were sympathetic to that view and spoke about it to the American Rocket Society. Even today, the claim

would probably be laughed at in proper academic circles. Why did they have the guts to go public with it in 1962?

It turns out that 1962 was in the midst of a period of leading-edge academic interest in the search for extraterrestrial intelligence. Prior to 1959, the topic was at best trivially speculative and at worst tainted with the stigma of flying saucers. But consider what happened in the next five years. In 1959, Giuseppe Cocconi and Phillip Morrison wrote their paradigm-changing article in *Nature* on “Searching for Interstellar Communications”; Freeman J. Dyson wrote “Search for Artificial Stellar Sources of Infrared Radiation” in *Science*; and Su-Shu Huang wrote “Occurrence of Life in the Universe” in *American Scientist*.

In 1960, Edward M. Purcell followed with a report out of Brookhaven National Labs on “Radioastronomy and Communication through Space.” Then Robert W. Bussard showed how to fly there with “Galactic Matter and Interstellar Flight” in *Astronautica Acta*, and Ronald N. Bracewell suggested that they might already be here in the guise of probes (“Communications from Superior Galactic Communities” in *Nature*). Two CalTech scientists then reported that two galactic radio sources, labeled CTA21 and CTA102, looked possibly artificial.

In 1961, Frank Drake told the world that he’d looked for ET signals with “Project Ozma” (*Physics Today*). J. A. Webb contributed “Detection of Intelligent Signals from Space” at the Institute of Radio Engineers 7th National Communication Symposium, and Eugen Sanger told us, once again, that we earthlings could fly there if we had the will (“Nuclear Rockets for Space Flight,” in *Astronautics Science Review*).

Then in 1962, the same year that Jackson and Hohmann did their work, Bernard M. Oliver offered “Radio Search for Distant Races” in *International Science and Technology*. Bracewell returned with “Radio Signals from Other Planets” (*Proceedings of the Institute of Radio Engineers*), Leslie C. Edie suggested coded messages in the DNA of viruses from space (seriously) in *Science*, and the Jet Propulsion Lab’s Dwain F. Spencer and Leonard D. Jaffe wrote of the “Feasibility of Interstellar Travel” in JPL’s *Technical Reports*. And the onslaught of these influential publications continued for the next year or so (while the UFOs, paradoxically, slept).

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So the two IBM scientists were not so far out on a forbidden limb as it might at first seem. In fact, they were in an excited flow of freethinking. What did they have to say? Let's take it piece by piece.

Tesla. In 1899, he was at his laboratory in Colorado Springs, driving monstrous surges of power into the Earth and also beaming energy outward from the 280-foot tower he'd built. He had instruments to record electromagnetic disturbances anywhere within a radius of 1,100 miles. It was an experiment of Frankensteinian proportions.

During the tests, Tesla began picking up odd data on his instruments. He was sure that this was a signal of some sort. The signals came

periodically, and with such a clear suggestion of number and order that they were not traceable to any cause then known to me. I was familiar . . . with such electrical disturbances as are produced by the sun, Aurora Borealis and earth currents, and I was as sure as I could be of any fact that these variations were due to none of these causes. The nature of my experiments precluded the possibility of the changes being produced by atmospheric disturbances. . . . Although I could not decipher their meaning, it was impossible for me to think of them as having been entirely accidental . . . a purpose was behind these signals. . . . they are the results of an attempt by some human beings, not of our world, to speak to us by signals. . . . I am absolutely certain that they are not caused by anything terrestrial.

After informing the world of these signals, he would neither discuss the devices he used nor the signals any further. But while this was occurring, the second genius in our story, Marconi, was astounding the world with his wireless transmission across the English Channel.

Marconi. In Newfoundland in 1901, he received the first radio signal sent across the Atlantic. People were wowed, Marconi became well-to-do and built a mobile laboratory on his yacht the *Electra*, so that he could work in privacy. As *Electra* sailed the Mediterranean in 1921, Marconi received a signal that he viewed as being of interplanetary origin. The London manager of the Marconi Wireless Telegraph Company, J. C. H. MacBeth, reported this news:

The signals . . . registered high in the meter band, although the maximum length of earth-produced waves at the time was 14,000 meters. The theory that the waves were produced by electrical disturbances was disproved by the regularity of the pulses. Although the pulses apparently consisted of a code, the only signal similar to earth codes was one resembling the letter "V" in the Marconi Code. Marconi himself expressed the belief that the signal had originated . . . at some point in outer space.

This leads us to **David P. Todd**, who was a professor of astronomy at Amherst College in Massachusetts. Todd



Nikola Tesla



Marconi on the Electra

knew that Mars was to make a close approach to Earth in 1924. Somehow, he got the U.S. government to persuade other countries to turn off their high-powered transmitters to create brief radio silence periods in August of that year. Then he waited and recorded . . . extra-terrestrial signals, in his opinion. (For more details, see *IUR*, 29:3, p. 20.)

All this is genuinely interesting, but apparently it was especially so to Jackson and Hohmann. They are not only sympathetic to the extraterrestrial reality of the signals, but they take them a step further. Marconi broadcast a signal (the letter "V" in Morse code) across the English Channel in



David P. Todd

1899. In 1921, aboard the *Electra*, he received his extraterrestrial data train, which included only one recognizable code—the letter “V”. In December 1901, his transatlantic signal was a repetition of the code for “S”. In 1924, David Todd received his signals, which included one “decipherable” code—the letter “S”.

Though consisting of only two data points, Jackson and Hohmann were impressed by this. They believed that the two signals had similar response times of about 22 years, and that perhaps the signal source was 11 light years away or so. They noted that Epsilon Eridani, a main-sequence star, is 10.7 light years distant, and went on to quote Drake’s new ideas on radio-message-sending civilizations. Tau Ceti



Carl Sagan, 1980

was a second candidate star at 11.8 light years. Intriguing as it is, this paper was probably just a little too much for the conservative academics to swallow, and it faded away, rarely to be referred to by the new SETI community. And—curses! foiled again!—the UFOs were back. Whenever the UFOs are thick, it’s tough to be a vocal SETIian. One young SETI scientist who was a little too dense to understand this was Carl Sagan. While the rest of his colleagues were anxiously pushing ET as far away from the solar system as possible, he was writing papers about how interstellar travel was not only possible but likely. To make matters worse, he began a relationship with Iosef S. Shklovskii, the imaginative Soviet SETI researcher, who believed that the two satellites of Mars were artificial ET-artifacts. In 1966, Sagan made the colossal tribal blunder (at the American Astronautical Society) of saying that ET had probably visited our solar system thousands of times in Earth’s history and could well have visited in historic times. It took years for him to recover his own aura of proper ET distance in the minds of the wheelhorses of astronomy and physics. For example, Ed Condon was extremely suspicious of him.

The subject of genuine ET-response signals did not die during this period because of interest, in radio circles, in the phenomenon known as “long delayed echoes” (LDEs). The signals were repeated from transmissions that had been sent moments before, or even many minutes before. The 22-year delay that Jackson and Hohmann wrote about is not an example of an LDE. An LDE can be as short as a few seconds but as long as a couple of days. One Japanese measurement was four days late. Surely, the category of LDE is some kind of mixed bag of differing phenomena.

Short-wave transmitters first noticed LDEs in the 1920s. People began to try to explain them, and although they had some luck with the extremely short ones, the lengthier LDEs



Oswald Villard (left), Antony Fraser-Smith

have never been satisfactorily explained. Oswald Villard at Stanford University wrote “Long-Delayed Echoes: Radio’s Flying Saucer Effect” in *QST* in May 1969. Hidden just beneath the smile was the thought that maybe these signals were being picked up by an extraterrestrial probe, possibly automated, which then rebroadcast them back to us. Non-sense, right? Some people weren’t so sure.

VILLARD, FRASER-SMITH, CASSAM: 1971

Possibly due to reading that 1969 paper, possibly due to Bracewell’s ideas about visiting alien probes, or maybe even owing to the recent UFO hullabaloo of the late 1960s flap and the Colorado Project, the Office of Naval Research and the Advanced Research Projects Agency approved a contract to study the LDEs. The project wasn’t simply open-ended. The organizations wanted Villard and the Stanford Radioscience Laboratory to write a report on whether the “Cosmic Repeater Hypothesis” had any validity in explaining LDEs. The Cosmic Repeater was viewed as meaning an alien probe (a “Bracewell probe” as they were now called).

After protecting their backsides with the proper conservative talk, discussing hallucinations and hoaxes, the authors go on to discuss the Cosmic Repeater:

Consideration of the very large number of stars in the sky has led to a belief among astronomers that conscious life of the general type which has originated on earth is probably not unique in the universe, and may well have also evolved elsewhere. However, consideration of distance and probabilities leads to the view that if another “earth” exists somewhere, it is so far away that—unless there are physical laws which we don’t now understand—personal visits would require so much transit time as to be out of the question.

On the other hand “visiting” by probes seems to be a possibility. Assuming that other civilizations share the same curiosity and the same willingness to support scientific research that we do, they could—in principle, at least—send out spacecraft which would be put into orbit around likely stars or preferably planets, to await some sign of civilized activity. Having found same in the form of Hertizian waves, the probe would presum-

ably report that fact back to its senders, while at the same time attempting to alert the discoverees to its presence. . . . The probe, it may be assumed, will not know in advance exactly what form of electromagnetic communications to expect. Therefore, what more effective way to perform the alerting function, than to repeat back to whomever might be listening, some fraction of a transmission that had just been sent?

The alternative of sending—blind—some kind of an attention-attracting transmission is clearly inefficient; consider the amazingly strong static-like signals from Jupiter. Our high-frequency receiver technology had progressed to the point where these signals could have been heard, say, as early as 1925. But their nature and Jovian origin was not established until roughly 35 years later.

The suggestion was accordingly made in 1961, by radio astronomy Professor R. N. Bracewell of Stanford University, that interrogations by cosmic probes might have the appearance of LDEs.

Those who have seen the movie or read the novel, *2001*, will recognize an analogous theme: instead of a repeater, the “probe” in that case was a radio transmitter.

Their report was sent to all the armed services, DOD, NASA, MITRE, Rand, Battelle, Arecibo, NSA, DIA, and many others. We are happy to know that the Air Force got 33 copies.

The SETIans trudged on unconcerned. NASA published its billion-dollar dream study for Project Cyclops the same year. In 1972, Boston University held a symposium entitled “Life Beyond Earth and the Mind of Man.” The subject was communication and the results of contact with extraterrestrials. A slightly less naïve Carl Sagan said: “It is now OK to talk about life elsewhere or intelligent life elsewhere, whereas a decade or two ago it was not OK.” And it was especially not okay to speak about life elsewhere unless that elsewhere was a very long distance off (as Sagan himself had found out).

The year 1972 was not really much different vis-à-vis the academic paradigm-setters than 1962 on that account.



Ronald Bracewell

Still, Bracewell, the SETI maverick, persisted. In *The Galactic Club* (1974), he dedicated Chapter 8 to the simple proposition: Why would you limit yourself to the intermittent long-time delayed deficiencies of radio messages if you could send a messenger? Back into the discussion came the alien probe and its repetitions of radio signals (LDEs).

Bracewell thought that

looking for and communicating with such a probe was a better way of letting “them” know that we were ready to join the Galactic Club. The fact that science fiction writer Duncan Lunan wrote, that same year, the book *Man and the Stars: Contact and Communication with Other Intelligence*, based upon the idea that he had already decoded space signals and knew where visiting aliens (or their technology) were from, could not have helped Bracewell’s attempt to get his idea taken seriously, in public at least.

As the 1970s pushed on, the SETI crowd got academia into lockstep about radio signals. There were lots of ET civilizations out there—way out there—but there are no probes, no signals yet, and, for goodness sake, nothing that sounded like a UFO. Although the SETIans seem to have a limitless tolerance for “no anything” (very much including their own “no data”), others had less patience (and rigidity). One of the best was and is Robert Freitas.

FREITAS: 1980

He is one of the few persons who can be considered a member of the SETI community who is willing to read everything, actually think about it, and remember what has been done. Especially, he read Bracewell. And he read about LDEs. In 1980 he wrote the article “Interstellar Probes: A New Approach to SETI,” in the noncrusty, out of the academic mainstream, *Journal of the British Interplanetary Society*, the place to go if you can’t stand the intellectual claustrophobia of typical science journals. (Note that they recently published a paper about UFOs by Deardorff, Haisch, Maccabee, and Puthoff.) Referring to Bracewell probes and LDEs, Freitas questioned the restricted categories of things funded by the in-group of SETI:

The imbalance of funding and effort appears to derive from the natural techno-chauvinistic perspectives held by many radioastronomers doing research in this field. Since mankind now has the technical expertise to send out radio messages, the traditional argument goes, then must not ETs as well find radio the optimum medium for interstellar communication? Beacon searches frequently are justified on the grounds that such signals are all we are capable of looking for at this time. Fortunately, this simply is not the case.

He proceeds to make economic, political, and sociological guesses about what a space-exploring advanced civilization would be all about and concludes, “Probes are better” (than radio beams). At this point he is doubtless on the verge of being persona non grata at any SETI party, but at



Robert Freitas

least he ensures us that he does *not* countenance UFOs. He, therefore, becomes the awkward guest who will not leave, whereas *we* ufologists will never be allowed in by the Right Thinking bouncer in the first place.

He goes on to propose a balanced (including funding) approach to SETI. He briefly lists two dozen SETI approaches. These include exploration of moons, asteroids, and planets for alien artifacts, transmitters, landed probes—*not UFOs*, though, *nope, not them*. Nine of the strategies are of this type.

Another group of seven methods is to look closely at the Earth-Moon gravity-well libration points for parked alien artifacts, probes, etc., but *not UFOs, no way*. And there is one strategy for “looking for evidence of incoming fusion-braking rockets, solar sails, interstellar ramjet plumes, laser push-beam backlighting, or relic corner reflectors” (and, of course, hope like hell that they don’t have any UFOs on board!).

I rather like Robert Freitas. He’s doing what he can to turn SETI into a sensible research program. It’s too bad that the intellectual climate is so stultifying. What I also notice throughout this whole story is this: Wherever there comes a bit of data, it points to (a) extraterrestrial intelligence as a real possibility, and usually (b) close by. Seventeen of Freitas’s ideas involve searches in the solar system, about 10 of which are right on top of us (Moon distance or less). Why not add one more approach—UFO research? Oh, sorry. Lost my head for a moment there.

JACKSON AND HOHMANN, PART TWO

In the first part of this article I presented the straight-up SETI-based part of the Jackson and Hohmann story (which allowed the whole signals-from-space issue to flow in a fairly uncluttered manner), but I should now integrate the UFO side. Let’s return, then, to our two heroes.

Robert E. Hohmann was a scientific and engineering writer at IBM’s facility in Kingston, New York. Sometime, apparently in the 1950s, he met fellow employee C. D. Jackson, and they discovered they had mutual interests. Jackson was a senior IBM engineer who worked in Alabama. They were both interested in space flight, SETI, and UFOs. They were described by author John Fuller as “deeply involved in work on the space program.” New York is the proper place for a science writer to be located. And, although I have to guess, the only reasonable place in Alabama for a spaceflight engineer was Huntsville. So Jackson was most likely surrounded by Redstone rockets, news of Russian satellites, and the likes of Wernher von Braun in his daily work.

When Hohmann and Jackson tuned into one another’s interests, they jointly attended Astronautics Society and American Rocket Society meetings. The two knew about NICAP and respected Donald Keyhoe’s work. I would be willing to wager that one or both subscribed to NICAP’s *UFO Investigator*. I make this conjecture because they



Betty and Barney Hill

wrote to Keyhoe to request a luncheon meeting with him in early October 1961, while they were preparing their paper for the Rocket Society meeting the next year.

There are several things that could have drawn them to the UFO phenomenon. In 1955, Hermann Oberth came to the United States and worked with Wernher von Braun in Huntsville for three years. Both previous to and after his years in Huntsville, Oberth had given talks and written papers in which he expressed the opinion that the flying disks were of extraterrestrial origin, and that the two most likely stars from which they might originate were Tau Ceti and Epsilon Eridani. There are the two stars chosen later (in 1959) by Su-Shu Huang as the most likely extraterrestrial habitations, and by Frank Drake to eavesdrop on in Project Ozma. They were also, you will recall, the two stars that Hohmann and Jackson found to be at the proper distance for their 11–light year turn-around signals.

In 1956, Capt. W. J. Hull and his copilot had an in-flight UFO encounter nearly over Huntsville (at Mobile), which received lots of attention. In early 1959, another spectacular aircraft encounter occurred over Pennsylvania (the Killian/Dee affair), which prompted a Huntsville missile expert to say at an engineering society meeting: “I know they are not from here, and they are not coming from Russia. We in this civilization are not that advanced yet.”

And in 1961, another Huntsville engineer suggested that we should send interstellar probes to the nearest stars, whereupon the probe was instructed to jam their radio signals. Why? To bring attention to itself and whatever message we would wish to communicate. In other words, he was suggesting a Bracewell probe radio-responder (à la the Cosmic Repeater hypothesis) in reverse.

Clearly, Huntsville was fairly boiling over with extraterrestrial ideas. And if Hohmann and Jackson *were* reading Keyhoe and NICAP, they were getting things like “Yale professor says aliens may be observing us,” or “Signals from unknown satellite picked up at Lockheed tracking station,” or “Akron-Canton satellite tracking group spots UFO fol-

lowing Vanguard.” With all this rolling around in their minds, Hohmann and Jackson ran into Betty and Barney Hill! How did *that* happen?

Betty and Barney had their abduction experience on the evening of September 18–19, 1961. She read a Keyhoe book (the same one that got Oberth started, by the way) and wrote him with a shadow of their tale on September 26. On October 4 or 5, Hohmann and Jackson came to Washington for the 12th International Astronautical Congress and lunched with Keyhoe. Their heads were full of ET-enthusiasm and he showed them Betty’s letter. As the experience was described as a CE3 (in today’s terminology), they were intrigued. Keyhoe promised to keep them informed.

Walter Webb was given the case and called Betty on October 19. Two days later he was in New Hampshire on the job, and by October 26 he had written a lengthy report to NICAP. Keyhoe let Hohmann and Jackson know the status of the investigation, after which they contacted Webb and soon get to read his report. They were wowed and wrote to Betty on November 3, mentioning their UFO interests and their belief that Oberth’s views on UFOs were correct. They scheduled a meeting for late November.

Jackson and Hohmann saw Betty and Barney on November 25. The Hills found the two men to be very likable and maintained correspondence with them for several years. During the discussion, Hohmann and Jackson specifically mentioned the star Tau Ceti as a candidate alien home base. Several years later, when Betty went under hypnosis and reconstructed a star map, which she felt she saw inside the craft, it had no star names associated with it. Betty tried on her own to figure which stars match the map and believed that she may have succeeded. Her fit does *not* include Tau Ceti. When Marjorie Fish later reconstructed the star map more empirically, lo and behold, one of the stars *was* Tau Ceti. I wonder what Hohmann and Jackson would have thought of that?

The discussion had two other intriguing aspects that struck the Hills. One was important—vitality so. The other was just mysterious. Significantly, Hohmann and Jackson’s questioning brought out the fact that the Hills’ episode had missing time, which led to the whole abduction drama later unlocked by the hypnosis sessions of Dr. Simon. And the rest is History, with a capital H.

The mysterious point is that Hohmann and Jackson were very interested in whether there were nitrates and nitrate-containing chemicals in the car. This came up more than once. They said, as the Hills recollected a few years later, that the question had something to do with rural UFO cases and several persons having nitrates or fertilizers involved. This made no sense to Barney and Betty, who had no special scientific training, but frankly, it makes no sense to me with my chemistry and biochemistry degrees. What in the world did Hohmann and Jackson think they knew, and what were they fishing for?

Any overt nosing around for chemicals sounds like a probe for a toxic syndrome of some kind, to me. Nitrates are

toxic but not usually as some quick, acute attack (at least the common inorganic nitrate salts which might be inhaled at low levels in dust, for example). *Fertilizers* have rarely been accused of danger except when they overload the water supply and cause “dead zones” (like we are now experiencing in the Gulf of Mexico due to run-off from the Mississippi River). *Pesticides* have often been accused of acute effects, especially if they are some of the organophosphates (like the insecticide Parathion, which has a single nitrate group attached to a larger organic molecule). But even if our IBM guys lumped “pesticide” and “fertilizer” together, it’s way too early for them to know about the effect of organophosphates on the central nervous system, I think.

So what were they looking for? I don’t know, of course. My primary hypothesis is that they didn’t either, but had heard something rumored. But I have a wild idea, which takes a lot of liberal interpretation, so much so that I’m sure I’m wrong, but let’s toss it on the table anyway.

Here’s what you have to give me: (a) the nitrates business made so little sense to Betty and Barney that they couldn’t clearly recall it in detail four or five years later when Fuller asked about it; (b) Betty, our wonderful synthesizer of bits and pieces in search of a solution, added “fertilizer” into the story, and with that, farmers; (c) what Hohmann and Jackson were *really* asking about were nitrates found in or around the car.

Why would they ask *that*? These guys are spacecraft propulsion aficionados, so they just might have been wondering what would happen if you turned on a big spacecraft engine right near the ground. What would it do to the air? Would it, especially if it were electromagnetic, activate air molecules, particularly nitrogen? Activated nitrogen would then combine with oxygen to form a suite of nitrogen oxides, most of which would react with water to produce nitric acid, and, ultimately, nitrates.

And, since you’re humoring me: The nitric acid (though very dilute) might explain the high acidity areas that chemist Phyllis Budinger recently found when she analyzed the damaged, stained areas on Betty’s dress from the experience. And, could Hohmann and Jackson have been wondering whether nitrous oxide (“laughing gas”) could have contributed to Barney’s laughing hysteria as he ran back to the car to get away?

Maybe even more interesting to them, could the activated nitrogen have produced a powdery mist of dinitrogen pentoxide, which is a white solid until it gets to a fairly warm temperature (30° C.), when it combines with water to create an acidic solution that can give mild burns at dilute concentrations. Hmm. Shades of Delphos, Kansas? Or even Angel hair?

Well, I appreciate your indulgence. All this reminds me that on November 8, 1961, an object flew over a farm in Chadron, Nebraska, and left a film of very fine fibers, which then disappeared. It was a “filmy deposit on Goff Farm,” the newsclip reported. Had to have been a coincidence, of course. ♦