

## **50 Years after Albert Einstein: The Failure of the Unified Field**

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The text from *Gone Dark* is being made available by Akronos Publishing. Its author, or assumed author, Mr. W. B. Smyth, has agreed to our conditions, including this disclaimer, as well as an introduction and a closing commentary written by the Correas.

No one at Akronos Publishing can vouch for the veracity of Smyth's text, nor for its author's being who he says he is. All that we can say is that its content appears to be rather plausible, even if our inhouse consensus is that it is fictionalized.

Smyth offered to us more of his text than we, in the end, chose to publish. It is our understanding that Smyth wants to publish the entire book from which the two chapters he sent us were taken. Yet he explicitly asked us to place a copyright disclaimer on the excerpted text. We have agreed to that. When queried, Smyth also asked us to retain the observed discrepancy in the initials of the apparent interviewer, who at first goes by the letter 'S', and shortly thereafter appears with the letter 'J'. We have no idea why Smyth did this, and it only appears in the first chapter of the text he sent us.

Smyth's text is written in the form of an interview that he apparently conducted - at least that's what one gathers, since Smyth has declined to answer that question directly - with an anonymous

scientist, a 'Dr. W.' who poses as having worked for the US intelligence community, possibly the NRL (Naval Research Laboratory) or the ONR (Office of Naval Research). The style of the text, although quite relaxed, is also rather polished, which suggests that it is most likely not a literal transcript of a live interview but has, if nothing else, undergone some editorial smoothing and rounding.

We do not know if Smyth's story is real or not, but from what we could corroborate of it, its references are frequently factual, which led us to conclude that it was worth publishing - all the more as it seemed to demystify much of the speculation concerning what happened with project RAINBOW (aka project Invisibility). Maybe the truth lies in these lines, and maybe it will come out some day. Maybe in Smyth's book, who knows?

We have marked in bold all of our additions, corrections and editorial remarks.

Feedback from our readers is appreciated. We can only hope to have made the right decision in publishing this material.

Dr. M. Askanas  
Editor-In-Chief, per Editorial Board  
Akronos Publishing

**Albert Einstein, Wilhelm Reich and the 'Philadelphia Experiment':  
Is there a spin to spacetime?**

An excerpt from *Gone Dark (Thoroughly Unremarkable Meetings)*  
by W. B. Smyth

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**NOTE. Editor's comments are in square brackets, in bold.**

**Aftermath of the meetings between A. Einstein and W. Reich**

(...)

**S** - And you heard about this fall-out [**between A. Einstein and W. Reich**] at that time, in late 1943?

**W** - Yes, it circulated, you know. From Einstein's coterie or Reich's, unpleasant things were whispered and leaked. Reich's threat to publish their correspondence was not taken lightly in many circles. We were still at war, and who knew what manner of secrets would come out?

**S** - Yes, but in a letter from March '44 that appears to never have been forwarded, Reich informs Einstein that he has instructed Dr. [**T.**] Wolf[**e**] not to publish their exchanges for the time being, in deference to Einstein's request [\(1\)](#). There is also a private memo to his lawyer, Pete[**r**] Mills [\(2\)](#), where he [**Reich**] explains why he had complied with Einstein's request. He explains this was because Einstein had assured him that he hadn't put any untoward rumors about Reich, into circulation.

**W** - What does that tell you? Get this, the entire process surrounding their communications was notarized by Mills, who kept the full archive. Judging by how he later turned on his own client, I'd wager that *he* was one such source of rumors. I

believe that it's in that same letter [**to Einstein**] that Reich repeatedly asserts how he's puzzled by the fact that Einstein had found no time to respond to Reich's rebuttal of the control results (3).

**S** - Yes, Reich is convinced that the responsibility for the 'unpleasant situation' that has arisen between them is Einstein's.

**W** - He says to Wolf[e], I think, that he will wait until he's able to understand the motives behind Einstein's 'strange behavior' before making the matter public. Back to my point - which is: ever since that time, many people have come to believe this 'affair' of Einstein with Reich was all about the orgone accumulator business. It wasn't.

**S** - ...but it started that way, no?

**W** - I'm not really convinced that it did. In another letter to Wolf[e] (4), Reich explains that he sought Einstein out because he had discovered a basic form of cosmic energy that was responsible for the gravitational field that Einstein's unified field theory claims must exist as a local distortion of the curvature of spacetime. This energy, what Reich called the orgone, was massfree and not electromagnetic. In his *Ether and Relativity* lecture (5), Einstein had plainly stated that space is endowed with physical properties, and that - if I can remember verbatim - "consequently there exists an ether". He put it in simple terms - that this new ether is a *necessary consequence* of the general theory of relativity. He says that the ether of general relativity is not the ether of Newton, Fresnel or even Lorentz, that it is *not an electromagnetic ether*.

**S** - That's where the break with the fixed ether models occurs - ?

**W** - Yes, he calls it plainly enough, a "gravitational ether" and describes its properties. It sets the metric qualities of any spacetime continuum. It sets the structure of gravitational fields and the molecular configurations of matter. He suspects that it might be involved in the structure of elementary charges and particles of matter, but confesses [**this**] is something that remains unknown. Do you see now the importance of that meeting between Reich and Einstein? Reich thought that he could provide Einstein's *Gedanken* [**thought-**]model of a gravitational ether with concrete physical evidence, with his own experimental discovery of orgone energy. Orgone and the 'gravitational ether' would be one and the same thing. The ether that Einstein was talking about, would be composed of massfree energy.

**J** - I see, yes, Reich thought that he was providing the physical basis for Einstein's 'gravitational ether'.

**W** - Little wonder that he was upset that something of so much importance and with so many implications would be neglected...

**J** - ...and of all people, by Einstein! --

**W** - There you go. There were all sorts of implications, not just scientific ones.

**J** - So he couldn't understand Einstein's silence, and was rather fearful of the consequences of rumors...?

**W** - We'll get to that in a minute. Talk about consequences! It was the equivalent of an earthquake in Reich's life! He oscillated in his feelings for years after the events. It went from being one of the most fruitful and important meetings of his scientific life, to a relationship that was hurting his own credibility and making him feel incredibly alone, to a realization that he did not need Einstein, nor could rely on him - and had to do his own hard work in basic physics. It is a complex relationship! Somewhere, Reich comments that Einstein failed to understand the possibility of free energy in atmosphere.

**J** - ... and in '44, where was he at?

**W** - He still wanted Einstein to give him serious consideration, but he was coming to realize that this would never happen. To placate Einstein's indignation, Reich dotted the i's - he wrote that he hadn't accused Einstein of spreading rumors, and only wanted to draw his attention to the fact that others were spreading rumors, and how this was hurting his own work, and even Einstein's antifascist cause. As a precaution, and to try to preserve a record of what happened between them, Reich deposited in New York and in Palestine sealed copies of all the notarized documents of the affair. Reich later referred to Einstein's behavior as 'the riddle'. Einstein had built his special theory of relativity on the basis that a fixed ether does not exist. His work led him to search for the unifying principle between gravitation, on the one hand, and electricity and magnetism, on the other. But this was a doomed effort. Aside from the new topological descriptions of the gravitational field, there was little else that he could say about the gravitational ether or how it related to the internal structure of matter. The effort appeared to have been self-defeating...

**J** - What could Reich have contributed here? Anything?

**W** - He claimed to have discovered how orgone energy at once generated and maintained gravitational fields and the structure of matter.

**J** - And did he?

**W** - If he did, he took it to the grave. At any rate, he thought that he did. So he was mystified by Einstein's reaction. Within Reich's circle of collaborators, the debate was whether Einstein was aware of the implications of Reich's experimental discovery of the gravitational ether, or whether Einstein had been so embarrassed by Infeld's criticisms that he disregarded the entire discovery - that he didn't really understand it. But Reich wouldn't admit that Einstein had failed to understand what he'd told him, or its implications, in light of all the perceptive remarks that Einstein had made during their face-to-face meetings. This suggested to him that Einstein harbored some ill

intent against him. This perception was intensified because some of the 'leaks' could be traced back to Infeld. Rumors had travelled all the way to the Soviet Union and back, because Infeld, as you know, was a Stalinist informer. And he never paid for it.

**J** - ...and Einstein didn't know that at the time?

**W** - So it seems. What Einstein couldn't avoid was finding out that, against his own wishes, Infeld had made the whole affair known to people from the Navy, the Army and the scientific community. In low whispers, the 'Professor' - and not just Reich - had become the butt of ridicule. And that's really how the American stigma that Reich would bear to the end of his life was born, you know? There was considerable pressure, soon after their meetings **[in 1941]**, for Einstein to dissociate himself from Reich.

**J** - What kind of pressure?

**W** - Look, before Reich was issued a passport in 1940, he was investigated by the FBI for his past communist affiliations - that's what the FOIA files show.

**J** - Uh-huh--

**W** - But then, a year later, a few weeks after Reich and Einstein's first meeting, a planted denunciation is made to the State Department by the American Consul in Oslo, Norway. This leads none other than J. Edgar Hoover himself to take a personal interest in the matter, in March of '41. The first internal response of the Bureau is that it's old hat and it had already been investigated, but Hoover himself comes back and orders the investigation re-opened at the end of April. So, over the exact span of time that involves the meetings and main correspondence between Einstein and Reich, Reich is being re-investigated under Hoover's direct supervision. An informer **(6)** conveniently pops up, with the bogus allegation that Reich is a member of the American Communist Party, and by May the FBI concludes that he poses a dangerous potential threat to American national security! Custodial detention is prepared but, for some reason, the FBI doesn't appear to want to act on it. Then in July, Hoover decides that Reich should be considered for detention in case of a national emergency, as war is already being anticipated. During this period, Reich wrote three more letters to Einstein, the last as late as September, all of which go curiously unanswered. On the very day following Pearl Harbor, Hoover asks the Special Defense Unit **[SDU]** to look into the case and on December 12, at 2 in the morning, Reich is picked up and transferred directly to Ellis Island, where he stayed until his eventual release on January 27, 1942 - some five weeks later **(7)**. There were, however, a few twists - all of which seem studiously contrived. One twist is that Reich had filed a patent application in early '41, in between his two meetings with Einstein - and which he thought was important in case Einstein sanctioned his work, as he expected.

**J** - What was the patent for?

**W** - I never saw it stated what it was for, but it seems certain that it was for the orgonoscope and likely also for the orgone accumulator and the orgone field meter. The Patent Office requested a demonstration of the devices by December 15, and a meeting was scheduled I believe for that same Friday, December 12 - the very day of Reich's arrest. Another twist is that Reich was suspected not just of being a communist but also a fascist! Hoover himself suspected Reich of fascist tendencies!

**J** - Wild!

**W** - Hoover says this when he orders yet another investigation, after he's informed that Reich had been released from Ellis Island! The last twist is the matter of a William Robert Reich who does belong to the American Communist Party and is repeatedly - and deliberately it would seem from reading the files - confused with Wilhelm Reich. This keeps happening all during the re-opened FBI investigations, in '42 and again in '43.

**J** - Despite the national war emergency, it seems a bit peculiar. It would have been enough for the appropriate channel to inform Einstein that Reich was under FBI investigation, for Einstein to want to keep well away from him --

**W** - ...and if the warning suggested that he could be a Nazi agent, this would have been sufficient to deter Einstein from pursuing any further contact with Reich or from answering his letters.

**J** - Did Reich overlook this possibility?

**W** - He suspected the rumors had been planted by Stalinists and he knew that, during their meetings, Einstein had shown genuine comprehension and considerable interest in his work. He might have suspected that Infeld had embarrassed Einstein, I don't know. When he found out, during his interrogation at Ellis, that he was also suspected of being a fascist - he was livid. Yes, from the Ellis Island nightmare he might have wondered what else was being sold to Einstein - that he was a charlatan working for the Nazis and trying to gain access to Einstein's papers on military secrets?

**J** - Atomic secrets?

**W** - Who knows?

**J** - So, one would have to say that there would have been something severely wrong with Reich if he *didn't* show any symptoms of paranoia after such malicious persecutions! But what you're also saying is that interfering with his attempts to remain in contact with Einstein was one of the reasons why he was placed on that custodial list for possible detention prior to Pearl Harbor. It seems, though, that you're suggesting that his work, and his patent application, were also significant factors in timing exactly when he was to be rounded up!? Shouldn't the intelligence powers have waited for his

demonstration before arresting him in that Gestapo fashion?

**W** - We'll never know what would have happened to his patent application had Pearl Harbor not occurred. But it is likely that when his case was reviewed by the SDU at the express request of Hoover, a G-2 flag would have popped up - especially after Pearl! So, one way of explaining that 2am arrest, is precisely because of G-2 involvement - if not after word got out that Reich had met with Einstein, or after he filed a patent application, then, for sure, on the heels of Pearl, and Hoover's request the morning after.

**J** - Why G-2 - that's Army intelligence?

**W** - What you might not know is that Army General George Strong was not just head of G2, but also, at the time, the head of the patent office. There is a way in which all these matters are intimately connected: the contacts with Einstein, the patent application for the orgone accumulator, the field meter and the orgonoscope - including the one that Reich loaned to Einstein and which Einstein didn't, by the way, want to return - and the evidence for a massfree gravitational ether. Just as there is a link between Reich's contacts with Einstein, the FBI's insidious allegations that Reich was either a communist or a fascist, the G-2 and the patent office. When Reich first contacted Einstein, America was not yet at war. The Commissioner of Patents was Strong, a personal friend of Vannevar Bush and Nelson Rockefeller, and the chief of G-2 intelligence in charge of projects ULTRA and MAGIC. [**Vannevar**] Bush was then the Director of the Office of Scientific Research and Development [**OSRD**], the most powerful office in the land. As Bush described in his book *Pieces of the Action*, there was a crucial military need to control scientific information and patent applications. Patents were considered essential assets because they could potentially tip off enemy intelligence on sensitive technology, or on technologies prematurely or inadvertently ignored by US interests. The OSRD had a special committee dedicated to reviewing all submitted patents that related to atomic energy and to any other technology suspected of being sensitive. By order of the President, all government patent rights arising from any invention and potentially relevant to war developments were to be placed in the custody of the Director of the OSRD. The current patent office [**USPTO, United States Patent and Trademark Office**] policy of not publishing patent applications unless patents are granted was introduced back then, you know, as a protective measure to ensure the secrecy of sensitive applications or of patents denied for sensitive political, economic or military reasons. The contents of Reich's patent applications will therefore never be known. What one knows for sure is that, had his patent been granted during Strong's mandate, Reich could never have been later prosecuted by the FDA, under the fabricated contention that his orgone accumulators did not function the way he claimed they did. And he would not have ended up in the FDA Museum of Quacks.

**J** - Likewise, had Einstein confirmed the temperature difference and not succumbed to the trivial explanation supplied by Infeld, the patent office would have felt constrained

to accept Reich's application and issue a patent, no?

**W** - Yes, now you can imagine the pressure that was brought to bear on Einstein - when he was still wondering about the positive thermal difference, still reviewing Reich's long rebuttal letter [\(8\)](#), still interested in the observations he was making with the organoscope. There was a convergence of interests - before Einstein could make the "mistake" of helping Reich by behaving as an honorable scientist, Bush, Strong and Hoover all got to him with their respective crazed suspicions. Infeld, with his own Stalinist agenda was only too happy to help, for it was he who first drew everybody else's attention to the meetings.

**J** - And as you said, Reich repeatedly referred to Einstein's strange behavior - the silence in response to his letters, the multiple delays and misunderstandings in returning the organoscope, Einstein's written denial that he had initiated rumors that were prejudicial to Reich, etc - as 'the riddle'. He seemed to think that once he approached Einstein, and once Einstein understood that the discovery of the orgone would substantiate the notion of a unified field responsible for both gravitation and electromagnetism - he would undoubtedly have his undivided attention.

**W** - Yes, but his later explanation suggested that Einstein did not see matters in this light. One way of interpreting Einstein's expression that Reich's discovery of the orgone was 'a bombshell in physics' is to follow Reich's reading of it at the time - that this discovery might provide the solution to the unified field which Einstein had predicted that it existed, but had failed to provide [\(9\)](#). Another way of interpreting it is that Einstein had sensed something that threatened his attempts - and Infeld's! - to provide that unified field solution.

**J** - But Einstein was already afraid for the future of relativity and the loss of his efforts to discover a unified theory, well before Reich showed up at his door!

**W** - Yes, but maybe during that crucial meeting with Reich he sensed that Reich's work was pointing towards an entirely new cosmogony. This is what Reich himself intimates in that short text entitled precisely *The Riddle*. But then, in his own handwriting he added a note, sometime later, that concludes that he had been wrong in thinking that his discovery of orgone energy was compatible with relativity after all, let alone that it could have been construed as a verification of Einstein's field theory.

**J** - Hmmm...

**W** - Read the man - that's what he says!

**J** - So, he concluded that he had been wrong in having approached Einstein to begin with - not because Einstein wouldn't have understood what he told him, but because Einstein would have understood enough to sense that it was a possible threat to his own and Infeld's efforts?

**W** - Yes, that's how Reich eventually solved his own riddle, I think. He came to the conclusion that his theory really wasn't compatible with Einstein's and that Einstein must have felt threatened.

**J** - I never fully understood how Reich could have thought it was compatible with relativity, to begin with...

**W** - Well, the special theory assumed there was no fixed luminiferous ether - an assumption that was compatible with the negative result of the Michelson-Morley experiment - but compatible also with Reich's view of a non-electromagnetic massfree ether that he found to be in permanent motion and capable of driving the precise movement of celestial bodies. Likewise, Einstein's equivalence of mass to energy was compatible with Reich's framework, and so was - back then, that is - the notion that photons were likely massless particles. Einstein's topology still appeared as the geometry of light. His notion of a gravitational ether could be made to coincide with the gravitational properties that Reich claimed for orgone energy...

**J** - ...and, I guess, the notion of a unified field - the unified field wasn't electromagnetic, but surely had to be gravitational and involve some fundamental form of spin...

**W** - Yes, uh, not quite - it needed to be able to give rise to gravitational fields, but somehow interact with electromagnetic fields, so the more pressing problems facing the unified field hypothesis concerned the high-frequency interaction of electromagnetic fields with matter. Reich claimed this interaction was not really electromagnetic, but an orgone- mediated interaction - which is the old problem of Tesla waves revisited...

## **Einstein and project RAINBOW**

**J** - How did Reich eventually come to the conclusion that his own theory wasn't compatible with Einstein's?

**W** - Through his own experimental research in the post-war years. Reich came to the realization that Einstein's unified and general theories had literally banned any systematic analysis of physical nature in exchange for a theory of topology, not even geometry or metrics. But before I try to answer that question, let me get on with my story - and then, maybe at the end, you'll understand better why Reich became convinced that his own theory wasn't compatible with Einstein's field theory after all. Let me get back to their meetings and correspondence - because there is a very important aspect to this matter that no one has noticed. In one of his letters to Einstein (8), Reich reiterates the surprising claims that magnetism and magnetic fields were poorly understood properties of orgone energy, that earth magnetism is not ferromagnetic, that he has magnetized dielectrics in an orgone accumulator - and that orgone fields act transversely to electric fields and in the direction of magnetic fields.

**J** - That would seem to suggest that there is such a thing as 'magnetic energy', and that orgone would be the same as magnetic energy, just another name for it.

**W** - Yes, in a way. It's a curious argument - and one that suggests that the magnetic field is an ambient reaction of the orgone to the flux of electric charges.

**J** - But then magnetic and electric fields would belong to different energy manifestations, no? - the energy of the medium versus the energy of the currents?

**W** - Yes, and *that* could be just the kind of parallel relationship required to provide a satisfactory solution to the unified field problem - if, in fact, magnetic fields could be simply a reaction from a medium. Reich told this to Einstein - including the fact that he was working on a theory of the magnetism of dielectrics and, at the same time, claimed some surprising results like their ability to make magnetic compasses spin.

**J** - Would Infeld and Einstein have dismissed that too - in light of their own work on magnetism?

**W** - Yes, that's a very curious question, isn't it? Infeld had been helping Einstein since the early '30's in his quest for the unified field solution suggested by the general theory. More than a decade of effort, but little came out of it. Moreover, the Einstein of 1941 was a very different Einstein from the one of 1920 with his gravitational ether ideas, or even from the Einstein of 1930 pursuing the elusive unified field. In 1938, he and Infeld stated something to the effect that all models of the ether had led nowhere, that it was time to forget its name and never mention it again.

**J** - Anathema! But they were just referring to models of an electromagnetic ether, weren't they?

**W** - In context, yes, I believe you're right, but the way it was phrased, it had a definitive tone to it. Einstein and Infeld had cast their damnation and had officially given up on the problem of any ether, even a gravitational ether...

**J** - But why? What made Einstein change his mind?

**W** - He couldn't, for the life of him, find a way to tie the gravitational field to an energy system, or to successfully unify gravitational and electromagnetic fields. He wanted a topology that reflected energy content and generated both a metric and a geometry - but all he had to work with was the mathematical thought of an abstract topology that pretty much lacked any energy considerations. His formalism was choking him, and he couldn't, no matter which way he turned it, squeeze out of it any tangible relationship relevant to the internal structure of matter. The divide between the quantum-mechanical world of matter and electromagnetism, and the world of the gravitational ether seemed impassable. On considerations of geometry alone, and employing Riemannian curves with five components, he had been led to conclude [\(10\)](#) that the geometry of spacetime 'caused' gravitational fields and these bent light rays.

**J** - Is this how the US Navy later became interested in his work?

**W** - In essence, but you cannot yet see the connection. I think that it was in July of '42 when Einstein approached **[Dr. Vannevar]** Bush because he wanted to participate directly in the war effort. Formally, it wasn't until early '43 that Bush appointed him to be a member of his committee **[the OSRD]** - the same committee that was also in charge of the scientific-civilian part of a special project that has remained classified to this day. This project originated from work done at the Naval Research Laboratory **[NRL]**, located on the Virginia side of the Potomac, just south of Washington, DC, and across from Alexandria. At the end of '41, the Special Developments Section of the Radio Division in charge of developing countermeasures, had learned that Royal Navy researchers had found a method to bend the German control beams first used in guided bombers, and later on gliding bombs and the V1-flying bombs. At the time, the Radio Division was under [Ross Gunn's direction](#), but 'Doc Taylor' **[Albert Hoyt-Taylor]** was the Superintendent 'in perpetuity'.

**J** - Who was responsible for the Section?

**W** - A very creative fellow by the name of [Howard Lorenzen](#). But between him and 'Doc Taylor', there was Taylor's assistant Lou**[is A.]** Gebhard**[t]**, previously from Carnegie and Marconi Wireless Company. Until '42, the Section had mainly focused on jamming high-frequency radar, the development of electronic chaff countermeasures and sensitive, high-gain receivers for detection. But Lorenzen, with Gebhard's support, progressively steered the Section to focus on radio countermeasures. The idea was to bend the radar bounces and replace them, successively, with displaced ones, so that the receiver got the wrong location of the target. By mid '42, Taylor wanted to know the field intensities that would be needed to bend the beams sufficiently to generate such a false target image. But it was a bad time for the NRL, for its Director, Admiral **[H.G.]** Bowen, and for Technical Director Gunn. They'd just lost a major fight with some of the most powerful figures of that period - Carnegie President **[V.]** Bush, MIT President **[K.]** Compton, Harvard President **[J.]** Conant, **[F.]** Jewett, the President of AT&T Bell Laboratories,

and the wealthy [A.L.] Loomis of Tuxedo Park. They lost - and, contrary to the predominant views, this was not simply because the MANHATTAN project went to General [L.] Groves, to the Army Corps of Engineers and not to the Navy. No, they lost in a big way - because MIT's Rad Lab also took over the radar research, which was something that Jewett himself was not too happy with. Bowen and Gunn came out the losers - Gunn's expression was 'we were hosed down'. He described it as a trauma to their psyche that they never forgot. And it cost Bowen his position as NRL Director. However, the new Director, [Rear] Admiral [A. H. van] Keuren, covertly kept Bowen's directives, and kept Bowen himself informed. I guess the Admirals had their own agenda.

**J** - Was Bowen removed just to pacify Bush?

**W** - Yes, some held that Bowen remained the covert Director... I don't know. The administrative fights didn't seem to concern us much, but Bowen's departure did. But work kept on going under great pressure. I think it was Taylor who came up with the idea to send Lieutenant Commander [F.L.] Douthit to liaise with Einstein. It might have been von Neumann who gave it to Taylor. Anyway, by June '43, Einstein had become a consultant for the Navy's Bureau of Ordnance in a hush-hush NRL project whose precise purpose was to test whether light could be bent by a man-made artificial gravitational field. The project was called RAINBOW, and the proposal was written by Einstein, von Neumann and Taylor. Gunn, [E.O.] Hulburt, Gebhard[t] and [O.] Veblen also contributed to it. It permitted Einstein to go, once more, over the problems that he'd faced with his unified field theory - but having a practical goal in mind this time - to see whether it would be possible to distort the electromagnetic perception of a ship's location, or even render it entirely invisible, by manipulating the gravitational field of the ship, or around the ship.

**J** - How was this to be achieved?

**W** - Nobody knew, that's why Einstein had to write the darn thing and come up with a way to implement it. At first, Einstein told von Neumann and Taylor that he had to think about it. Meanwhile, Taylor discussed the task with the Radio and Radar Divisions - which is when someone suggested that intense electromagnetic fields could interfere with nuclear spin. Someone else added that this could be the basis for spacetime distortion and for creating magnetic and optical camouflage.

**J** - This was at a meeting?

**W** - Yes, a meeting of the responsible Section chiefs at the NRL. It might have been Hulburt, the chief of the Heat and Light Division, and the head of the Special Developments, Lorenzen. Hulburt was brought in because the project concerned the optical image of a target, as much as the magnetic and radar images.

## **Einstein's unified field theories and project RAINBOW**

**J** - My impression was that RAINBOW had older roots than those relating to the problems of a unified field theory?

**W** - Yes, there are several precursors. RAINBOW was a convergence of efforts addressing electromagnetic countermeasures for guided missiles, magnetic and electric countermeasures for magnetic fuses, and optical countermeasures for ship and airplane recognition. Einstein's unified field predictions could potentially impact all of these. That was the idea.

**J** - Tell me about the magnetic countermeasures program.

**W** - This was a joint Anglo-American Navy project that goes back to 1939, when the Germans began laying magnetic mines with aircraft. At the time, Captain [**Hollis M.**] Cooley was still director of the NRL, and he answered to Bowen who was in charge of the Navy's Bureau of Engineering. Gunn was already the Technical Director and chief of several Divisions - one of them, Electricity and Magnetism, that took over that problem. With the shift of the NRL from under the Bureau of Engineering back to the Secretary of the Navy - if I recall, hmmm, under the auspices of the Bureau of Ships - Bowen became NRL Director, and a major effort was initiated to develop countermeasures and understand the basic science behind them. The Naval Ordnance Laboratory [**NOL**] also got involved, through Commander [**J.B.**] Glennon, Officer-in-Charge of the NOL, with Dr.s [**R.C.**] Duncan - in charge of scientific matters - and [**R.D.**] Bennett and [**F.**] Bitter in charge of degaussing. Duncan had asked [**Vannevar**] Bush for help, and Bush had recommended Bitter, from MIT, to serve as scientific liaison between the Navy Bureau of Ordnance [**NBO**] and the Royal Navy. Bitter had the rank of Navy Commander during the war.

**J** - Did [**Lt.**] Townsend Brown have a role in this project?

**W** - He was the junior officer in charge of magnetic mine sweeping. In 1940, [**R.W.**] Ladenburg had suggested that sufficiently strong electromagnetic fields could be used to counter torpedoes and mines. *If* powerful electromagnetic fields could be employed to distort spacetime and to interact with the Earth's gravitational field, then it might also be possible to bend light rays, produce optical, magnetic and radar illusions or even to achieve total electromagnetic invisibility.

**J** - You mean optical, magnetic and radar invisibility, all at once?

**W** - Yes, *if* strong magnetic fields could distort spacetime this would alter the propagation and reflection of all electromagnetic signals. So, the idea arose whether one could employ the 'degaussing' methods that remove the stray magnetic field generated by the magnetized iron of ships, to create a controllable gravitational field distortion.

**J** - I don't understand. I thought that Einstein's general theory permitted electromagnetic fields to interact with gravitation, to be bent by the curvature of spacetime, but not to cause it...?

**W** - Yes, it was more of a geometric constraint on light than an actual interaction - in the physical meaning of the word - but that is so. Einstein's insertion of Maxwell's theory of the electromagnetic field into his own theory was pretty forced, and he was quite aware that his treatment, as it stood, wouldn't really permit what has been called a unified field theory, a UFT. All field equations, gravitational or electromagnetic, should be derived solely from the internal logic of the theory - what he called "*a unitary and logical theory of the total field*". The departure point for all this was the topological notion that there are two families of curves in space - those defining the structure of gravitational fields, and those defining electric fields. It might be possible to find a dynamic topology that could generate both types of curves from a single set of equations. But he admitted that to succeed at this, one needed a much better understanding of the physical nature of matter. That's where the problems of magnetism and quantum mechanics come in - but he basically ignored them. His 1916 general theory proposed a model for the bending of light rays operated by the tensors describing the curvature of spacetime. And he argued that the energetic action of the gravitational field, acting on matter, transmitted its impulses *to* matter through the spacetime curvature. But Einstein, you have to see, was very careful to limit the use of the general theory. He often repeated that it can't teach *anything* about the structure of matter, and he pinned his hopes on a joint theory of electromagnetism and gravitation that was yet to be discovered.

**J** - Is that why we get to the UFT - to solve the problems left hanging by the general theory?

**W** - Not directly, no. At first, the general theory *appeared* to be independent of the unified field problems. And that's even how it's still sold. But the fact is that the real challenge of the general theory was whether or not it could lead to the unified field. So in the mid-20's, Einstein goes through repeated drafts of a UFT. Because of quantum mechanics, he knows full well that Maxwell's equations can't apply to very intense electromagnetic fields. But he's trying to bypass quantum mechanics altogether. Others doubted it could be done, and explicitly suggested that the field approach was inappropriate, but Einstein believed at various moments that he'd found a definitive or smooth solution.

**J** - When was this breakthrough?

**W** - You mean breakthroughs - what Einstein *thought* were breakthroughs at different times. Between 1927 and 1931. He produced several attempts, with slightly different formalisms. And he published several papers on the subject, beginning in 1928. Two main versions resulted - one published in 1929 and the other in 1931. Both were presented to the Academy of Sciences in Berlin - and neither was well received. I think it was Max Born who referred to them as a great tragedy - that Einstein had been wasting his time...

**J** - What were the differences between the two versions?

**W** - In 1929, Einstein thought he'd succeeded in introducing a tensor for the electromagnetic potential, but by 1930 he changed his mind. He'd also introduced a topological torsion tensor that reflected the helicity of magnetic fields. Within the Riemannian geometry employed by the general theory, the torsion tensor was simply assumed to be zero. There was no spin of spacetime, and thus no asymmetries of distance in geometric terms.

**J** - What do you mean?

**W** - Simply put - that a given path across a region of space will not necessarily be equal to the return path. If spacetime has a torsion, the metric tensor will have antisymmetric properties, but if the torsion is zero, the helicity can be disregarded. **[E.]** Cartan, back in 1922, had proposed a theory of spaces with torsion - to follow up on his own 1913 theory of spinors. And **[J.]** Schouten, in 1923, had proposed a topological representation of the electromagnetic field based on the torsion or twisting of a four- dimensional continuum. These are problems that geometrically belong to the distortion of a metric, and topologically belong to the 'teleparallel' dislocation or transport of vectors in spacetime. What's important for you to retain, though, is that, if the torsion is not zero when the electric field vanishes - as is the case for a perfect plasma - then plasma motion along magnetic field lines could generate a co-linear electric field.

**J** - Like a dynamo effect?

**W** - Exactly. For a spinning body, like a planet, this co-linear electric field would be somewhat like the vortex of stacked eddy currents generated on a non-laminated iron core by magnetic induction. The first attempt at a unified field theory was made by **[Th.]** Kaluza. He employed Einstein's 10 gravitational potentials and the 4 components describing the electromagnetic potential but in a 5-dimensional continuum, so that the paths of the motion of charges coincided with the geodesic lines. **[O.]** Klein and Einstein worked on this, in 1926 and '27. In his 1931 variant of the UFT, Einstein refined his formalism by adapting Kaluza's theory of the total field - instead of Kaluza's 5-dimensional continuum, he followed Veblen and stuck to a 4-dimensional continuum correlated in parallel with a 5-dimensional 'linear vector space'. He thought his approach succeeded where Kaluza's had failed - in establishing a constant relation between the electrical mass and the 'weighty' mass of a 'material point'. He believed that he had successfully joined Maxwell's first system of equations with the equations of gravitation, connecting them through the curvature of spacetime. He left open the question of the anti-symmetric tensor, and didn't even touch the possibility of a torque to spacetime. But he was satisfied that his approach appeared to work for gravitational and electromagnetic fields in space devoid of matter. When matter is introduced into the equation however, he admits that his only recourse is to resort to a fiction - the term 'density of matter' and the tenuous assumptions regarding its distribution.

**J** - Is this where the famous cosmological constant makes its appearance?

**W** - Yes, that was one of the gimmicks that he used to adjust the overall energy density and fit it in with the dogma of the accelerated expansion rate of the universe. Later he was very ambivalent about this procedure. Moreover, the unified system of equations *only* applied to space containing matter *if* the equally tenuous assumption of no magnetic mass was also made. So he admits that the nature of these points as material particles is still *not* understood. That their corpuscular structure or graininess remains a mystery. They are still only topological singularities, even if one calls them 'material points'.

**J** - So the solution couldn't be so definitive after all!

**W** - No, it couldn't - and it wasn't. And the solution that he, along with Infeld and [B.] Hoffman, presented later in 1938 for the total field sustaining the motion of many bodies, only considered isotropic distributions. If there were torsions in spacetime they were not considered.

**J** - But they certainly *would* have to be taken into account by project RAINBOW, wouldn't they?

**W** - Yes, yes, all the possibilities had to be taken into account - in particular those that involved nonzero torsion tensors, or skew tensors. Spacetime could be deformed not only by the rubber-band analogy, but by a spherical distortion, a spin, if a full integration of the electromagnetic field was to succeed. That's also one of the reasons why, in 1941, Reich thought that his own discoveries about orgone-induced magnetism was pertinent to this problem of a unitary field description. Do you see my argument?

**J** - Yes, I'm beginning to - hum-hum...

**W** - It's also why, in parallel, demagnetization experiments with very intense electromagnetic fields became significant in '42 to '43, because of the development of magnetic fuses for mines and torpedos. And all these lines were frantically converging at the NRL in the very desperate context of the war effort.

**J** - And do these two lines have a *direct* connection between them - I mean, spacetime twisting and demagnetization experiments?

**W** - One connection is that a deformation of spacetime which is transverse to an axis of spin is every bit analogous to Reich's notion of cosmic superimposition between two or more orgone energy streams that create spiraling or spinning orgone envelopes. Because of their energy density, these structures would more likely be discoidal than spherical - and would create flux tubes around their axes. This is an extremely important clue, you see, because of the analogy between these cylindrical flux tubes and the 5-dimensional cylindrical treatment of the continuum that Kaluza proposed in his shot at a unified field theory. Reich's orgone envelope seemed to have all the conditions that were required to produce two different families of curves for the two resultant fields - gravitational and electromagnetic. Reich as you know was after the physics of energy --

**J** - Massfree --

**W** - Yes - the physics of a massfree energy that would be responsible for creating what topologically appeared as a torsion to spacetime.

**J** - But Reich never explicitly addressed the descriptive problems of metric and topology, did he?

**W** - He worked extensively on the problems of the co-ordinatization of the solar and galactic systems. But his thrust was that geometry and condensation of matter were created by the superimposition of massfree energy within the same space occupied by matter, so that, it was space, in fact, that could be engineered - do you see?

**J** - Not entirely - but what's the connection to demagnetization?

**W** - Well, you see, demagnetization involves placing the permanently magnetized object that one wants to demagnetize, in very strong electromagnetic fields generated by the pulsation of high-frequency currents. The object, for instance - even something as large as a ship - is placed in one direction and then is either placed in the opposite direction, or is completely rotated through successive angles until it arrives at the opposite direction - while the electromagnetic field is being applied. The effects of the induced alternating field is very much like the effect of imposing an oscillating diamagnetic field. This disorders the ferromagnetic structure of the magnetized body, and the disorder increases as the applied currents are gradually reduced. And Reich had discovered how 'orgone-charged and magnetized dielectrics' disturbed electromagnetic instruments and iron- magnetic needles, even though they had magnetic properties quite distinct from those of iron-magnetism or paramagnetism.

## **Faraday and the magnetic nature of space**

**J** - I'm afraid I'm still not clear on all the important differences and connections...

**W** - Think of it this way. Paramagnetic substances tend to orient their long axis parallel to the magnetic force vector and are attracted to one of the poles of the field, either in parallel or in an anti-parallel orientation, the parallel orientation being the most frequent. This is also called the lower energy state. Their permeability to magnetic fields is slightly greater than unity, so they act like a magnetic lens that makes the lines of force converge. Aluminum, platinum, manganese, chromium are examples of paramagnetic substances.

**J** - But I thought that iron was also paramagnetic?

**W** - Yes, but truly so only when it's heated to 786 degrees centigrade! - ferromagnetism is a special instance of paramagnetism for high permeability substances, one that involves a 'cooperative alignment' of molecular magnetic domains. There are only three elemental ferromagnetic substances - iron, nickel, and cobalt. And they all cluster together between atomic numbers 26 to 28. Ferromagnetic substances are magnetized by the geomagnetic field - by magnetic induction. The pole of the compass needle that points north is actually a south pole.

**J** - Yes, that much I remember. But so, the effect of orgone energy was neither paramagnetic nor ferromagnetic?

**W** - Quite. The effect appeared to be diamagnetic. And diamagnetic substances have low magnetic permeability - less than unity. They act as divergent magnetic lenses. They avoid the magnetic field lines, as though they're being repelled by the applied magnetic field. Some metals are diamagnetic - like copper, zinc, silver, gold, antimony, bismuth and mercury. Dielectrics employed in friction machines to store electrostatic charge - like glass, sulphur, rubber - are also diamagnetic. The hydrogen atom or free radical is paramagnetic, but hydrogen gas is a diamagnetic substance because, normally, the magnetization of one atom cancels out that of the other. An air flame is diamagnetic and is repelled by either of the poles of a strong magnet.

**J** - Do diamagnetic substances align their long axis predominantly in antiparallel orientation?

**W** - No, not quite. They align their long axis perpendicular to either the parallel or antiparallel orientations of paramagnetism. It's true that a rod of iron suspended in a strong magnetic field will line itself up along the lines of the field because, as Faraday first put it, it tends to move from the weaker to the stronger parts of the field. In contrast, in the same arrangement, a rod of bismuth or glass will orient their longitudinal axes perpendicular to the magnetic force vector because it tends to move from the stronger to the weaker parts of the field. This was discovered by Faraday in 1845. Others had observed the phenomenon before, but had discarded it because they didn't understand what it meant. Faraday's studies showed that most substances or materials are diamagnetic - not paramagnetic. In the absence of an applied permanent magnetic field - induced diamagnetic effects can be observed in diamagnetic substances that are subject to a

changing magnetic field, like the action of a transformer or an induction coil. The effect only lasts for as long as the changing magnetic field is applied, and the induced diamagnetization is directed transversely to the inducing field. The idea is that, in the absence of an applied magnetic field, there is no spinning motion of the atoms of diamagnetic substances. In other words, diamagnetic atoms don't behave like small magnets - not the way that paramagnetic substances do. And, you know, Faraday's discovery of diamagnetism had cosmic implications...

**J** - No, aside from his name and the laws of electrolysis, and the charge unit that carries his name, and a little more, I'm actually rather ignorant of his life and work!

**W** - So are most people nowadays - but what I'm going to tell you next - if you have any patience left, um - is the very beginning of the classical thought of a field theory in physics. You see, in that same year, 1845, Faraday concluded that space, mere space as he used to call it - had to have magnetic properties, in fact, properties intermediate between those of paramagnetics and diamagnetics - this is what Faraday called the magnetic 'zero-point' of the vacuum. Only these physical properties permitted the reality of magnetic lines of force and their persistence in a vacuum, in empty space. Becquerel later suggested, by analogy with Archimedes' principle of buoyancy - and to preserve Ampère's Law, it's true - that diamagnetic repulsion could be understood as a differential form of magnetism, with attraction and repulsion being seen as a matter of the relations between a test body and the medium. Of course, the fundamental problem with this approach is that it failed to explain why, in a vacuum, diamagnetic repulsion persists just as strongly. For as long as one assumed a luminiferous ether medium that had magnetic properties, one could get out of this problem by pointing out that the medium itself drove the repulsion of diamagnetic substances. But this solution brought in turn a whole new batch of problems - if the ether was magnetic, why did one need to invoke the action of matter that was more magnetic than diamagnetic substances? Much later, Maxwell returned to Becquerel's hypothesis; he saw it as the basis for the existence of circular currents in the electromagnetic ether - something that Faraday had anticipated, but said it stretched his own credulity too much. Before Maxwell, however, Oersted and especially Weber vindicated Faraday instead - diamagnetism had to be a new force of nature, because the repulsion was irrespective of magnetic polarity and a consequence of same-pole induction. Same-pole induction generated in diamagnetics molecular currents, otherwise absent, that were opposed to the molecular currents in the inducing magnet. Paramagnetics were subject to opposite-pole induction, diamagnetics to same-pole induction. Weber showed this with an induction apparatus coupled to a falling rod of iron or bismuth, and also showed that the induced currents had opposite polarity. Even so, Faraday later abandoned Weber's notion of diamagnetic polarity, because he concluded instead that diamagnetic substances didn't have magnetic polarity, nor the closed currents required by Ampère's theory.

**J** - So, how did Faraday resolve the problem of magnetic polarity?

**W** - Actually, he didn't. He transposed the problem to the physical reality of the magnetic lines of force. In a series of experiments, he refuted Weber's findings - and concluded that polarity is a directional property of the lines of force.

**J** - As if these lines were part of an infinitely large closed circuit?

**W** - That's just the problem that Faraday wanted to avoid - and that Maxwell jumped into head first. With his description of paramagnetics as converging lenses and diamagnetics as diverging lenses, Faraday came to the conclusion that magnetic polarity didn't really exist - neither for paramagnetics, nor for diamagnetics. He argued that paramagnetics simply intensified the applied field, and diamagnetics simply weakened it. In media more paramagnetic than themselves, paramagnetics behaved as diamagnetics, and in media more diamagnetic than themselves, diamagnetics behaved as paramagnetics. It all came down to the problem of transmission of the magnetic force. Unlike electricity, magnetism had no poles. Hence, no detachable magnetic monopoles could exist - unlike charges of one polarity that *can* exist on their own. Magnetic lines of force couldn't be transmitted by 'magnetic particles', not the way electrostatic lines were transmitted by contiguous electric charges. If you cut a magnet in half, you will always get a new set of two poles, not two isolated monopoles, one North and one South.

**J** - All right. But I still don't see how Faraday resolved it --?

**W** - For a while he considered whether the fluid ether hypothesis could explain the transmission of magnetic force along the magnetic field lines. He speculated whether this ether might produce vibrations transverse to the direction of electric currents, or whether it would instead have longitudinal vibrations. He wondered whether light could be a longitudinal vibration, and if not, what would constitute such a vibration? Confronted with having to assume a magnetic polarization of the luminiferous ether - an ether tension - he came to a very strange conclusion: that magnetic lines of force were stresses in space, they were a physical property of mere space that was only revealed when space was disturbed by matter.

**J** - I see - this is the core vision of field theory then --

**W** - Yes, the core axiom. Space has physical properties - one of these properties is to be strained by matter; and when strained by matter, it reveals the magnetic lines of force caused by that strain.

**J** - Yes, but don't you have to also add that this matter must be magnetic, or at least paramagnetic with respect to that space?

**W** - That was just the problem that Faraday thought he had found an answer to. Previously, for him, if diamagnetics had no polarity and did not respond to magnetic fields, it was difficult to see how matter, by itself, provoked that strain. But once diamagnetics became only divergent lenses for the lines of force, matter - whether magnetic or diamagnetic - would always produce a stress in space. Stop and think about this for a minute and you'll see that it's very close to the guiding notion of a unified field. Space has magnetic properties, and so does matter - and matter can only make these strains bend one way or another, like a filter.

**J** - Yes, - and like Einstein much later, you could conclude there's no luminiferous ether, no need for it - yes, I see.

**W** - In a magnetic medium, you can only demagnetize substances that are more paramagnetic than the medium is. Diamagnetic substances, less paramagnetic than the medium, would not be susceptible to permanent magnetization. You would have to pick a more diamagnetic medium, to see that happen to those substances - because now they would behave as paramagnetic ones.

**J** - So, there was no molecular transmission of the magnetic lines of force - they could exist just as well in a vacuum because the transmission wasn't a 'mysterious action-at-a-distance', but a physical stress in the neighboring space itself, is that it?

**W** - Yes, for Faraday space had physical properties - it transmitted the gravitating, electric and luminiferous forces, as well as the magnetic force. The idea that the magnetic lines of force were physical stresses in the fabric of 'pure space' was further reinforced by the fact that magnetic propagation along the field lines seemingly took no time. So he sought to differentiate space from matter, how the former acts differently from the latter, how the medium of pure space acts differently from material media.

**J** - How did he do that?

**W** - To answer you, I need to bring up an important series of facts seldom mentioned today. Our current explanations for diamagnetic behavior still resort to Oersted's and Weber's same-pole induction - yet, the behavior of diamagnetics is far from uniform. Another of Faraday's discoveries sheds some light on this - and also relates to Hulburt's specific interests - it concerned the atmospheric variation in optical propagation and light frequency, and its dependence upon atmospheric heat, magnetism and electricity, in particular, upon the roles of paramagnetic oxygen and so-called diamagnetic nitrogen. I'm going a little quickly here, but I think you'll see where I'm headed. The first crucial observation made by Faraday is that a ray of plane-polarized light that's transmitted through a diamagnetic medium with a high refraction index, like glass, can be made to rotate when acted upon by a magnetic force.

**J** - So a magnetic field *can* affect light...

**W** - Yes, the effect of magnetism upon light depended upon the geometry of the applied magnetic field, the nature of the diamagnetic and the distance travelled by the light ray through it, and the intensity of the magnetic lines of force. At first, it appeared that the direction of rotation of the plane of polarization was positive or right-handed - that is, clockwise, when seen by an observer placed at the end of the diamagnetic where the light exited - and that for ferromagnetic substances the direction was reverse, negative or counterclockwise. Maxwell later used this observation to return to the argument of same and opposite pole inductions that Faraday had abandoned, and concluded that ferromagnetic and diamagnetic substances cannot be simply explained by the lens-argument of 'magnetic permeability', but must, in fact, have real opposite physical properties. But this re-establishment of Faraday's original polar argument had to be framed properly, because some diamagnetics like neutral potassium chromate produced negative rotations, other diamagnetics like quartz could cause rotation in either direction irrespective of the presence of an external magnetic field and dependent only upon the direction of light entry, and still others like turpentine only produced clockwise rotations irrespective of the direction of the light's entry. It's easy to see that if the rotation with respect to the direction of the light ray

entry was constant, say counterclockwise, an observer looking at a light pencil reflected back to its point of entry would see no rotation, as the two rotational effects would cancel out. But that's *not* what happens with turpentine or sugar solutions, and so on, when a magnet is applied. An observer at the point of entry and looking at the reflected ray will see a rotation which is double that observed at the point of reflection opposite the point of entry, and in the same direction. No matter whether it is the emitted or reflected ray, an observer at the point of entry will always see an accelerated counterclockwise rotation, and an observer at the point of exit or reflection, an accelerated clockwise rotation. The ray returns to the point of entry with its rotation increased, not cancelled, as *should* be the case if it was due to a molecular action, or a molecular transport. According to Faraday, this action of turpentine depended on the diamagnetic nature of the matter, but was not itself a molecular action. It was rather an indication that the magnet had induced stacks of electrical currents on planes transverse to the light ray and running counterclockwise when seen from the point of entry of the light ray.

**J** - Like a vortex --?

**W** - Yes, that is exactly what Maxwell later concluded. Maxwell imagined that all materials present two uniform circular vibrations with opposing direction. Two opposing vortices. When they are equal in all respects - periodic time, amplitude, acting on the same plane or the same longitudinal series of juxtaposed planes - they balance out to produce what he called a 'rectilinear vibration' on any plane, anywhere where they meet.

**J** - I think I follow - in ferromagnetic materials one of the vortices carries over the other - and there's a net negative twist...

**W** - Yes, that's it. In diamagnetic substances, if a magnet is applied, the other carries over and there's a net positive twist. It suffices to accelerate the phase of one of the vortices, and the plane position of that rectilinear vibration will rotate in the direction of the circular vibration that was accelerated. That's what happens in turpentine.

**J** - So, some diamagnetic substances only show positive rotation in the presence of a magnetic field, while others show it independently, as if the substance had a natural diamagnetic order or 'polarization' - is that it?

**W** - Yes, pretty much. You see - Faraday was after the distinction between space and matter, the magnetic field being a property of space that was disturbed by matter. In the same way that there were ferromagnetic substances, such as permanent, saturable paramagnetics, there could also be diamagnetics which retained their structure just as permanently. Faraday wouldn't exclude the possibility that certain matter or material media might have properties identical to those of space - and he thought he'd found the model of space in nitrogen. At first, he thought that nitrogen was diamagnetic. But when he used the torsion balance principle for detecting motion induced by a magnetic field, and mounted on the torsion bar identical volumes of nitrogen at different pressures, they failed to show differential attraction and repulsion in the presence of a magnetic field. So, he concluded that nitrogen was like space itself, neither diamagnetic or paramagnetic.

**J** - But according to Maxwell, wouldn't that just mean that the vacuum, or pure space, had to be formed by some sort of balanced vortices that magnetics or diamagnetics merely threw out of balance?

**W** - That's just the problem - pure space *cannot* be empty, and when a magnetic interacts with it, wouldn't space have to behave like a diamagnetic substance and screw up all the magnetic lines of force? You see the problem - space never appears as a paramagnetic medium for diamagnetics, outside of them, just as it never appears as a diamagnetic medium for magnetics.

**J** - Somehow, Faraday's progressive scale between magnetics and diamagnetics fails because space is not really at the center?

**W** - Yes, it is and it isn't. Rather, space *complies* with the twist that is intrinsic either to permanent paramagnetics or permanent diamagnetics, in the presence of one or of the other. Maxwell went on to think of molecular vortices aligned along the same axis and rotating in the same direction, in analogy to a stack of coins. But he wanted to remove the longitudinal component of the interaction, the very component necessary for establishing direction and time of propagation, and for constructing the mental image of a helix. These molecular fluxes could only embody the net result of those counter-coupled vortices, and not be confused with one or the other vortex. That's why the molecular explanation does not work for empty space. What are the molecules forming the magnetic or gravitational lines of force, if matter is absent? It all comes down to the physical nature of those lines of force - what is it that spins, and what is it that forms counterbalancing spins? That's where Reich comes in. Faraday's lines of force had no other physical reality that one could point to, and neither did Maxwell's counterbalancing vortices. All one was left with were phenomenistic or mathematical descriptions that would take recourse to these types of abstractions only when necessary, and wouldn't need to suppose any physical reality for those vortices. Reich, on the opposite side of the spectrum, was convinced that orgone energy could explain magnetism - that it acted on the same plane as magnetism but in the opposite direction, and perpendicularly to the electric field.

**J** - All right, let's see if I get this - orgone energy would have diamagnetic properties, yet in the presence of magnetic fields, it would develop a countervortex, whose excess over the natural diamagnetic vortex would explain the magnetic lines of force.

**W** - Very good, very good. But you see what this implies --

**J** - Well, it means that space is not like nitrogen - that it has to have either diamagnetic properties, or some excess of diamagnetism over magnetism.

**W** - That is one of the thoughts, and perhaps the best one. More profoundly though, it means that space is made up of massfree energy and that everywhere this energy is in states of superimposition, or spin and counterspin -

**J** - But when Reich gives spiral galaxies as macroscopic examples of what you say, the two streams of massfree energy minimally required for the process spin in the same direction...

**W** - That indeed happened much later - but I don't think Reich kept much to these ideas on magnetism past 1944.

**J** - Would the layering of ferromagnetic and dielectric substances in the orgone accumulator create magnetic force vectors that are alternately pointing at right angles to each other, as one goes from layer to layer?

**W** - If the layers were polarized with respect to their stacking axis then, yes, they could present alternating oppositely-dominant directions of rotation. And what you say isn't entirely foreign to what Reich contended - that the ferromagnetic layer continuously attracted and repelled the orgone flow, concentrating it, focusing it, while orienting its field along local geomagnetic lines, and that the dielectric or insulator only attracted the orgone, and even 'soaked' it in. But I think that these were still very primitive ways of describing the effect of magnetized dielectrics, or what it all means. Here's where the real problem emerges. How is it that certain diamagnetics - even certain plastics! - can be induced to acquire permanent magnetism without changing the medium from a more paramagnetic one, to one that is more diamagnetic? You can see how important it is to determine exactly what physical characteristics of space permit the transmission of magnetic lines of force. Reich's answer was that all fields are orgone energy phenomena. For Faraday terrestrial magnetism was largely a surface phenomenon caused by the paramagnetic properties of oxygen - for Reich, at the time of project RAINBOW, geomagnetism was due neither to oxygen nor to an iron-nickel core in the planet. He thought it was the flux of massfree orgone charges coursing through the Earth that generated geomagnetism, and this was the alternative explanation he gave to Einstein. The Earth's magnetic field was not due to iron-magnetism, he said, but due to a magnetic reaction brought about by the interaction between the rotating mass and the diamagnetic properties of primary massfree charges traversing the earth, concentrating at its core and feeding that rotation. This would equally explain why a magnetic compass in the northern hemisphere does *not* point horizontally to magnetic North, but points with a dip that reaches the vertical or 90 degrees at the pole.

**J** - ... and the same geomagnetism would be responsible for the magnetization of ships during their construction?

**W** - So there's your direct connection.

## Degaussing and Project RAINBOW

**J** - OK, now I see the connection between Reich, magnetism and Einstein, as well as the origins of field theory and the problems raised by the responses of the vacuum or the properties of space. Tell me about the connection to the military problem concerning the detection of magnetic fields in WWII...

**W** - All right. To develop effective countermeasures for magnetic proximity fuses, we had to understand not only how to remove the permanent magnetism of a ship once it was built, but also how to remove its induced magnetization at sea - the magnetization induced by its motion and its heading in the magnetic field of the Earth's dynamo. For Reich, these effects upon the ferromagnetic structure of ships were caused by the streams of spinning massfree charges that coursed through matter. By manipulating these fluxes, he thought one could either intensify a magnetic or electromagnetic field, or alternatively, neutralize them. In other words, from the point of view of remote detection, make them go 'dark'.

**J** - Sort of like producing dark Faraday spaces in a glow discharge?

**W** - Sort of --

**J** - ... is it just a matter of destructive interference involving magnetic spins or beam cancellation?

**W** - No, no; well, in a way, perhaps, but the kind of 'destructive interference' that I'm talking about would be far more fundamental, not a 'plane event', but a 'volume event', if you will. It would be something that would have to be related to those countervortices of Maxwell, or describe similar results. If the interaction was a property of space, maybe topology could get at its abstract logic, but *if* it were a property of energy, of an unknown form of energy, then all bets would be off. Would the interaction of space with high intensity magnetic fields still be the same? It was one thing to assume that a magnetic field interacted with light directly - but this, of course, could only be phenomenalistic! - but it was another thing altogether to realize that this interaction was mediated *by something*, by a property of space or a property of massfree energy composing that space - a property which light *only indirectly* translated for us. Now, a similar problem occurred for unified field approaches - there, it was assumed that light was bent, not rotated, because it interacted with space, with the deformation or surface strain of spacetime. If we consider torsion a lateral strain in pseudo-Euclidean space, then in a spherical system of coordinates we need a torsion tensor for spacetime. This would imply some form of electromagnetic feedback on the gravitational fields themselves. A massfree energy spinor could be such a system, and it might be capable of deforming or distorting any electromagnetic signals employed to detect it.

**J** - Are you saying that the observations on magnetism that Reich certainly must have related to Einstein, were not relevant to Einstein in 1941, but became relevant when he began working for the Navy in 1943?

**W** - No. They were relevant all along. Reich's notion of a superimposition of massfree energy giving rise to a spinning massfree energy field that generates self-enclosed envelopes - or multiple spherical surfaces - or to spinning and counterspinning magnetic reactions, was relevant all along. But Einstein had never considered energy that was free from mass. His famous equivalence between energy and matter,  $E = mc^2$ , was symmetric. There could be no energy without matter. But Reich's model was *not* symmetric - massfree energy existed 'before' matter, he claimed. It was massfree energy that created matter by superimposition, and was responsible for its gravitational displacements. And this energy was distinct from the energy of the electromagnetic field which, for Reich, was energy 'after' matter. These quasi-ontological and cosmological notions, the 'before' and 'after matter' qualifications, were placed there to remind us that all matter is not just equivalent to energy, but is energy - whereas, not all energy is matter. Topological spacetimes, and the field geometries they called for, were, according to Reich, nothing more than reductionistic descriptions of superimposed massfree energy. Spaces without matter would only exist by the constant superimposition of massfree energy. The question of the metric could not be resolved unless one discovered the intrinsic metrics of massfree energy. Einstein would have to accept that his most fundamental equation had this asymmetry- that *all matter is energy but not all energy is matter*.

**J** - Which he never did, of course! You know, I'd studied some of Reich's work, but I had no idea this is what he had to contribute - I guess, like millions of others, I never read him seriously. Still... it looks like, despite Einstein having been read to death --

**W** - Supposedly!

**J** - ...he wasn't taken very seriously either - or was he? Either way and from what you're telling me, what an extraordinary series of blunders he made! So, how do we get from the demagnetization of a ship to an experiment that implicates predictions by unified field theories that introduce spacetime torsion?

**W** - Einstein's connection to the Navy problem came from the questions provoked by the use of the very powerful electromagnetic fields involved in degaussing, from the seemingly unsolvable UFT problems raised by the lack of consideration of the magnetic mass of a 'material point', and from the possibility that there could be a spin to spacetime.

**J** - All right, first the degaussing story...

**W** - Yes... Under the direction of [**W.**] Gerlach [\(11\)](#), German naval research into torpedo and mine fuses successfully developed a murderous magnetic proximity fuse. They had also begun a comprehensive program of countermeasures, which focused on ship degaussing. By early 1940, the [**US**] Navy's Bureau of Ordnance, with Neumann and Veblen in charge of solving this problem, was working on its own countermeasures, prompted by British reports of the new magnetic German mines. So Francis [**Bitter**] was sent over from MIT. Remember that America was not yet at war with Germany. As I recall, it was in November of '39 that the first magnetic mine was captured - right in the Thames Estuary - and defused, just as Bowen took charge of the NRL. A secret NBO salvage operation led by [**T.T.**] Brown brought back the mechanism of another captured magnetic mine and Francis [**Bitter**] discovered that when the residual

magnetism of a ship distorted the local geomagnetic field of the sensor, it activated the magnetic needle of the trigger. Francis and his colleagues started to wonder how much of the ship's residual ferromagnetism was left over from the permanent magnetization induced by the local magnetic field during the ship's construction, and how much was magnetization induced by the motion and heading of the ship once at sea. The Royal Navy was already developing empirical methods to cancel this residual magnetism. So, a joint NBO/NRL mission was formally sent to England, where Bitter, Brown and the other members of the team studied the work being done by the British with boats they called "electric tail sweepers". Electric cables were run on deck and around the outside of the ship to cancel the residual ferromagnetic state, and a large floating cable was trailed behind the ship, connecting two electrodes immersed in sea water.

The electrode furthest from the ship was cathodic and the one closest to the ship - anodic. With large homopolar generators, a powerful current was made to flow between the two electrodes and across the water, in a wide, circling path. These currents produced powerful magnetic fields behind the ship, effectively informing the magnetic mines that the ship was at a location other than it actually was - and thus causing them to detonate at a safe distance - with the right maneuvering of the ship.



**J** - It was a combination of degaussing the sweeper at sea...

Sailors laying down degaussing coils on the deck of a warship. (contr. by Akronos Publishing)

**W** - ...hmm-hmm, by cancelling its induced magnetism...

**J** - ...and creating a ghost magnetic image of a ship where there was no ship.

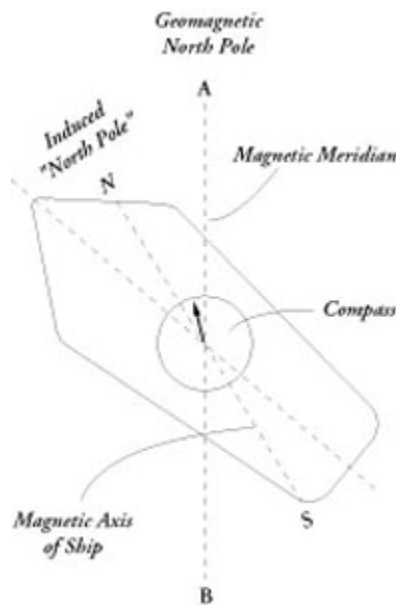
**W** - Yes, the degaussing coils eliminated the magnetic image of *the* ship and the hydro-ionic currents gave a magnetic image of *a* ship, and thus a false location. Bitter first saw this method in Liverpool harbor, where the British had developed it. It immediately struck him that one could use much lower currents and much stronger fields if one employed coils, instead of water, as the medium for current conduction. But placing coils behind a ship introduced significant resistance to its speed and imposed a tremendous load on it. To solve the problem, the NRL and the NOL experimented with coils wound around bar magnets weighing tens of tons and over 1 meter in diameter, going from the bow to the stern and protruding or projecting at the front of the ship for many tens of feet. The purpose was to project the intense magnetic field forward, to the bow, not astern, and permit more efficient magnetic mine sweepers. Several variants were built. Bitter also started to think about employing water to cool the coils. With special enclosures, combinations

of different winding gauges and the right coil insulation, turbulent cooling permitted very powerful fields.

**J** - Were the Germans also working along similar lines?

**W** - Well, part of Gerlach's tenure until 1942, as Director of German naval research, was focused on designing and building degaussing installations for construction yards. The Germans didn't focus on countermeasures at sea. I believe that the Anglo-American project was far more comprehensive. Francis [**Bitter**] was after a systematic understanding. He wanted to know what caused residual ship magnetism and how magnetic signatures of ships might vary with size, building methods and motion. Permanent magnetization of ships was the result of the assembly process, particularly the riveting steps, the magnetized parts aligning themselves in the direction of the local geomagnetic field - with the magnetic axis along the magnetic meridian. To prevent this magnetization of the ship during construction, the French had developed the *deperming* technique before the war. During construction, the ship was entirely wrapped with coils. At different building stages, these coils were pulsed at 'resonant' frequencies and high current. If the ship was in the water, the process was carried out with the ship being rotated through a complete circle. The frequencies and currents were largely determined by trial and error, and the process was poorly understood. A depermed ship would still have a residual magnetic field, and its strength depended on several factors. Francis wanted to understand all of them - how deperming always produced a variable, residual signature. Studies of magnetic ship signatures utilizing detector coils placed on the bottom of harbors indicated that the intensity of the stray magnetic field varied from ship to ship, even within the same class.

**J** - And the orientation of a ship's motion would contribute to this --?



Induced ship magnetization and its effect on a magnetic

compass. (contr. by Akronos Publishing)

**W** - Exactly, induced magnetization is the result of the interaction of the ship with the geomagnetic field. That's why getting rid of the residual had to be such an intensive task. A ship moving north will have a north pole induced in its bow and a south pole induced in its stern, and if heading south, the opposite results. The extent of the induced magnetization depends on the strength of the local magnetic field, the heading of the ship, but also the age of the ship, its composition and its speed. The objective of completely degaussing the ship was to eliminate its induced, residual or stray magnetism - to go beyond deperming. This process of cancellation could be quite sophisticated, but complete elimination was a complex, difficult and costly affair, not to say a full-time job. Mine sweeping could deal with the magnetic mines, but a more radical solution was needed to deal with torpedos armed with magnetic detonators. The 1940 German version of these torpedos was very imperfect, as U-47 found out at Scapa Flow. But by '42, the Germans had developed sophisticated magnetic fuses for torpedos, and neutralization of residual and stray magnetism became imperative.

**J** - So, from what you're telling me, the problem of magnetic countermeasures converged with the problems of controlling enemy guidance beams and electromagnetic camouflages.

**W** - All in mid '42, when the Germans appeared to be winning the war!

**J** - ...because of Döenitz's U boats in the Atlantic?

**W** - Yes, and with [V.] Bush's administrative and hierarchical victory over Bowen, let me tell you, the Navy did not look too sharp. No Siree.

**J** - OK. But back to the magnetic countermeasures: there were also all sorts of problems with the tail sweeper method - the problem of poor dielectrics for insulating the high-current electricity from the water, the heating of the water, --

**W** - More like vaporizing, yes - Bitter's turbulent system mostly took care of that. And the NRL Chemical and Light, and Heat, Divisions worked very hard on the dielectric problems - as did [T.T.] Brown himself.

**J** - And there was also the problem of the current magnitude in producing strong magnetic fields, right?

**W** - Yes, a problem that the French had resolved - using a solution that Kapitza developed before he left Cambridge [England] to return to the Soviet Union. Bitter was well aware of this, and he had his own ideas about it. The problem was the magnitude of the currents required to produce those 'ghost' signatures. Kapitza had found that if the high frequency coil currents were pulsed within certain parameters, very intense currents could be created, and fast enough that it didn't heat up the coils. The coils still had to be very thick, but using this method Kapitza had succeeded in producing - with air-core secondaries - magnetic fields ten times greater than was possible with iron cores.

**J** - Do you mean that Kapitza was employing something like a Tesla coil?

**W** - He'd made the primary an exact function because he had to control the heating. But Francis **[Bitter]** wanted to go a step further - he wanted to employ active cooling to permit still higher pulsed currents. He thought that one could take advantage of the large water reservoir, the ocean, to cool the emitting coil, and direct the turbulence caused by the ship's movement to do that cooling.

## **Project RAINBOW, nuclear magnetic resonance and E. Purcell**

**J** - Some time ago, in one of our first meetings, you told me that the so-called 'Philadelphia Experiment' was some sort of a precursor of Purcell's discovery of nuclear magnetic resonance in late '44. I think you said then that Bitter thought that residual magnetism might be a nuclear phenomenon - ?

**W** - That's right, that's how this whole story really started for Bitter and for the MIT Rad Lab - it's also where Bitter falsified what he actually did for the government. Anyway, he'd been sworn to secrecy - and never received any public recognition for his contribution to the discovery of nuclear magnetic resonance. He suggested that there might be resonant magnetic energy levels, literally unoccupied quantum levels, that had to be reached before the residual could be completely eliminated. He also claimed - following [**I.**] Rabi's studies - that there was no doubt that nuclei were magnetic dipoles, and so we had to consider the possibility that residual magnetism was a gross external magnetic effect resulting from the magnetic properties of ferromagnetic nuclei. This part of the work refers to the obliteration of the ship's magnetic image - not to what we discussed before, the creation of a false ship image, a ghost.

**J** - Twin ghosts? really! - one made into a ghost ship, and now the other, a ship ghost...

**W** - Hah-hah, yes... Bitter's idea was that one needed to combine a permanent magnetic field with an alternating one. Achieving this with permanent magnets was impossible - even today, it still is. So instead, one had to drive permanent electromagnets with homopolar generators, to create the permanent field, and then superpose an alternating electromagnetic field that constantly changed the orientation of the atomic dipoles. The idea was a bit more complex, because the permanent field was also periodic, it was also pulsed, but at a much slower rate, and changed its magnetic polarity  $180^\circ$  with each impulse.

**J** - Fundamentally, this is the method employed by [**E.**] Purcell at Harvard to discover proton magnetic resonance in December of '45!

**W** - ...and don't forget [**F.**] Bloch at Stanford. Yes, after the studies of Rabi at Columbia in the 1930's. The problem was that, back in '42, Bitter lacked most of the equipment needed to produce or detect these nuclear magnetic resonances, and no one knew where they were, at what energy levels. As you know, nuclear magnetic resonance is --

**J** - Please explain -

**W** - Yes, in a permanent magnetic field, atoms and nuclei do not so much oscillate like small permanent magnets would, along an axis parallel to the magnetic field or the force vector, as they rotate like precessionary gyroscopes around the direction of the constant applied magnetic field. From discussions with colleagues at the Rad Lab, Bitter got the idea that it might be possible to superpose over the constant magnetic field, a resonant oscillating radio-frequency field that

would selectively flip the direction of some nuclei. He was encouraged by both Purcell and Bloch in this.

**J** - I don't see the rationale...

**W** - In a permanent magnetic field, atoms and their nuclei align themselves in predictable ways. In a magnetized piece of iron, all the molecular dipoles (12) will tend to orient close to, or align with, an axis parallel to the magnetic lines of force. Some, as I said, align parallel and others antiparallel. This is a little more complicated than I am making it, because these alignments are precessionary. In iron, the lowest energy state is the parallel alignment. But there are substances whose dipoles lock in parallel and antiparallel orientations within the same magnetic domain - they are called antiferromagnetics, like permanganate. If they are heated above a certain temperature, they become paramagnetic. Atomic hydrogen is like an iron dipole - it preferentially settles in the parallel orientation. The problem then became how to flip sufficient parallel, lower energy states into antiparallel, higher energy states, so that residual magnetism is cancelled - much as it happens in antiferromagnetic substances. From Boltzmann's thermodynamics, Purcell did not expect the distribution of the two orientations to be homogenous - their quantum energy levels or excitation states would not be symmetrically distributed between the two main alignments. The presumption, as I said, was that the lower energy states predominated to generate the permanent magnetic field. Maybe residual magnetism was due to this predominance, no matter how small. With a particular radio frequency signal at the right frequency, it might be possible to shift more atoms or nuclei from the lower to the higher excitation levels, and achieve a balanced distribution. There was no equipment designed to detect these energy absorptions in water, let alone in ferromagnetic materials. But such a balanced distribution could result in the elimination of residual magnetism, and be used to prevent or cancel out induced magnetism.

**J** - So RAINBOW was a precursor of NMR, is that it?

**W** - You might say so. In an NMR machine, the 'samples' are placed in a permanent, static magnetic field, and a transverse 'radio-frequency' field is continuously applied at the Larmor frequency to cause zeemanizing, or the splitting of the excitation states. If the permanent field is increased, any nucleus precessing in parallel orientation becomes more resistant to being flipped into the antiparallel orientation, and so higher frequency radiation is required to flip it. When the particular combination of an external magnetic field and the applied RF field causes atomic nuclei to flip, the nucleus is said to be in resonance, in a state of nuclear magnetic resonance. Part of the original RAINBOW protocol was similar to this, except that the permanent field was periodically switched 180 degrees, and the RF field was also pulsed.

**J** - OK. I think I 'm beginning to understand this at last --

**W** - A constant magnetic field applied to paramagnetic substances always induces the creation of a molecular magnetic field. Because the induced magnetic field has two orientations for a precessing paramagnetic substance, parallel or anti-parallel, when one forces the parallel into anti-parallel flip at electromagnetic resonance, the induced molecular field ceases to aid the applied magnetic field, and opposes it instead. As the magnetic field strength is increased, the

parallel nuclei become more resistant to flip, and higher energy RF must be injected at a higher resonant frequency for the flipping to occur. When there is permanent magnetism, even residual, in a substance, and the applied permanent magnetic field is parallel to it, the two fields add and the lower energy molecular dipoles are said to be *shielded*, because more RF energy is required to flip them into the antiparallel orientation. If the applied permanent magnetic field opposes the permanent magnetism of the target, then the lower energy dipoles are said to be *deshielded*, because less RF energy is required to flip the dipoles.

**J** - I see, that's why Bitter wanted to pulse the permanent magnetic field and reverse its orientation - he would periodically *deshield* the parallel dipoles, making it easier to have them flip.

**W** - Uh-huh.

**J** - And if the permanent applied field was constantly opposing the residual magnetization, would one reach a balanced state like that of antiferromagnetism?

**W** - That's roughly the idea, but these are quantum processes, and one never even gets close to it. As Purcell found out in late '44, stimulated emission compensated for the absorption --

**J** - But the idea was to dissipate residual magnetism by balancing the parallel states with more antiparallel states --?

**W** - Yes, a very tough problem indeed. No one knew where these resonances were, and by [**J.**] Ewing's theory of molecular magnetization, magnetic alignment of the molecular domains or the molecular dipoles is a step process that takes time and never reaches saturation. There were lags in demagnetization and relaxation - and much heat could be expected from partial gyrations and counter gyrations of the magnetic domains.

**J** - What would happen if one could, say, align all domains, make them all either parallel or antiparallel?

**W** - That's the problem of superconducting magnets. Making most of the dipoles parallel is the problem of magnetization or induced magnetization of a sample. Tesla had already encountered this problem when he designed his electromagnet rectifiers with iron cores. Fields much greater than 3,000 gauss were needed to bring the cores to saturation. Beyond that limit, Tesla claimed that one had to employ low-frequency disruptive discharges -- which means pulsing the coil.

**J** - So Tesla preceded Kapitza, the French and Bitter in this technique?

**W** - Yes, in the case of Tesla, you're trying to get as many domains as possible into a parallel orientation - but as for turning half of all domains into antiparallel orientation, that is well nigh impossible, at least with ferromagnetic or ferrimagnetic cores. By 1938, at Bitter's Magnet Laboratory at MIT, fields of 100,000 gauss were attained. Your question is important though, because Einstein's general theory proposed that gravitational fields have two main components, one static and present in space devoid of matter, and the other dynamic and caused by the

gravitational coupling of two or more bodies in relative motion. Two spinning bodies would exert a mutual force of gravitation. If the nuclear gyroscopes of a rotating body could be aligned in a preferred direction - say, parallel or antiparallel to the body's axis of rotation - they would generate a force field normal to that axis. The alignment condition is called spin polarization. If the force field varied periodically, then it might be possible to generate a secondary gravitational field.

**J** - Would this then superpose another curvature upon the local spacetime continuum?

**W** - If we disregard magnetic torsion, one can only think of it as either intensifying the existing curvature or relaxing it. This is equivalent to saying that it would either increase the density of the gravitational field flux lines, or decrease it.

**J** - How could we disregard magnetic torsion? Isn't there a relation, for example, between the earth's rotation and its axis, and the orientation of the magnetic field and its axis? Couldn't the apparent magnetic axis offset be the mean of the precessionary motion? After all you jumped from magnetism to gravity - but you were assuming, implicitly, that the two fields were coincident or nearly so, no??

**W** - I understand --

**J** - ...even the idea of varying the line density goes back to your discussion of Faraday's notion of magnetic lenses --

**W** - Well, yes - hmm, hold those magnetic field notions in your mind, and suppose that it is possible to give a single description of them which could be made identical to a description that would apply to any gravitational field. Now, in the general theory where there is only one metric tensor  $g$  to express local geometry,  $g$  is locally determined by the gravitational field, by its local flux line density. The metric tensor simply expresses the acceleration of the frame of reference. Therefore, the flux line density of a spin-polarized, rotating body *must decrease* with respect to the flux line density of surrounding space, if the gravitational attraction of that body towards any other revolving one is to decrease. The spacetime occupied by the spin-polarized rotating body would have to have less of a curvature than the surrounding spacetime.

**J** - But I don't understand - that would only allow one to decrease the acceleration of the local gravitational field. How would weightlessness or antigravity be possible?

**W** - It wouldn't - not from any of Einstein's theories, unified or general, by the way. But some interpretations permit one to think in terms of a shield of the spacetime occupied by the spin-polarized rotating body. The weight of two bodies with respect to each other would only exist if the secondary gravitational field within that shield had a line density *greater* than that of the space surrounding either body. In contrast, weightlessness would be a condition of degravitation, where the density of gravitational flux lines within the shield of either of the spin-polarized rotating bodies would be *equal to* that of surrounding space. And antigravity would be a negative weight characteristic reached when the line density within a shield was *less than* that of

surrounding space. If this condition occurred, then spin polarized nuclei would align themselves antiparallel to the weight vectors.

**J** - Something like a curvature that can be straightened or even inverted to form a geometric negative?

**W** - That's the idea. Yet this interpretation [\(13\)](#) *cannot* be entirely correct. Geometry results from gravitational fields, from states of acceleration. It is, of course, hardly possible to understand how space devoid of matter is subject to a state of acceleration when it is equally supposed to be devoid of energy, when time itself is taken to be one-dimensional and simultaneity is seen as a relative state. Somehow, one has to imagine space as being subject to an acceleration, without being able to treat that same space as a physical property of energy...

**J** - If I understand you correctly, Reich wanted Einstein to do just the reverse - to treat that space empty of matter as a property of massfree energy --?

**W** - Yes. One might think of energy in flux as subject to an acceleration, even if treating the energy as massless presents conceptual difficulties. But to say that space is in motion, or is subject to acceleration, is physically meaningless. It is at least as mysterious as Faraday's lines of force and Maxwell's superposed, counter-rotating vortices. But suppose nuclear spin polarization could permit us to alter or even invert the curvature of spacetime. Then, the main technical difficulty would be to come up with a process that flips most of those gyroscopes from parallel to antiparallel orientations with respect to the mutual weight vectors. That's where magnetism, or some form of it, comes back into focus. After all, outside of a critical distance, two mutually gravitating bodies do not fall towards each other - some force already keeps them apart. And unless one takes recourse to the gravitational shield interpretation, one is only left with the spacetime torsion.

**J** - ...and neither is satisfactory? What about nuclear magnetic resonance - could it not be used to cause that torsion at very high field intensities?

**W** - Well, the solution can only come from asking whether a body which had a majority of its magnetic dipoles oriented in antiparallel magnetic direction could also function as a body which was nuclei spin polarized in antiparallel orientation with respect to its main weight vector. Without introducing the question of the magnetic properties of space or of some form of massfree energy, it's difficult to see how the gravitational relationship could be modified or inverted. You may regard the shield as a finite spacetime region. And one can treat the curvature as a matter of flux density - but there is no physical mechanism to create relative differences in this density that would generate opposing curvatures, 'convex' curvatures.

**J** - So RAINBOW was going to test for the complete removal of stray magnetism with methods analogous to NMR. But it was also going to test for general relativity and the unified field - to see if a high intensity rotating magnetic field generated a secondary gravitational field, and if either its curvature or torsion - or both? - would change...?

**W** - Yes, engaging magnetic resonance with very intense fields might change the local curvature of spacetime that 'contained' the ship - that was the idea. This could bend all light rays further than they are already bent on the surface of the earth and...

**J** - ...give the wrong optical or electromagnetic image of the ship's location.

**W** - Yes, the electromagnetic image of the ship would be red-shifted, and the ship would appear to be further away than it was. The radar bounce would take longer to return, the bounce would be stretched or bent longer, and would not return therefore on the expected frequency for which the receiver was tuned. You see, this is the reason why RAINBOW was such an important project - and its outcome would bear on many different fields. It would address a number of very different questions, all of them of crucial importance.

## **The convergence of optical, magnetic and radar countermeasures at the NRL**

**J** - Let's see if I can catalogue the main series of problems that converge in project RAINBOW. I'll count them, and you can correct me. One, to make a ship magnetically invisible to magnetic fuses on mines or torpedoes, by canceling its residual magnetism with some form of nuclear magnetic resonance developed from degaussing. Two, to create a false magnetic image of a ship, a 'double', that would permit harmless detonation of these mines and fuses. Three, to bend the radio-controlled beams of gliding bombs and flying bombs, I presume with strong magnetic and electric fields?

**W** - Uh-huh --

**J** - Four, to replace guidance beam echoes - and radar beam bounce - with false ones, that would give off a false electromagnetic image of the target. Fifth, to make a ship - or airplane, you said - optically invisible, on gun sights, etc, by using very strong electromagnetic fields to bend the spacetime curvature...

**W** - Yes, but you see - if intense fields altered local gravity, you also got a bonus: they would also alter magnetic and electromagnetic signal detection. The attraction of the UFT was that one could have it all, all the countermeasures in one - and that was the optimistic rationale of RAINBOW.

**J** - At which point did the various 'roots' meld - where did the impetus come from for such a comprehensive undertaking?

**W** - I recall that it was on word from Einstein, that Neumann went to Navy Commander [**L.**] Strauss, personal assistant to the Navy Under-Secretary [**J. Forrestal**] and told him about all the military possibilities of an experiment combining degaussing with induced nuclear magnetic resonance of a target ship. Understanding gravity, magnetism, optics and radar - and proving the general theory - were bonuses of a possible new military arsenal of electromagnetic countermeasures. One might be able to eradicate the residual magnetization of a ship *and* make the ship appear to be where it wasn't. One would fool magnetic mines and torpedoes, and might even fool optical sighting in gun mechanisms or do one better and foil radar. One might be able to make the ship invisible, with sufficient curvature near the line of horizon, and so on.

**J** - The eyes of the brass must have rolled out of their sockets!

**W** - Yes, the idea of bending light or radar beams really struck their imagination.

**J** - But if it weren't for Neumann himself and his Einstein reference, they would never have bothered!

**W** - You're forgetting Taylor and Gunn! Plus just how bad it was in '42-'43. One thing was losing Bowen to Bush, but when it came to doing the 'right thing' when the war appeared to be lost, you would be hard put to find a more determined bunch of Navy civilians!

**J** - So, all the pressures combined made the Navy more prone to accepting off-the-wall propositions?

**W** - Yes, *if* backed up by established authorities. Neumann was, at the time, employed by the NBO and he had tremendous pull and charisma. He was a real organizer and figured that Van [**V. Bush**] owed him a couple. The NRL had let radar and the nuclear fission projects go to the OSD, so the OSD now had to let the NRL take this one over. With Einstein and Neumann on their side, it was the turn of Harvard and MIT, along with Rad Lab, to make a few contributions in return.

**J** - Hence Purcell and Bitter?

**W** - Yes. Gunn was already a member of Bush's OSRD, and its superstructure - the National Defense and Research Committee [**NDRC**], where he battled for the independence of the NRL.

**J** - Was Professor Allen part of it?

**W** - Yes, [**C.M.**] Allen of the Worcester Polytechnic, and [**Dr. R.H.**] Kent...

**J** - In *The Philadelphia Experiment*, William Moore alludes to most of these people...

**W** - Yes, he and co-author [**C.**] Berlitz - they don't mention Purcell's involvement, though, nor --

**J** - ...and they come up with two main characters, a "W.W. Albrecht" and a "Dr. Franklin Reno". No one has ever been able to determine who these characters were, or if they ever existed. Was Moore telling the truth about their existence - even to Berlitz or to [**S.**] Friedman?

**W** - Well, Moore bent the truth a little...

**J** - Everybody does...

**W** - Uh-huh, but what I mean is that all the relativity computations and so on, particularly for the models of the unified field, were mostly done by Gunn and Hulbert. Gunn published seminal papers on astrophysics, on the anomalous rotation of the Sun, on the rotating earth as source of terrestrial electricity and magnetism - the earth as dynamo...

**J** - But Gunn was the technical boss?

**W** - Yes, the effective director during Keuren's tenure --

**J** - So 'Albrecht' is Ross Gunn...?

**W** - No, no, no! 'Albrecht' is 'Doc Taylor' - the Superintendent of the Radio and Radar Divisions!

**J** - Huh?

**W** - Yes, Albert Hoyt-Taylor - the wireless warrior of WWI in charge of Marconi's Delmar Station - or Camp Evans when the Navy took it over during WWI - the man who initiated the quest for radar with his 1922 experiments --

**J** - He - he's the "W.W. Albrecht"? Why the 'WW', and the German name?

**W** - Haven't you figured it out yet? They're *inside* jokes! Look, some historians called WWI the 'wireless war'. At Camp Evans - the Marconi station - they called themselves the 'wireless warriors', and sometimes called Taylor - the Wireless Washington.

**J** - Like the General?

**W** - Yes, and on the same stomping grounds. Other times, to distinguish him from Einstein, Navy people would also call him 'our Albert' - or, because of his strictness, 'Albrecht'...

**J** - ...which Einstein was.

**W** - Yes, so Taylor became, quite naturally, W.W. Albrecht or W.W.-you-know- who. When he'd meet up with Einstein, there'd be unending jokes about the two Alberts.

**J** - Well then, that would make Dr. Franklin Reno - Lou Gebhard, then!?

**W** - Right you are!

**J** - So [**G.E.**] Simpson and [**N.R.**] Burger, in their novel "Thin Air", were barking up the right tree when they first named him Rinehart?

**W** - Yes, that was a superb clue from a very poor and sensationalized account. You'll find very little, if anything, about Taylor's assistant and co-worker, and one of the inventors of radar. But Rinehart was an excellent choice because, you see, his real name is not Gebhard, but Gebhardt - Louis Alfred Gebhardt - with the t at the end like 'Rinehart', or like the real German name for Rinehart, which is 'Rheinhardt', which has the same ending 'dt' as 'Gebhardt'. And he didn't die in 1977 or '78, but ten years earlier - in '68.

**J** - I see...hmm - but why did Moore and Berlitz never reveal this - his true name and that of 'Albrecht'? It would have lent substantial credence to their book, no?

**W** - I believe they went as far as they thought it was safe to go.

**J** - Do you mean someone got to them?

**W** - I know nothing about that. I mean they didn't think - back in '78 - that they should reveal more than they did about the supersecret doings of the NRL.

**J** - The uncertainty certainly tainted their reputations!

**W** - But it must also have been secretly amusing to see newsmakers and aficionados running around making wild claims about Reno, Rinehart and Albrecht.

**J** - [A.] Bielek swore that Reno-Rinehart was von Neumann.

**W** - That's all part of the silly lore that has surrounded this project. The more buried the thing is, and the more categorical are the denials by the Navy, the more fantastic are the tales by the radical ufological and fringe communities. Remember, it was the ONR [**Office of Naval Research**] that got this whole ball rolling in the first place.

## Why the Carlos Allende tale?

**J** - Was it not the two letters sent by Carl Allen - or Carlos Allende - to [M.] Jessup that got this thing started?

**W** - Yes, they were the leak that concentrated all the legends - but who knows what prompted them? They perplexed Jessup, that's for sure - but he was nearly ready to drop the matter when Commander [G.W.] Hooper and Capt. [S.] Sherby called him over [in 1957] to the ONR, in Washington. Had they not printed the Varo edition with Carl's extra-terrestrial voices annotated in color...

**J** - So what are you telling me? - that there are only two possibilities? - that either Carl Allen was disturbed and he sent the letters to Jessup and then the annotated copy of Jessup's book to the ONR, or that he was some kind of a disinformation agent?

**W** - I imagine it's far more complicated than that. Allen was definitely disturbed - by megalomaniac fears. This fact alone predisposes any sane person to immediately view the entire story as a hoax that he perpetrated. That would be the case if his neurosis or psychosis simply latched on to rumors that he'd run across - you know, sailors' stories. You see, following the failure of RAINBOW and then, nine months later, the explosion of [P.] [Abelson's](#) uranium purification plant in the Philadelphia Yard (14), the veils of secrecy over the NRL were thicker than ever before. Tales of great dangers, fantastic events and dark powers were frequently employed to dissuade the incautious or attract potential spies. They were planted by plainclothesmen in bars and meeting halls along every important waterfront. If you know the marine milieu, merchant and naval, you know how fast tales travel and how they're spun.

**J** - Hmm, I can imagine.

**W** - But Allen could have been disturbed because of events connected to RAINBOW - either because he'd lived through some of them, and this caused his disturbance, or because he was able, somehow, to find out about these occurrences. In the latter case, we still have several possibilities - he could have found out about these events because of proximity, or through a third party, or he was given access to knowledge of those events while being 'handled'.

**J** - O.K., I see there's a lot of possibilities. But what's your hunch?

**W** - I don't need one. Franklin Reno was real enough, and he clearly was in touch with Carl Allen long after RAINBOW was buried. So, I have little doubt that Allen was being 'handled'.

**J** - By Gebhardt?

**W** - Precisely. The question is *why*. He might have been handled because he was, in fact, some kind of a human guinea pig in one of RAINBOW's experiments - and so he was a risk and had to be shut up and made to appear delusional - or he might have been handled because of his

potential to bring discredit to the emerging field of ufology and counteract the near-panic being caused by the sighting flaps, or to sow confusion and disinformation around a military black ops project that did involve Einstein, or as part of some rogue action. It's no coincidence that the Allende Letters are contemporary with an intense UFO flap and the emerging policy of denial.

**J** - Yes, Allen's first letter to Jessup dates from January 1956. The policy of denial comes in full force after the debunking carried out by the CIA [**H.P.**] Robertson- [**D.**]Menzies panel [**in 1953**] and just as [**T.T.**] Brown and [**USMC Maj. D.**] Keyhoe were preparing to create the Flying Saucer Discussion Group - which later, in October of that year, led to the National Investigative Committee on Aerial Phenomena, NICAP, supported by Rear Admiral [**D.S.**] Fahrney and Admiral [**R.H.**] Hillenkoetter, who ten years earlier had been the first Director of the CIA. I don't think that the USAF was happy with what all these Navy people had done - in creating NICAP...?

**W** - Yes, don't forget that other equally important events were afoot. Einstein died in early 1955 (**15**) and, though he left no unified field solution, he was [hailed in the media](#) as having had one since 1950! This notion of Einstein's success impacted the problem of the UFOs when it was at its most intense, on the brink of turning into a mass-panic nearly like that of [**O.**] Welles' ill-fated *War of the Worlds* radio experiment [**In 1938**]. [**USAF Capt. E.**] Ruppelt, who was in charge of the USAF project BLUE BOOK until 1953, had previously placed the Air Force on a collision course with the CIA's policy of denial. In fact, those years of '53 to '56 are crucial ones - remember that it's in '54 that Eisenhower creates a top-secret group to oversee the 'invisible government', as some have called it. It was known as the 54/12 Special Group and was supposed to centralize all intelligence, civil and military, and all major propaganda and disinformation efforts.

**J** - Is that the real MAJESTIC 12?

**W** - That's a different story, for another occasion... But don't forget the Special Report debunking UFOs, produced by Batelle in October of '55, which was severely criticized by Ruppelt and Keyhoe. In fact, the year of '56 saw a crescendo of important books on the subject of UFOs. One was *The Truth About Flying Saucers*, by the French mathematician Aimé Michel, which drew attention to the 'cosmic-ray' gravitational force- field hypothesis put forth a year earlier by French Air Force Lt. [**J.**] Plantier (**16**). The other was Keyhoe's *The Flying Saucer Conspiracy*, which concluded that UFOs flew in accordance with [**H.**] Oberth's hypothesis of a 'g-field', and then had a chapter entitled 'Redell explains a Riddle' in which the mysterious Redell tells Keyhoe that both Oberth and Plantier are only proving that Einstein's UFT is correct! The third was Ruppelt's honest account - *The Report on Unidentified Flying Objects* - which, though critical of Keyhoe, also concluded that UFO propulsion could only be explained by Einstein's UFT (**17**).

**J** - By all accounts, Einstein's UFT was seen as a stunning success -

**W** - ...at least amongst those seriously concerned with investigating UFO phenomena. So, this matter was very much in the air at the height of McCarthyism and the Cold War - which is to say, also, at the height of American paranoia and disinformation. A firm policy of denial was now in place. All governmental and military research into unknown aerial or maritime

phenomena went deeply underground, and so did any research into esoteric technology that might be linked to it, even if just by mere similarity.

**J** - Like what?

**W** - There were too many to count - all the advanced research into flying platforms, coleopters, flying wings, stealth bombers and fighters, turbine suction aircraft, perforated skin suction, skin polarization, not to mention rocketry, satellites, and so on. It was a technological avalanche of experimentation. Many different things were tried and many things went wrong. Rockets, by then, were beginning to be mastered, but circular suction aircraft were every bit as bad in their crash rates. The saving grace was that they rarely exploded. The point is this - and it was made by **[R.] Vesco** in his *Intercept UFO* - circular- turbine craft and perforated-skin craft were the focus of a great effort of development by the US and by the Russians, the British and the French, right after the end of the war and until the early '90's. There were more crashes with these devices than with just about anything else. And all these projects were highly classified.

**J** - You forgot the Canadians --

**W** - Those were really joint Anglo-American projects - including Wilbert Smith's project MAGNET in Ottawa, supposedly under the Ministry of Transportation, and the AVRO car.

**J** - And out of all these efforts nothing ever materialized?

**W** - No, no - many things came from these highly classified projects. Including the caper of crashed UFOs to cover up the frequent crashes of experimental craft outside of their test ranges. But none of them involved anything remotely like a technology that permitted gravity control. None of them tested Einstein's unified field theories. None of them were follow-ups of project RAINBOW or further elaborations of it.

**J** - So, what could Allen's objective have been in writing his letters to Jessup - or the objective of his handler or handlers?

**W** - Allen's apparent fear was that Jessup's book, *The Case for the UFO*, would stimulate the US government to reopen the book on investigating unified field technologies. That's delusional - since the US never stopped investigating the possibility that such a field exists, even if it has never succeeded in finding one. Nor would the US government bother to listen to Jessup. It appears, at first, that Jessup's book must have been the problem. It wasn't a particularly good book, well written or researched. In fact, it was lousy, but it was written by an astronomer and read like a catalogue of horrors through the ages. Jessup appears as someone who is at least as deluded as Allen - with his race of higher men flying metal machines some 300,000 years back, or space intelligences that hide in 'big clouds', or falling 'live things' that are 'the inhabitants of celestial hydroponic tanks', or a master culture of Atlanteans, and so on, he was an ideal target for disinformation.

**J** - You mean someone gullible enough to be made to swallow a fabulous tale?

**W** - In the Special Section we had 'spotters' that picked people like this - in particular 'talkers' like Allen and 'targets' like Jessup. Jessup believed that some space beings were material, and others massless or ethereal - so, as you can imagine, this left many degrees of freedom to play him with - ha ha!

**J** - I can only imagine...but, if anything, this should have suggested the ONR stay away from Jessup...

**W** - Yes, except maybe for all the baits, and that's my point - and these were simply too many: they had been sent a book written by someone who *could be* handled and annotated by someone who *was* handled; the annotations explicitly refer to 1943-1944 experiments of the Navy with electromagnetic force-shields and the horrors that resulted from them; they alluded to Einstein's UFT efforts, stated that they succeeded but that the sudden and uncontrollable invisibility of those subjected to such fields had been so disturbing that Einstein had been forced to retract his solution; and the esoteric references in Jessup's interpretation of the history of religions are matched by even more exotic notes made by Allen that purport to explain ship and plane disappearances happening up to 1955.

**J** - They had to look into the matter, especially if it was a hoax designed to smoke them out -

**W** - ...at the NRL and ONR - yes, to make them tell the truth about RAINBOW, or to deny it and suddenly be put on the spot, but --

**J** - Hold on, so Jessup's book was really immaterial?

**W** - Yes, fundamentally. Allen could have picked up any of a variety of recent books about UFOs and made similar annotations. Perhaps not one that was *so* far off the wall - but still... Nor was Jessup the first to claim ship and plane disappearances, time freezes or human abductions. Jessup also argued that these space travel machines are not rockets, and are neither propelled by magnetic fields nor atomically powered. He talks of controlling 'gravitational field reactance', or propulsion by controlling gravitational fields - and is convinced that the Russians must have some form of exotic technology that they've been hiding. He calls repeatedly for the government to carry out research on gravitation, to create saucer patrols, and so on. But, as I told you, so had Plantier, Michel, Keyhoe and Ruppelt before him - and in much more cogent fashions. So, ONR's interest could only be due to Allen's annotations, because he alone had claimed that Einstein's UFT had been tested, and that this had been done by the Navy in '43 to '44. That was the new item, and that's the first giveaway.

**J** - This must have immediately prompted the question - how did Allen know about these experiments, no?

**W** - Certainly. But, you see, Allen - who seems to identify with 'Mr. A', one of the annotated voices - makes a reference to the magnetic levitation of paramagnetic substances [\(18\)](#), like aluminum, and this was Gebhardt's work.

**J** - 'Franklin Reno' left a mark...

**W** - In more ways than one. Allen explicitly suggests that Jessup is wrong - that Jessup doesn't know what he's talking about and refuses to admit that electromagnetic fields simply can't be employed to do what he wants them to do - to alter gravitational fields.

**J** - So it was Allen's contentions that tweaked the interest of the ONR?

**W** - In part, and Allen and Gebhardt had to know that this would be the case - sending Jessup's annotated book to the ONR would trigger something. The ONR's concern was that details about the real RAINBOW might be released - potentially causing both discredit for Einstein and public embarrassment for the NRL. But there is another twist to this. That's the second giveaway, and it's been well tucked away all these years. You see, back in '56, project RAINBOW was still going on - ha ha ha!!

**J** - I don't get you - what are you talking about?

**W** - I'm laughing because I think that this is the main reason why intelligence people got alarmed by the Allende tale. RAINBOW had become, in the meantime, a joint Navy, CIA and Air Force effort at radar camouflage. Remember the CIA/USAF flights of the Lockheed U-2's over the Soviet Union - SINGINT and ELINT missions they were called - - beginning August 1955?

**J** - Yes --??

**W** - That was part of operation Soft Touch. There was a problem with it, however - - it could not be implemented unless U-2's could be made invisible to Soviet radar. It seemed to be working in the beginning, but not too well because, as you may recall, Powell got shot down in November of 1956! (25) So, in great alarm, more resources were thrown into RAINBOW, when the 54/12 group met in early 1957 (19) with President Eisenhower, Chief of Staff USAF [Major] General [N.] Twining, CIA Director [A.F.] Dulles and his two sidekicks - his Deputy Director of Operations [USAF] Brigadier General [C.P.] Cabell who had earlier created the national UFO-tracking radar network, and his Deputy Director of Plans [R.] Bissell. Bissell was also placed directly in charge of managing the U-2 program. Anything that would have had to do with radar invisibility or RAINBOW would have highest priority and greatest sensitivity. It's been said that when Bissell despaired of getting more sophisticated electromagnetic camouflage for his U-2's, he came up with the notion that the right canvas --- he called it 'the right wallpaper' - would do the trick. So the Allende tale was sensitive also because of its timing with reference to the ongoing RAINBOW efforts to make the U-2 plane invisible. Officers at the ONR would be quite concerned with the possibility that the book, with its annotations, contained some sort of cipher that could pass highly classified information under the wire. They wouldn't want to be blamed for anything that could hinder what had by then become Bissell's pet project.

**J** - So you don't believe Allen was an ONR disinformation agent, or that the ONR was targeting Jessup?

**W** - No, not at all. They certainly must have weighed the pros and cons of calling Jessup in - but that's understandable, because they needed information on *who* had written the comments, and they had no other obvious lead but Jessup.

**J** - So the Allende letters *cannot* be an intelligence caper?

**W** - I didn't say that. There is obviously intelligence behind them - and they are a caper of some sort. Just what *sort* of caper is the problem, wouldn't you say?

**J** - I'm not seeing it --

**W** - If it was part of an organized caper, then it's pretty obvious that the caper has its analogies with the UFO capers themselves. In both cases, a subject deserving of scientific attention is released to the public under circumstances that stretch its credibility beyond any reasonable limit and thereby bring it squarely into disrepute. The public is confronted with hush-hush information that appears to be simultaneously very deep and totally imbecilic. And the public - including scientists - has no means to ascertain which is which, which regularly divides them into willing believers and militant skeptics. So everything is distorted by this dualistic lens. A test vehicle unexpectedly crashes - and no small numbers of U-2's crashed at landing! - that's bad, but if on demand it can be camouflaged as an ET saucer crash, then, with a public denial policy in place, no serious questions will ever be asked about what was really going on. On the other hand, if people come to believe that what crashed was an ET machine, they can rest assured that the US has the same technology and will protect them from any unforeseen ET horrors.

**J** - What if a real ET saucer or an enemy craft eventually crash lands?

**W** - No problem, one can always say it was a test-vehicle. It is a superb circular caper, whereby *truth was afforded real invisibility*. Likewise with RAINBOW. It would come out one day or another - and what better way than through someone who was handled and as disturbed as Allen? Except for those few in the know, no one would take him seriously; and those that would, would be stigmatized by his madness - and that itself would rub off on the opinions, all now in agreement with each other, expressed by Plantier, Michel, Keyhoe and Ruppelt about the UFO and Einstein's UFT. At worst, it went to Einstein's credit. At best, to their discredit.

**J** - Yes, but there's one snag with what you're saying - the horrors that went with it in the Allen(de) annotations and letters. Michel, Keyhoe and Ruppelt, even though they admitted that some strange events might be going on, didn't have the same opinion as Allen(de) or Jessup had about at least some of 'their' ETs, or the horrors that Allen(de) said were caused by Einstein's UFT in the context of the 'Philadelphia Experiment'.

**W** - That's the last possibility - that the caper wasn't organized by the ONR, or by some supersecret intelligence group that the ONR itself was not aware of, but that it was a rogue caper, a 'renegade come-on' from inside the NRL or from among its ex-members, some sort of dangerous provocation, given the times and the context. If it was an official caper that handled Allen, then clearly its objective can't be understood outside of the more general policy of denial - a policy that ran something like: *"it's best to deny the validity of sightings and ridicule the reports --which permits suppression of all those unexpected events involving classified projects. If a minority of UFO sightings may be genuine unknowns, the majority certainly are our own experimental military craft. In either case, we don't want to panic the public, nor find ourselves in the awkward position of having to reveal advanced projects that have turned out badly. But*

*while denying the validity of the sightings, it doesn't hurt to have a little mystique, an aura of astonishing achievement leak out --because if we're ever really confronted by an aerial enemy, terrestrial or otherwise, we can always turn around and say that we've had it all along, which will keep people from panicking".* So, Allen could have been handled by the ONR to release disinformation that would ridicule the UFO field and at the same time glorify the Navy and Einstein who had supposedly discovered what space intelligence has known for millions of years. But just as likely, Gebhardt and others, working as a rogue group, could have created a caper to draw the Navy and the NRL out into the open about work that they had done during the war, work that was still going on and for which they were never recognized, and which would shed - in their minds - some light on the problems of a unified field.

**J** - Which is the right answer?

**W** - Look, it is obvious that in the following decades - until the early nineties - capers like these continued to be staged fairly frequently. So-called radicals in ufology are the greatest consumers of this stuff - and there are entire groups of imitators that follow. With the New Age movement, there is no end to belief - conspiratorial, gargantuan, paranormal, a permanent Paranoia Inc.

**J** - These events in the '50's sound like a road map for what was to come...

**W** - Yes, the Lazar caper and countless others, crashed saucers, abductions, crossbreeding, come to mind. These capers took on lives of their own, that's for sure. Now think for a moment - there's no doubt that Gebhardt handled Allen; but someone handled Moore too!

**J** - ...I follow, yes, and unless Moore lied about the year Gebhardt died, he couldn't have been handled by Gebhardt himself, but by someone impersonating him - is that it?

**W** - There you are! So, the caper had continuity beyond Gebhardt - and that's pretty unusual for a rogue caper - wouldn't you say? Someone who knew all about Gebhardt and RAINBOW continued what had been started by Gebhardt and Allen, well past Gebhardt's death.

**J** - Unless Gebhardt went dark for the last ten years of his life, and didn't die in '68, but much later - some ten years later to be exact.

**W** - Quite. What caught my attention back then, when I first heard about the ONR/Varo incident, was that so many of Allen's facts were right - about Einstein's involvement, the ships that were used, the dates, etc. It made me think that this was exactly like the camouflage strategies drummed up by the Special Developments Section.

**J** - That's how you knew Gebhardt was feeding this material to Carl(os) Allen(de)?

**W** - Yes, and if Allen was aboard one of the ships [\(20\)](#), he kept that contact with Gebhardt for at least 13 years.

## **The project RAINBOW experiments**

**J** - Alright, this has cleared up quite a bit for me. Can we go back to RAINBOW itself? By mid-'42, RAINBOW seems to be well under way at the NRL, and by early '43, with Einstein formally engaged, it becomes a test of his UFT. Taylor was in charge of the project, and Gebhardt -

**W** - Yes, Gebhardt supervised several sections for Taylor - and that's where Lorenzen and [**Lt. Cmdr. Dr. Lloyd**] Berkner came in. Berkner was the radio engineer aboard the first 1928 expedition of Admiral [**R.E.**] Byrd to Antarctica. Taylor and Hulburt had designed a special high-frequency radio system that was built by the NRL Radio Division for Byrd's 1,500 kilometer flight over the South Pole. Berkner was the chief operator. From '33 to '41, Berkner worked at the Carnegie Institute on both terrestrial magnetism and ionospheric studies, following up on the high-frequency studies of [**M.A.**] Tuve with the crystal-stabilized transmitters invented by [**L.C.**] Young and Gebhardt at the Carnegie Institute, and the studies of Taylor and Hulburt.

**J** - Sounds like a Carnegie-club operation...

**W** - Yes, [**V.**] Bush's home-ground. Berkner had joined the Navy Reserve in '26, and was called to active duty in '41. When his rank was revealed after the war, surprisingly, he'd become a Rear Admiral. As of 1940, Berkner became a consultant to Bush's NDRC, the National Defense and Research Committee where Gunn had a seat.

**J** - What was Berkner's role in RAINBOW?

**W** - He was the chief engineer in charge of overseeing the technical part of the project for the NDRC, directly in charge of the high-frequency component and radar instrumentation. At the NRL, he interfaced with Gunn, Taylor, and with Hulburt in particular. Between '43 and '45, Berkner was the Director of the Electronics Materials Branch of the Navy's Bureau of Aeronautics [**NBA**].

**J** - So RAINBOW was not exclusively an NRL project! It really was a joint NDRC/NBO/NRL and NBA project.

**W** - Right -- that's how it started. Hulburt's Division of Light and Heat was renamed, I think in '41, the Physical Optics Division. Hulburt was a man of great character who joined the NRL in 1924. He was the first to propose a mathematical treatment for the propagation of low and high frequencies that took into account the role of the ionosphere -- this was in a paper co-authored by the 'Wireless Washington'. His later work on rocketry at the NRL led to the discovery of the role of the ozone layer in absorbing ultraviolet below 3,000 angstroms. For these contributions, he was awarded the John Adam Fleming Medal from the American Geophysical Society in '64. Berkner got one in '62. Aside from his many other specialties, Hulburt was also the supreme expert in optical camouflage and mirage. He was the author of the Navy's handbook of ship camouflage patterns and colors. After the 1935 reorganization of the NRL, the Bureau of Aeronautics asked him to look into the possibility of optical camouflages that might make a plane seem closer than it was, or make it invisible until it reached a very short range. The idea of the brass was to employ varied illuminations for these purposes -- but Hulburt thought this was

totally impractical. And he was proved right by experiments carried out at the Anacostia Naval Air Station. He immediately began tinkering with the possibility of bending light -- if light could be artificially red-shifted, a plane would appear to be further away than it was. Or it could even be made invisible -- and that's how he, Gunn and Gebhardt began thinking about the implications of a unified field for the general theory.

**J** - So this problem must have joined the other countermeasures problems that Lorenzen's Section was working on?

**W** - Yes, Hulburt was the chief scientist in charge of the RAINBOW experiments, data gathering and analysis. He operated largely through Lorenzen's hands-on approach. Ship procurement and project logistics were left to Commander [William S.] Parsons. [T.T.] Brown, now made a Lieutenant Commander, was placed in charge of the electric and magnetic equipment used to generate the fields. Duncan, Bennett and Bitter from the NBO/NOL were in charge of degaussing and the electromagnetic transmitters. The long-term target of the experiment was to produce *magnetic, optical and radar invisibility*, that's how it was sold in the end. Einstein and Infeld did the preliminary study regarding expected local distortions of space curvature. But afterward, the calculations for the gravitational and nuclear-magnetic effects were made by Einstein, Taylor and Hulburt, correlated by Gebhardt, Bitter and Berkner, and checked by Neumann and Veblen. The required strength of the total field -- if it was to bend light and produce an electromagnetic mirage -- was anticipated by some of the models to be incredibly high.

**J** - I'm not clear on this. On one hand, the idea of completely degaussing at sea was to use methods similar to NMR to achieve a more balanced distribution of atomic dipoles. But this wouldn't interfere with light - how could it, since you would be countering any expression of a magnetic field? Then you raised the question of spin polarization of most nuclei either in parallel or antiparallel direction with respect to both the gravitational and geomagnetic fields. But this polarization requires an effect opposite to balancing the dipole orientations -- it calls, instead, for a preferred orientation...?

**W** - Yes, these were two different experiments - how to create what you could call an antiferromagnetic state and erase all residual magnetism, and how to bend light by inducing a greater curvature of spacetime with high power magnetic or 'antimagnetic' spin polarizations --

**J** - You mean with parallel or --

**W** - ...preferably, antiparallel spin orientations with respect to the applied magnetic field. Correct. If I remember, Hulburt had questioned the notion that a steady optical light displacement would be possible if one succeeded in inducing a substantial antiparallel spin polarization. Expected resonance states would suggest sudden shifts. The result could also be a fuzzy pattern of light, a colorless fog of electromagnetic waves caused by random destructive and constructive interference.

**J** - Why so?

**W** - Keep in mind that nuclear magnetic resonance was known to exist but resonance levels were unknown. Many models had to be considered, and the values were widely different for such guiding parameters as magnetic field frequency, Larmor frequency, field strength, and so on, not to mention optical shifts. Hulburt, Gunn and Abelson were all of the opinion that the field would interact with the protons in the surrounding air and water and produce all manner of possible mischief.

**J** - Yes, no one knew what the NMR thresholds would be for air or water...

**W** - Nor were the calculations accurate for the amount of heating that the ship would have to endure, or the amount of ozone and hydrogen gas that would be released from air and water. Worse still, for heterogeneous materials where magnetic domains have different sizes -- it's more difficult to orient large magnetic domains than smaller ones in a non-uniform field, and an alternating magnetic field will involve all manner of hysteresis lags in magnetization and relaxation, as I've said. If the timing of the superposed fields was not appropriate, the result could be quite disorderly - like dissociation of molecular structures and magnetic domains.

**J** - How were they going to try to generate a secondary gravitational field - one seated on the target ship, that is? Would it be done by increasing the strength of the permanent magnetic field when the ship's dipoles were deshielded, and then varying the RF field -- in frequency and intensity? Surely the ship was not going to be set spinning...?

**W** - The target of the experiment was not antigravity, or even weightlessness. Demagnetization of residuals was the objective of the first experimental runs. Redshift of electromagnetic radiation was the next step -- but the equipment required for the second step was going to be tested from the start. All the equipment was to be installed under the cover of degaussing the ship at the end of its construction period. When the ship was launched, it was pretty much ready to go.

**J** - So, the work really began in '42.

**W** - Yes, the construction of the gigantic permanent electromagnets, the homopolar generators, the coils to be wrapped around the magnets and the ship, the transformers, the motorized current interruptors, radar transmitters and receivers in various radio and microwave bands, the optical detectors, the magnetic resonance detectors, the gaussmeters. It was a major ordeal. Most of the effort took place at the NRL and at the Philadelphia Naval Yard. By June '43, the DE 173 USS Eldridge was fully fitted with the gargantuan coils, transformers, generators and magnets, and the USS Furuseth with all the monitoring and test equipment. Several short experiments were conducted throughout the early Summer of '43, in the hope of hitting the most likely resonances. There were some observations of possible resonant spikes, but they turned out to be nothing more than instrumentation glitches. The final experiment of this first phase -- on or about August 12, 1943 -- appears to have been performed at some resonant condition, but the result was catastrophic. A cloud of green fog enveloped the ship -- and it appeared opaque to radiation. Water and air boiled off all around its periphery, surfaces became charged, it was a hell of a freakish thing and plenty of equipment broke down and ignited. A terrific electrostatic field developed alright, but it bathed the entire ship. Outside the foggy envelope, the ship became

surrounded by an envelope of shimmering light due to 'zeemanizing' and constructive interference. The men had been issued rubber shoes, suits and gloves, as well as gas masks. Even still, virtually the entire crew ended up at the Bethesda Naval Hospital with severe psychosomatic ailments, toxicity and burns. Brown himself, who had been aboard the USS Eldrige, suffered a nervous collapse. Confronted with the dismal and unexpected result, the experiment in its original form was discontinued. Over the years, physicists like Einstein, Infeld, Gunn, Hulburt, Gebhardt, Bitter, etc, poured over the data, to figure out what had happened, where it went wrong. For Einstein, the problem was tremendous -- there was little chance now that he would ever succeed in completing his Unified Field Theory, since the properties of the total field clearly were not understood.

**J** - So the ship did not disappear and leave an indentation symmetric to its hull on the surface of the sea?

**W** - No, that's sailors' lore. The ship 'disappeared' in the sense that it became enshrouded in fog. It was described as grayish green fog traversed by constant shimmering -- as though it was surrounded by a swirl of thick, silvery heat waves that appeared to spin.

**J** - And no gravitational redshift was observed?

**W** - When it came to the radar bounce, it was more like a jamming effect that dispersed the reflected beam in every direction. At first they thought this was good news - some form of invisibility had been reached with a new kind of jamming to boot. But then, to their horror, they realized it was sheer havoc down there.

**J** - Was there an optical mirage?

**W** - No, not like that. The optical ranging of the fog was still in the same location, so no bending of light had occurred.

**J** - So what caused the fog?

**W** - It took me many years to understand the answer to that question. The observation that put me on to it was that Reich had seen a similar green fog during some of his Oranur experiments. He attributed it to a very high concentration of orgone energy that was exposed to ionizing radiation, particularly to neutron radiation.

**J** - I thought that Reich claimed this green fog was caused by DOR, deadly orgone he called it --

**W** - Yes, orgone concentrated by an inrush would turn into deadly orgone, that was his interpretation. That could well be the case -- without going there, my point was that the green fog could also be due to the secondary release of protons...

**J** - I still don't understand -- was the fog due to DOR radiation, or protons -- or like **[J.]** Corum claimed in '94 [\(21\)](#), due to chlorine gas released from the water, you know, the yellow-green color of chlorine gas...

**W** - No, Corum is mistaken. The green fog that was observed was the green line characteristic of the formation of hydrogen gas from atomic hydrogen, from the free-radical state -- something that was totally unknown back in '43, but not today. Whenever you have free protons, say because of ionization or electric polarization, and they are subjected to some cycle of recombination with an electron plasma, you will generate hydrogen free radicals. The hydrogen radical may convert to hydrogen gas and release that green light, or instead absorb more energy and re-ionize. Reich, in fact, was generating protons and hydrogen radicals with nuclear sources inside his orgone room, and RAINBOW with its tremendous magnetic and RF fields was doing exactly the same thing in a much grander scale, and at much greater intensities. These combined fields ionized the water and released protons, polarized and recombined them, generating hydrogen gas and ozone, and produced an electron plasma that was pushed out all around the ship.

**J** - Was this the cause of the shimmering?

**W** - Right you are! The energies imparted to the electrons were split by a permanent magnetic field, so the photon frequencies radiated by all possible orbital transitions were greatly multiplied by the Zeeman effect. Some interpreted what they had seen as proof that some distortion of spacetime had occurred due to employing electromagnetic fields resonant with the nuclear structure of matter. So it appeared for a time to have validated the general hunch of unified field theorists - except for the fact that it's all bunk. In my view, you know, to think that any of Einstein's unified field theories were on the right track or met with success is a bit like imagining that a Roman charioteer with all his precise knowledge of chariots might have been able to engineer a modern automobile, if he happened to stumble across one. What would his description be like? -- *"it's not drawn by horses, but seems to have a legless metal horse permanently imprisoned inside its bowels; wood is absent and the horse is not fed with grass but rather with a slightly colored alcohol; the wheels have soft shoes made of solid tar,"* and so on. You see my drift -- the charioteer's description may actually be accurate in terms of what he knows and the language he has at his disposal. But he would never be able to reverse engineer, let alone design or build a modern automobile from his own description, nor understand how an automobile works, or how the internal combustion engine functions as 'a horse'. Likewise with Einstein's theories of the unified field. They simply don't give the tools one needs to be able to understand gravity, let alone antigravity. Everything that happened in RAINBOW can be understood today with tools that require no invocation of a unified field. The events can be entirely explained by what we now know about nuclear magnetic resonance, the chemistry of water, free radicals, and so on -- all contributions made by quantum physics, not relativity or the unified field. This is not to say, of course, that there are no gravitational anomalies, including antigravitational ones associated with truly incomprehensible observations. But our physicists and our physical knowledge are just as impotent to understand them today as they were back in '43. We grasp them, but only like the Roman charioteer would have grasped a modern automobile - totally inadequately with respect to understanding how gravitational fields form and how they can be counteracted.

## **What was wrong with Einstein's UFT?**

**J** - What do you think the main problem was with all the predictive theoretical work behind the early stages of RAINBOW?

**W** - For my part, I believe that one of the main problems Einstein was faced with was integrating Maxwell's equations. It's not simply that they fail when powerful fields are employed. I think they have intrinsic errors - even in their application to ordinary fields. So, Einstein was, in fact, lacking an appropriate electrodynamic model and so his treatment of the electromagnetic field cannot be correct. You see, Maxwell's equations can be fitted to what Einstein called 'a skew-symmetrical tensor' that permits their treatment in Euclidean space, but only if we stick to Lorentz's interpretation of those equations for closed circuits. Magnetic intensity never enters into the tensor treatment, only the electromagnetic field and the electric current density do. But as the magnetic field turns out to be a property mediated by the energy structure of the charges - or, what's worse, by the relative mass of charge carriers - the same intensity could have very different field velocities, or the same field velocities could exist for very different energy magnitudes. This connects to another problem - the complete disregard that all of Einstein's attempts at a unified field theory had for the quantum structure of matter.

**J** - But he did willingly admit this.

**W** - Yes, little was known about the electromagnetic field of 'concentrated charges'. If inserting a scalar for the density of matter appeared fictitious, replacing it with a tensor of energy per unit volume that was capable of expressing the roles of matter and electromagnetic energy was even more dubious. Moreover, today, I don't believe his formalism can be correct. If the general theory is a matter of physical geometry where it is important to ascertain whether its axioms are true or false by empirical determinations, then its axioms regarding space and time cannot be said to be correct. Metric relations are seen only as the geometric properties of bodies, not as energy relations. Then, there is an assumed priority of topology over metric, as if spacetime had merely a formal order for its points, and as if these points had a real existence that constituted spacetime. Einstein is aware that this simple numbering of spacetime points had no metric significance whatsoever. Space and time remain distinct, he says - so that space is three-dimensional and time one-dimensional - but they are treated as a continuum by the mathematical artifact of a four-dimensional spacetime. Time-like line elements are treated as if they were space-like line elements, as imaginary distances. In the special theory, the coordinates have both metric and topological functions, but in the general theory they only perform a topological function and do not permit any calculation - by means of co-ordinates - of the interval or the distance between any two points. The metric functions are performed, instead, by the metric tensor  $g$ , made up of 16 components, 4 components per imaginary dimension. For a theory that wanted to derive the metric properties of spacetime from the content of this spacetime, from the energy of the continuum, this formalism would seem quite arbitrary!

**J** - It sounds to me like the failure of mathematical formalism divorced from empirical data - but wasn't it also, and more profoundly, a failure of field theory? Above all, I wanted you to answer this question --

**W** - You mean failure of Faraday, Maxwell, Einstein --? Which? All of them? Perhaps - hmmm, perhaps they all failed, if by field you mean these topological lines of force that to this day lack any physical reality. But, if you mean 'field' as a discrete zone of activity formed by some energy flux - following the intuition that energy generates forms, that energies act in concert and there is continuity of energy and media - no, the failure cannot be taken as anything other than the failure of *specific* field theories. I'd much rather say that the scientific objective should be understanding the morphology of energy systems, not replacing them with *ad hoc* topologies. Einstein pushed a formal concept as far as it could go. But 'field' without energy - and without considering energy properties - is not a viable approach, if you see what I mean...?

**J** - And he failed.

**W** - ...because he had no direct way to connect metric systems with the structure of energy. When he thought 'structure of energy', he always thought the influence exerted by the average density of matter upon the metric structure of space. His theory of the total field could never go beyond topology - could never extract the metric relationships that are inherent to the *structure* of energy, could never get at *energy morphology*. Space without matter might well be subject to acceleration, but that can only be because it *cannot* be void of energy. If spacetime is determined by its energy content, then the metric has to be intrinsic to that content. It *cannot* be arbitrary. To know the structure of the energy *would be to know its metric*. Einstein was likely correct in assuming that gravitational fields still exist in space without matter, but he could only introduce an energy density tensor by reducing energy to electromagnetic energy and its main field component, matter. So he proceeded to develop his unified theory with a provisional 'energy tensor of matter' that was strictly an electromagnetic field function. Despite all these shortcomings, a perception was created after the war - in the public, the media and in the scientific community - that, with his unification of the gravitational and electromagnetic fields, Einstein had succeeded in finding the key to the physical understanding of the universe. Announcements of this "profound discovery" were carried by major newspapers, such as *The New York Times*, in [January of 1950](#). And *that* is the perception that remained throughout the '50's.

**J** - Yes, it's the second time you bring this up, but you've never really explained *why* you think it happened - besides the obvious 'feel good' effects for our sense of national pride?

**W** - Maybe it was also a signal of sorts... I like to think that it was the aftermath of the original RAINBOW.

**J** - How so?

**W** - Shortly after the war, Infeld left Princeton to go to the Department of Mathematics at the University of Toronto ([22](#)). There he concentrated on the problems raised by a unified treatment of magnetism and gravitation, in light of the emerging field of nuclear magnetic resonance. Now,

earlier in that same year of 1950 (23), at the height of the Cold War, [Infeld defects](#) to the Soviet block, to Poland, with all the work that he'd done in that field. Which is why Reich printed these news pieces in his *Einstein Affair*, in '53.

**J** - The implication being that, all along, Infeld was a Stalinist spy.

**W** - Quite so, there can be no doubt about it. So the signal to the Soviets appears to have been - "you've got Infeld but we've got Einstein and, meanwhile, our Einstein has solved the problem, thank you very much" - which he hadn't, of course.

**J** - Face-saving - yet later, as nowadays, it became commonplace to think that his UFT was ill-fated - so was this just posturing, Einstein hadn't resolved anything after all?...

**W** - Well, it's claimed that all three of the acid tests that Einstein suggested would provide proof for the general theory, have now confirmed it. But the theory of the total field has never been proven and the ill fate of the early RAINBOW is there to remind us that its predictions were *deeply* flawed. Are you beginning to see now why it was obvious to me that Reich's orgone theory wasn't at all compatible with Einstein's approach to the unified field?

**J** - Yes, but not yet fully...

**W** - Look, if the continuum is one of massfree energy, it cannot be treated by a mere topological representation in 4 dimensions...Einstein considers gravitational fields as exclusively questions of topology, and the only energy he recognizes is electromagnetic and has inertial effects. To speak of curving light in a gravitational field is just another way of saying that light carries weight and inertia. Reich discovers a massfree energy that has no inertia and will permit us to engineer space. The notion of a spacetime continuum is foreign to Reich. Einstein's relativity abolished the notion of simultaneity, Reich's work with pendulums and periodic motion restores simultaneity and brings it back to questions of energy. Einstein's special theory treats photons like fibers of light that propagate across space, and later his general theory treats them as geodesics. What use would Einstein have for a theory, like Reich's, that claimed that light or photons propagate by 'orgonotic excitation', or that they are the 'lumination' property of orgone? Electromagnetic fields may well be consequences of a unified field - but this would not even begin to tell Einstein how such consequences arise. And now that we're on this one - what did Reich ever think he wanted with relativity, a theory that made metric subordinate to light, Time subordinate to Space, and invoked time-dilation and length-contraction?

**J** - I see now - so the riddle...

**W** - [The Riddle](#), yes, the riddle is a double one - that Einstein, despite the negative results of RAINBOW, stubbornly refused to realize that the electromagnetic field is secondary to the primary orgonotic properties of massfree energy fields. He couldn't really understand Reich for the same reasons that he couldn't understand the early RAINBOW results. There too, if I'm right, what that underlying massfree field did was never understood. The other side of [The Riddle](#) is that Reich himself didn't know enough about his own work at the time to realize that it really

wasn't at all compatible with Einstein's approach to a UFT, or to really be of any help to Einstein in his quest for a UFT. That realization only came later, some time before '53.

**J** - Maybe the whole story teaches us something about seeking approval for new ideas from established authorities --

**W** - Or about the openness of scientists or science in general. Now imagine that you're a car mechanic and by way of some sort of time-machine you drop in - equipped with toga, manners, Latin and all - on an ancient school of charioteers. Suppose further that they're perplexed by this automobile that was dropped, on some earlier occasion, on some patrician's estate. If you want to explain to them what this car is and how it works, you must first get them to listen to you. But you are not a charioteer, they've never seen your mechanical or driving prowess. They simply won't listen to you. You must first become a charioteer, and then they might listen. Now suppose you set out to become a charioteer, you go through the motions, year after year, until they will listen to you. And, if you're lucky, one day they do - and you compress for them the knowledge that led to the internal combustion engine across 20 centuries of history. They might even be disposed to listen at first - but soon enough they'll throw you out of there, or kill you, if you're unlucky. They'll be absolutely certain that you are speaking nonsense. Yet, you could be telling them a profound truth! Major discoveries in science often suffer this fate - the peers ignore them, there is intention to suppress, the discoverer is scorned, poor replications are carried out. Why? - you might ask. Because the reaction of most people when confronted with having to learn something new that is complex, is to feel threatened and insulted while doubting its veracity. People don't like to change their ways nor to be told that they're wrong, or worse still, be proven wrong! That is the real answer to the riddle.

**J** - That's almost what Reich himself said over and over...

**W** - Uh-huh, but it gets worse - for I believe that, in the end, people admired Einstein for the very same reasons that they ridiculed Reich: they didn't understand either of them. When the physicist Harold Urey from the OSRD asked Infeld why one couldn't use the "master theory" to resolve problems such as those posed by RAINBOW, Infeld answered condescendingly - "*Like Chinese, you must first learn the alphabet*". And you know what? Urey replied, "*Had I bothered to read it, I would still not have understood it!*" So clearly, he hadn't! And no one - neither Infeld, nor Einstein nor any of the FDA physicists -- ever presented evidence to contradict Reich's experimental claims. Not even in 1953, when Reich felt the FDA tightening its noose around his neck and finally published almost all of his correspondence with Einstein, in a booklet called *The Einstein Affair*. A thousand copies were printed by the Orgone Institute Press - without asking any authorization from Einstein himself. But from Einstein's side, came not a whisper.

**J** - That's where [The Riddle](#) text comes from, right?

**W** - Quite so. But Einstein appears to have betrayed Reich's confidence well before then. A German physician, Dr. [E.] Jacobsohn, claimed in '47 that Einstein had told her that he'd been unable to reproduce Reich's findings - which would have been exactly the same lie that Infeld

had been spreading and that the FDA was clinging onto. Don't forget the other significant event in this story - Reich's final arrest and imprisonment in 1956.

**J** - No, I won't - but, Einstein appeared to have broken Reich's confidence in '47...?

**W** - That is what the record shows. And you know, that's how one knows about these little conspiratorial chapels - they always leak insidious rumors while suppressing overt publication of what was or was not said. With the beginning of the Cold War, Einstein lost many friendships. But you are right, yes, Reich's real mistake was to have sought approval from the authority of "great men", people like Freud and Einstein. But if he hadn't, we might never have known the truth about Einstein, eh?

**J** - I don't get you - it's apparent that his Unified Field Theory failed, but Special and General Relativity are well established, you said so yourself. Reich was unable to do anything that would shake this - it stands to this day.

**W** - I mean the truth beyond the pretensions of the physics establishment. And the proof is visible - they no longer seek to understand gravity or antigravity through unified field theory, but through all manner of 'quantum' hypotheses about gravitons, conversion of electron-positron annihilation, infinite energy of the zero-point, and so on. The basic understanding of the structure of matter that Einstein lacked, is still missing - and we are still stuck on the dogmas of the topology of spacetime, and have gleaned little else about gravitational fields.

**J** - So, there were no positive, direct outcomes from RAINBOW - aside from the U- 2 business and such like?

**W** - No, there were - as you see - even direct ones, hmm, but not *that* way - not with respect to the unified field hypothesis. For one, you have NMR and all the benefits - including medical ones - that have come from it...

**J** - Yes, you're right --

**W** - ...and for two, you've got a major triumph for Lorenzen's Section in '44: when radio-controlled bombs were launched against Allied ships in the Mediterranean, in late '43, the Navy captured a Henschel-293 glide bomb like the one that destroyed the *Rohma* in November. This was an integral part of RAINBOW, with similar ship support protocols but entirely different setups. Lorenzen's Section employed a two-destroyer system to record, magnetically, on steel wire, the German steering signals and to analyze the frequency shifts. His renamed Special Projects Section was able to jam the German radio signals, and even successfully usurp the frequencies - so that the Luftwaffe was deluded into thinking that the guidance system was faulty and unfriendly. The war was made and won by these small victories, and they often came from comprehensive investigations in basic science, even incomplete or unsatisfactory ones. In fact, when it comes to this, we should take our hats off to people like Bowen, Gunn, Hulburt, Gebhardt, and so on, for the simple reason that before and during the war, they always pleaded the case of basic science, and never entirely succumbed to the logic of research only for direct military use. But they were all heavily penalized for it, too.

**J** - Extraordinary... I do very much want to thank you for shedding so much light on these troubling matters. I'm sure it took a great deal of courage to come forward - I know, I know, you feel you're close to the end of your life, you've told me, and - you believe that the truth must be told, that too many lies and injustices have been committed to prevent it from getting out.

**W** - The Navy's denial has always bothered me - it seemed to be protecting Einstein's reputation, and us from his failure. But then Allen's letters and their timing, and the unnecessary death of Jessup and what was done to Reich, they too, bothered me greatly. Maybe one day you'll release this information?

**J** - Yes, though I wonder who will listen to me?

**W** - Yes, who?

**J** - I have one last question - if you don't mind. Einstein's last texts on the unified field problem, I believe in '53, do they address his failures?

**W** - Yes, they do - there is some serenity that can be read in them, and there is a parting line where he states unequivocally that all of his efforts did not succeed in coming up with a model of the real continuum, and that maybe, somewhere, there lurks a more fitting theory, one that will succeed in describing reality with a purely algebraic approach (24). Do you know what is the greatest irony of all in the riddle of the meeting between Reich and Einstein?

**J** - No, tell me!

**W** - When they met, Reich thought that he had something to contribute to the unified field, but he hadn't - as he later realized, because his discovery was not compatible with the unified field, nor did it need it. But by the time Einstein concluded that his entire life's work might have to be superseded by a purely algebraic theory, Reich was in fact laying down the basis for one. He never systematized it or completed it, but supposedly, while in jail, he was working on a book entitled *Creation* in which he was providing an integral mathematical presentation. Apparently, that book was burned in '57 by the prison authorities after Reich died from a very suspect heart attack. Why these authorities burned Reich's manuscript instead of giving it back to his family, has never been answered. Certainly I, for one, don't know of anybody who has succeeded in creating such a purely algebraic theory. What's more, I believe that nobody is even looking for one."

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