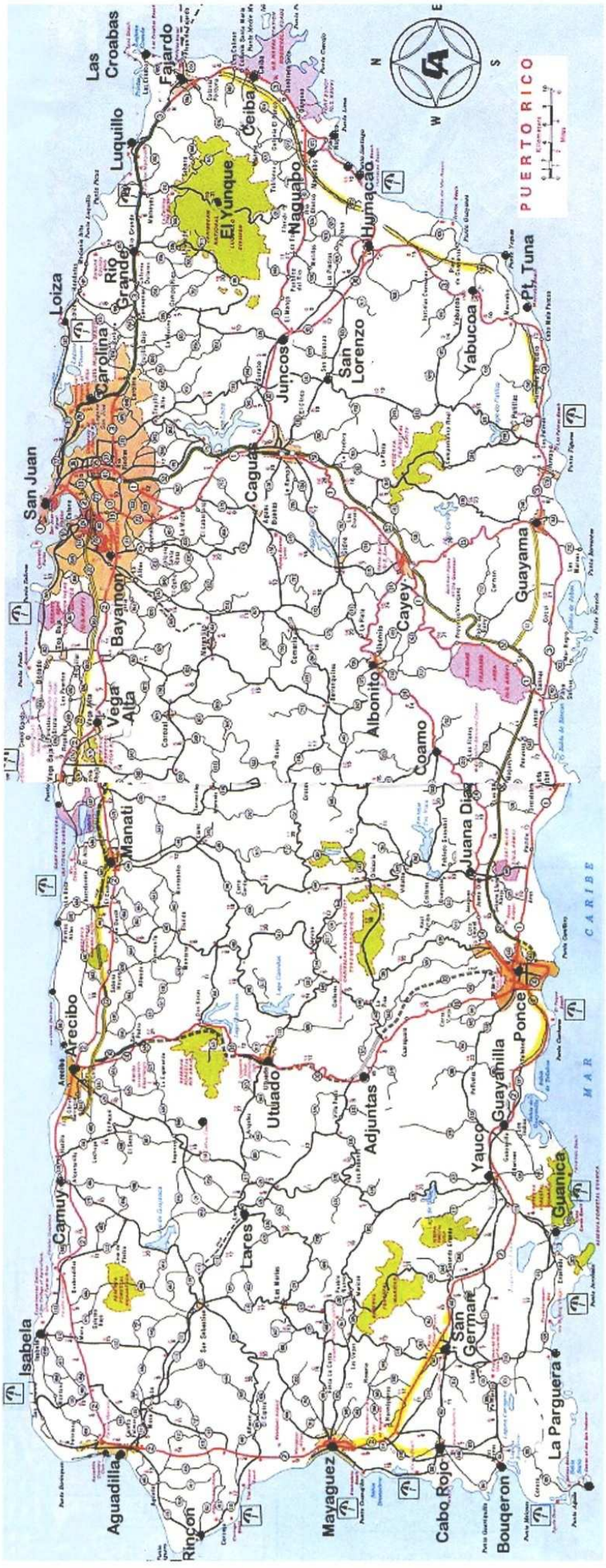

MAP OF PUERTO RICO

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Flying Saucer Review

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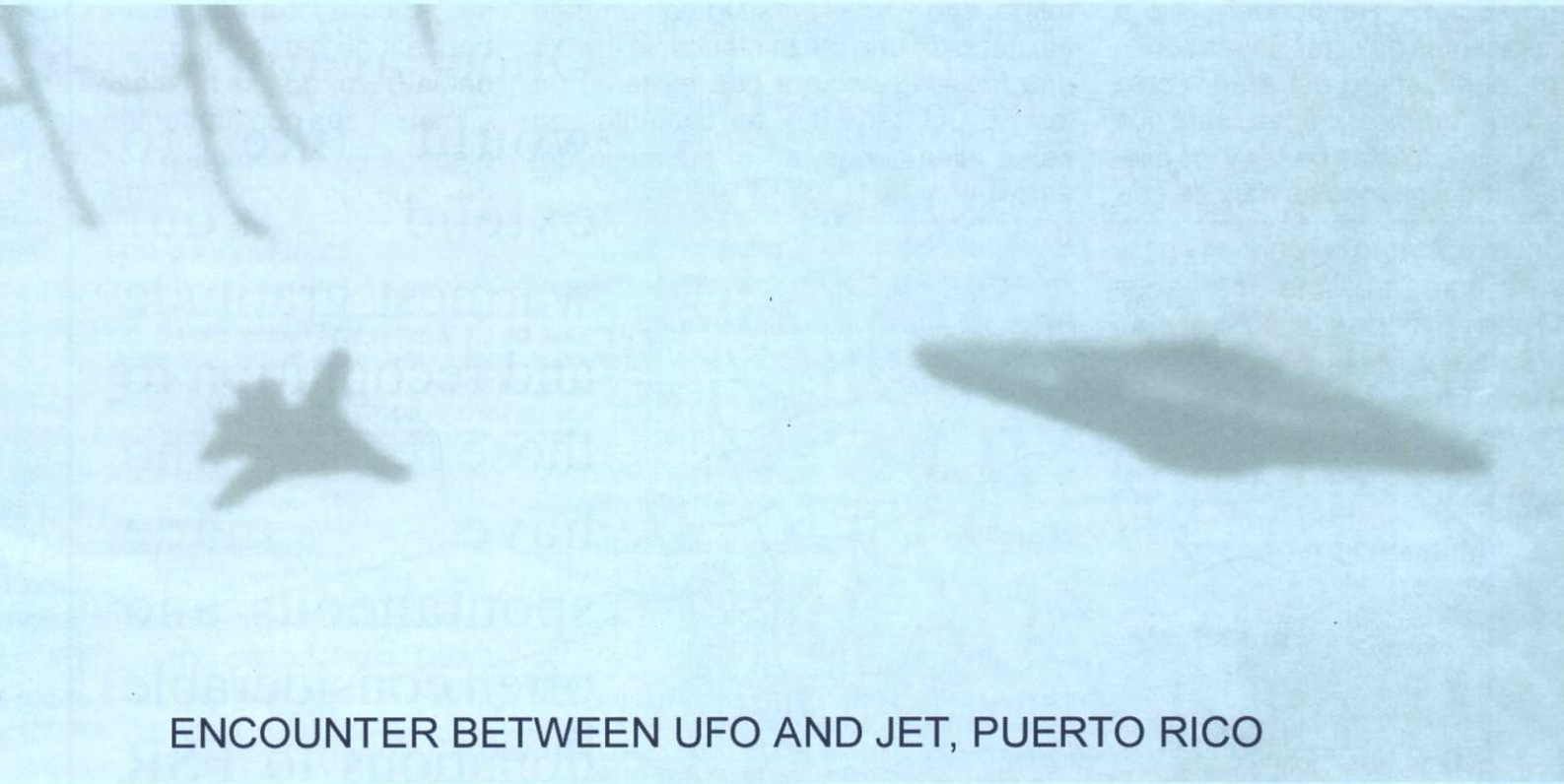
Spring 2002



ENCOUNTER BETWEEN UFO AND JET, PUERTO RICO

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EDITORIAL
A YEAR OF EXTRAORDINARY SCIENCE

This last 12 months or so has been a period of extraordinary developments in biological science, most of them concerned in one way with genetics, cloning and stem cells. Much of this has received a lot of airing in the mainstream press, unlike some equally astounding developments in physics which have been less widely reported.

Our lead article reports on the state of anti-gravity research, with particular reference to that of the enigmatic Evgeny Podkletnov.

Otherwise, I have the feeling that it is in quantum physics and particle physics that this last year has been particularly exciting.

HIGGS BOSON.

There is the ongoing search for a very mysterious entity, referred to as the "Higgs Boson" -sometimes also dubbed "the God particle" because of its key position in accounting for the origin of the property of mass, and in unifying the various forces in a "Theory of Everything."

To date the "Standard Model" of particle physics is able to explain three of the main forces of nature: electromagnetism, the strong nuclear force, and the weak nuclear force; however it is unable to cope with gravity.

Further, for the grand unification of the forces to be possible, it is also necessary to invoke a principle called "Supersymmetry". Essentially this is an embellishment of Einstein's theory of special relativity to include quantum variables in the fabric of space-time itself.

All that is impeding the discovery of the Higgs boson appears to be the capabilities of existing particle colliders. There is nothing new to this story -it has occurred all along the way. It therefore seems highly likely that this remarkable particle will soon be discovered, and with that the movement of physics onto an entirely new footing. (Ref. 1)

INTERACTION-FREE MEASUREMENT.

Now let's look at how to do something useful -but also decidedly odd- with quantum physics; in fact all common sense says that it is impossible: To observe something without looking at it?

Well, what kind of thing might you want to "observe without looking at it"? How about an unexploded bomb -of the kind that is detonated by light?

Originally this was conceived as a thought experiment in which single photons pass simultaneously through two paths of a rectangular array known as a Mach-Zender interferometer. If a live bomb is interposed in one of these paths the photon cannot pass; if it's a dud bomb with a hole through it, the photon can pass. The net result is that a proportion, one quarter, of the live bombs can be detected without ever exploding.

Incredibly, real experiments have since been devised, not using photon-triggered bombs, in which it has been possible to view objects like knife-edges, hairs and slits -without any single photon impinging on them.

Real-life applications could include the examination of inaccessible or light-sensitive archaeological specimens through which light cannot be passed in the ordinary sense that we mean that. (Ref. 2)

SCHRÖDINGER'S CAT.

The unfortunate protagonist long referred to in quantum physics as Schrödinger's Cat is an animal suspended in a state of simultaneous "alive-deadness" through being employed in an equally unpleasant

thought experiment in which it is placed in an enclosed box containing an instantly lethal mechanism triggered by a random quantum process such as the radioactive decay of an atom. After a certain time the box can be opened -and the cat will be found to be either alive or dead -but *not* something in between!

The problem for quantum physicists has long been that it has been believed that, until an observation is made, a quantum state remains in a state of "superposition" -a hybrid of two realities. So does this uncertainty also apply to the unfortunate cat, whose physical fate appears to be entwined with that of the quantum process involved?

It appears that at last some sense is starting to appear in this matter, and some physicists are suggesting that this principle of superposition only applies up to a certain *size*. Thus, while it has been possible to fire large molecules such as C60 buckyballs through two slits simultaneously -and still obtain an interference pattern, just as with single photons of light, it is now believed that there has to be a limit on *size* of the object for which quantum superposition can endure for times which are not vanishingly small.

And the agency which determines this limit is gravity, or rather the warping of space-time which mass causes. Thus it is impossible for anything as large as this ill-fated cat to exist in an indeterminate state, and it is indeed *either* alive or dead *before* the box is opened and inspected.

However, to settle this matter once and for all is going to require some rather elaborate experiments which can only be carried out in outer space because of the path lengths that will be needed for the X-ray photons used.

The idea is to bounce high-energy X-ray photons off a microscopic crystal suspended in an interferometer arrangement. The crystal will then enter a state of superposition in which it has both been deflected by the impact, and also not deflected. It will take a matter of between 1/10 and 1/100 of a second for this superposition to decay into being really one or the other state. If decay into a definite state does not occur the signal will always come back along the same path as it took outward.

REFERENCES.

1) New Scientist, 30 March 2002, p. 28
2) New Scientist, 8 December, 2001, p. 14
3) New Scientist, 9 March 2002, p. 26 ■

PODKLETNOV'S EXPERIMENTS AND THE WHOLE VEXED SUBJECT OF ANTIGRAVITY. BY PHILIP CREIGHTON.

As we all know who have been schoolchild-, or even undergraduate essayists, it is extremely hard to write coherently about something you do not understand -and therein, of course, lies the purpose of the exercise: First you must research the subject until you *do* understand it in some measure.

However, whatever our degree of accomplishment, it is a different order of task to compose and write on a subject which *noone* seems to fully understand or agree about, and on which only incomplete information is available!

Having acknowledged that this is probably our collective lay position, let us now try to explore this peculiarly difficult subject, with particular reference to the experiments of Evgeny Podkletnov and those who have tried to repeat them.

We are therefore especially pleased to be able to reprint, with thanks to the *New Scientist*, David Cohen's excellent, comprehensive and balanced article, *Going Up*, which appeared in *New Scientist*, 12th January, 2002, page 24.

Reader Ken Mortimer wrote to us regarding this article, suggesting that this so-called gravity-shielding device, used in conjunction with Sandy Kidd's machine, which I believe to be a kind of gyroscopic inertial thruster (GIT), *could* provide the right kind of combination to account for the flight properties of UFOs, including cancellation of inertial forces caused by acceleration and deceleration.

The subject of GIT's is also controversial. The general idea is that by moving gyroscopes around in various ways it is possible to produce an action without a reaction - which of course is contrary to Newton's third law of motion -and would make possible a "rocket" which does not need to spew anything out the back to achieve thrust.

Eric Laithwaite also produced a GIT -which was quite wrongly represented in the popular press as an antigravity machine. He did *not* claim that it shielded gravity out, but rather that it produced thrust.

Podkletnov's device, however, is more reminiscent of the fictional substance *Cavorite* which enabled H.G. Wells' astronauts to travel and steer by adjusting "windowblinds" of this substance to screen out gravity on different sides of their space craft in the novel *First Men in the Moon*.

Incidentally, I have seen no mention anywhere of what happens *underneath* Podkletnov's device. That would be rather interesting to know. However, as the following article explains, he also claims to have achieved a *repulsive or impulsive* gravity-like action!■

Evgeny Podkletnov has convinced NASA to spend $600,000 on a machine he claims will shield matter from the Earth's pull. Has the agency flipped? David Cohen tracked down the man who wants to turn the laws of physics on their head

GOING UP

SEATED in a near-empty restaurant in a backstreet of Tampere in Finland, Evgeny Podkletnov certainly doesn't look crazy—even when he holds up the superconducting disc he says he used to reduce the effects of gravity. The Russian émigré's claim caused such a storm he was thrown out of his job at Tampere University of Technology five years ago. He now works as a researcher in superconducting materials at the nearby University of Tampere, but he's not about to give up his quest to be taken seriously.

Podkletnov claims others have repeated the experiments with great success, and for the moment at least, influential scientists around the world are giving him the benefit of the doubt. Researchers at Toronto University in Canada, at CNRS—France's national research agency—and even an employee of Boeing in the US all want to repeat his experiment, Podkletnov says. And perhaps most significantly of all, NASA is ready to give the idea a shot. This month, after a two-year wait, Ron Koczor and his team at NASA's Marshall Space Flight Center in Huntsville, Alabama, will take delivery of a machine that Koczor believes could shield matter from gravity.

Koczor persuaded NASA to pay Superconductive Components (SCI) of Columbus, Ohio, $600,000 to build a copy of Podkletnov's apparatus. If SCI's replica works, it could change our way of interacting with a fundamental force of nature. And that, Koczor says, would change everything. Wave goodbye to rockets and the internal combustion engine. Say hello to energy-saving, gravity-powered spaceships, aeroplanes, cars and elevators—and a whole new branch of theoretical physics.

Koczor is aware of what the critics will say, but he believes there are hints that it might work and he is determined to keep an open mind. This kind of investigation lies within the Marshall Center's remit to seek out new and exotic forms of propulsion, and the potential payoff is huge, he says. "It's worth a little bit of effort to pursue it to its end."

But that "little bit of effort" is, essentially, a gamble on Podkletnov's claims. In 1992 he published a paper describing how he had stumbled across a "gravity shielding" effect while running a routine test on one of his superconductors. The details were sketchy. But the basics are these: make a superconducting disc 145 millimetres in diameter and 6 millimetres thick, according to a special chemical recipe that Podkletnov did not make public. Cool the disc to below –233 °C, then levitate it using a magnetic field. Finally, apply an electric current alternating at around 100 kilohertz to coils surrounding the disc. The current makes the disc rotate in the constantly changing magnetic field, something like an electric motor (see Graphic). So far, there's nothing extraordinary here.

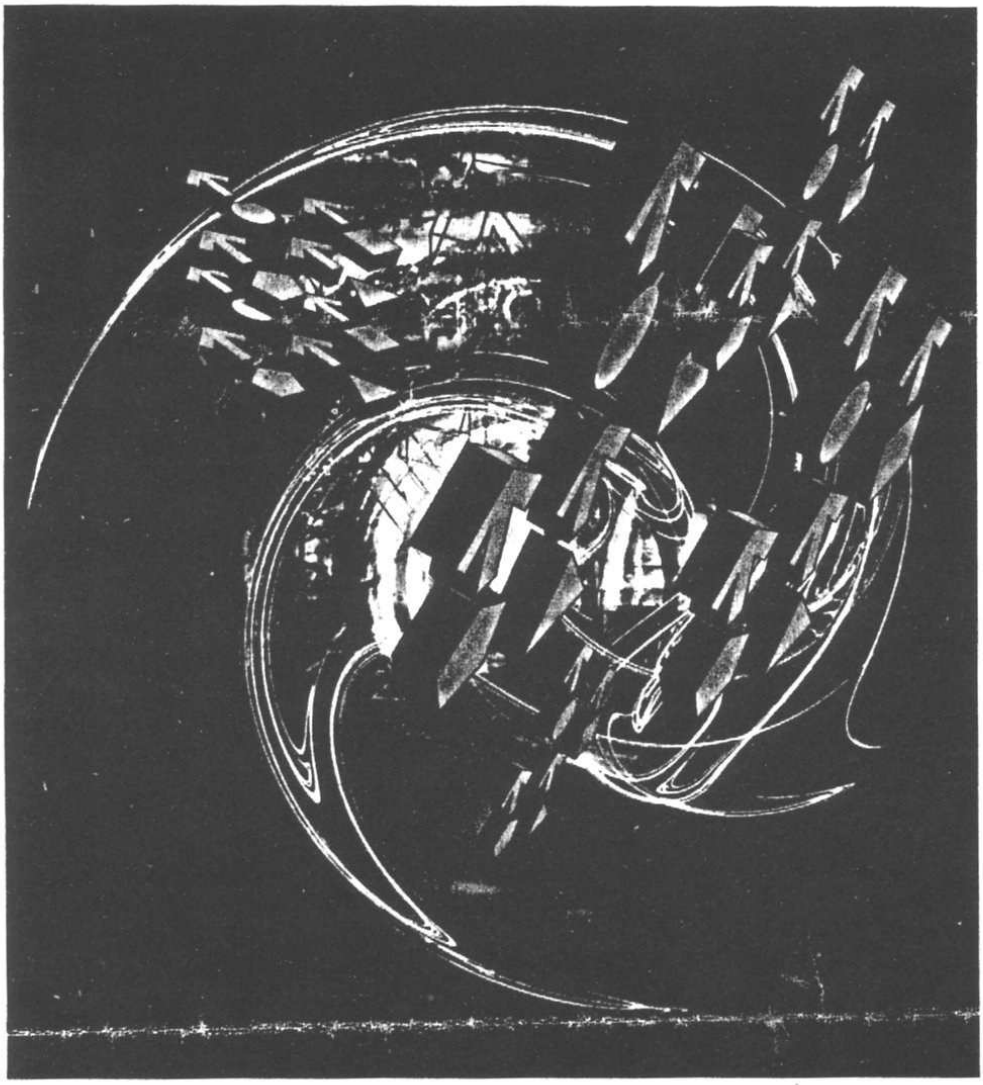
But Podkletnov claimed that when the disc was spinning at more than 5000 revolutions per minute, objects placed above it lost around 1 per cent of their weight. Increasing the spin speed, he claimed, reduced their weight still further. In subsequent experiments, he claims to have seen weight reductions of up to 2 per cent.

Podkletnov concluded that this apparatus somehow reduced the strength of the Earth's pull on any object placed above it and called it a "gravity shielding" device. Stick a more powerful version of this apparatus on the bottom of a spacecraft and rocket propulsion would be history: just the slightest nudge would be needed for lift-off into space. Terrestrial transport would be revolutionised too, together with a large chunk of theoretical physics.

At the time, the paper was greeted without fanfare. It would probably have been forgotten, but for the fact that Podkletnov continued his experiments and, in 1996, produced another paper. *Physica D* reviewed and accepted it, but its contents were leaked to the press before publication. "The world's first anti-gravity device", as *The Sunday Telegraph* in Britain called it, was rubbished by scientists around the globe, who loudly proclaimed that it broke the known laws of physics. In the academic scuffle that ensued, Podkletnov was dismissed from his post. After withdrawing the paper (to protect his co-author's career, he says) he disappeared—for a while, at least. I caught up with him in Tampere at the end of last year and found him still adamant that his superconducting disc can shield matter from gravity.

Podkletnov has the air of a persecuted man. While talking about his work his mood shifts constantly between suspicion, seriousness and wild excitement—there are echoes of the cold fusion debate here. But his frustration is clear. "I am a professional scientist and have published more than 30 papers and hold many patents," he says. "Some people say 'Podkletnov is a fool,' but there are too many other people in the world who have seen this and they all can't be wrong." His English is almost perfect with only a faint Russian accent. He peppers his conversation with references to private conversations with eminent scientists who would come right out and support him, were they not so scared of losing their credibility.

His confidence—and Koczor's—stems from the fact that he is not alone in suggesting a way to modify gravity. In 1995, Koczor and his team were approached by



'PODKLETNOV CLAIMS THE "GRAVITY GENERATOR" CAN KNOCK OVER A BOOK PLACED ON END A KILOMETRE AWAY'

Ning Li, a researcher at the University of Alabama in Huntsville. Li had never met or even heard of Podkletnov, yet she was developing a theory, based on the idea of converting electromagnetic fields into gravitational fields, that came very close to explaining Podkletnov's experiment. She claimed her theory pointed to the possibility of producing a "gravito-magnetic effect" by spinning a supercooled superconducting disc: the angular momentum of fast-spinning ions in the superconductor would produce a gravitational field, she said. By 1995 Li felt she had reached the point where she could approach NASA to fund an experimental test of her ideas.

"We were interested in her theories," says Koczor. "But we thought her experiment was undoable." Then, in a literature search, Koczor and Li found Podkletnov's 1992 paper in the journal *Physica C*. "We were intrigued. It was essentially the same experiment, only simpler," Koczor says. "*Physica C* is not a trivial journal. If [the experiment] got in there then it must have got through sufficient scientific vetting to take to a higher level, so we decided we'd try it ourselves."

For the following two years, Koczor and Li tried to duplicate Podkletnov's experiment. They bought some small superconducting discs, levitated them, put high-frequency electromagnetic fields into them and did a few experiments to measure the gravitational effects. "We tried to see if there was one or other of these factors that could be isolated and identified as responsible for the Podkletnov effect," explains Koczor.

Their experiments were unsuccessful. In 1997 Koczor's team reported their lack of findings in *Physica C*, saying that for their 10-centimetre discs the measurable effect on gravitational pull was a mere two millionths of 1 per cent—small enough to have been background noise in the measuring equipment. But they were not disheartened.

"Podkletnov told us we wouldn't see any effect unless we repeated his experiment faithfully," Koczor says. "We never did the full Podkletnov experiment—we were still learning to work with these superconductors." And so the team focused on producing a 30-centimetre yttrium-barium-copper-oxide (YBCO) superconducting disc like that used by Podkletnov. But they still didn't have his recipe. Eventually, in 1999 Koczor gave up and commissioned SCI to build a replica of Podkletnov's apparatus. At the same time, Li set up an independent laboratory to pursue the research. SCI contracted Podkletnov as a consultant on its project, asking him to advise on some technical aspects of building the superconductor. "Podkletnov has been as helpful as he could be to get our mission fulfilled," says J.R. Gaines, vice president and general manager of SCI. And so this month—a year behind schedule—Gaines will hand over the finished apparatus.

High hopes

NASA is not the only bona fide organisation that has been taking Podkletnov seriously. When British military and aerospace company BAE Systems learned that Clive Woods, a superconductor researcher from Sheffield University, was trying to replicate the experiment it decided it too would hedge its bets and help fund his attempts.

"We know we're out on a limb," says Ron Evans, director of Project Greenglow—BAE Systems' research programme into alternative forms of propulsion. "But even though we got negative advice from several professors, it seemed to me that for a small amount of money it's worth the gamble. Experts have been wrong before and that's the only thing that makes it worth doing."

Evans is giving Woods an undisclosed sum to reproduce Podkletnov's experiment. So far Woods, too, has been unsuccessful. Like Koczor, Woods believes this could be because he has not managed to reproduce all the conditions Podkletnov says are necessary—the specifications are extremely demanding. "That does not mean there is no effect to be observed," Woods says.

Meanwhile, Podkletnov has been quietly continuing his research. "I am not a rich man," he says. "But I have some funds from other projects and I put everything I have into gravity research. This is my life's dream, my hobby, my goal."

He has made good progress, he says. With the help of friends in a laboratory that once belonged to Moscow's Institute for High

Temperatures, he claims to have built an "impulse gravity generator". He says its pulse—produced by a spinning superconductor with a strong electrical charge—is capable of knocking over a book placed on end more than a kilometre away.

The pulse has the same properties as a gravitational field, says Podkletnov. It is unaffected by an inch-thick steel plate fixed in the beam path, and the force it exerts is changed only with the target's mass, not its constituent material nor its chemical or electromagnetic properties. As he talks about it, he suddenly becomes animated. He thinks it could one day be used to nudge satellites into the correct orbit, and even knock incoming missiles off course. "This is a very powerful device, and I am now in the process of arranging a future project on the gravity generator with serious European firms," he says, almost in a whisper. But, he adds, he cannot divulge which firms—he has signed confidentiality agreements.

'NASA AND BAE SYSTEMS STILL DON'T KNOW WHETHER THEY HAVE BEEN SENT UP A BLIND ALLEY'

Although Podkletnov is happy to discuss his work, he says no one can come and look at the gravity pulse experiment. It requires extremely high voltages, and the required generating equipment is, unfortunately, in a restricted area of Moscow State University's campus. So he refused my request to watch the gravity generator in action.

Evans, too, has suggested that an independent observer might visit Podkletnov's Moscow laboratory. Again, Podkletnov refused. "He told me that he once hosted some Japanese visitors to his lab, but they tried to bribe his technicians for the secrets on how the experiment worked," Evans says. "As a result he decided not to bring any other visitors."

Podkletnov, who says he is in the process of patenting his work, is also scared someone might steal his intellectual property rights to the experiment. But Robin Tucker, a theoretical physicist at Lancaster University who is also investigating possible ways to control matter with gravity, thinks Podkletnov's secretive behaviour is odd, to say the least. "Any normal physicist who found this kind of effect would be shouting about it from the tops of the trees and asking people to come and verify it," he says. "It would mean a Nobel Prize if you'd actually discovered some kind of gravity focusing."

Podkletnov's refusal to open up to scrutiny leaves the scientific world lacking any independent, verifiable observations of gravity modification. He gave me an untraceable e-mail address for a Takashi Nakamura, who he claimed was a senior physics professor employed at Toshiba Electronics in Japan. Nakamura responded to my e-mail question, saying that he had managed to reproduce Podkletnov's experiments with even better results. "With all my respect to Evgeny-san, our ceramics is better and we got 8.79% of the weight reduction," he wrote. "Our programme of research has already shown much better efficiency."

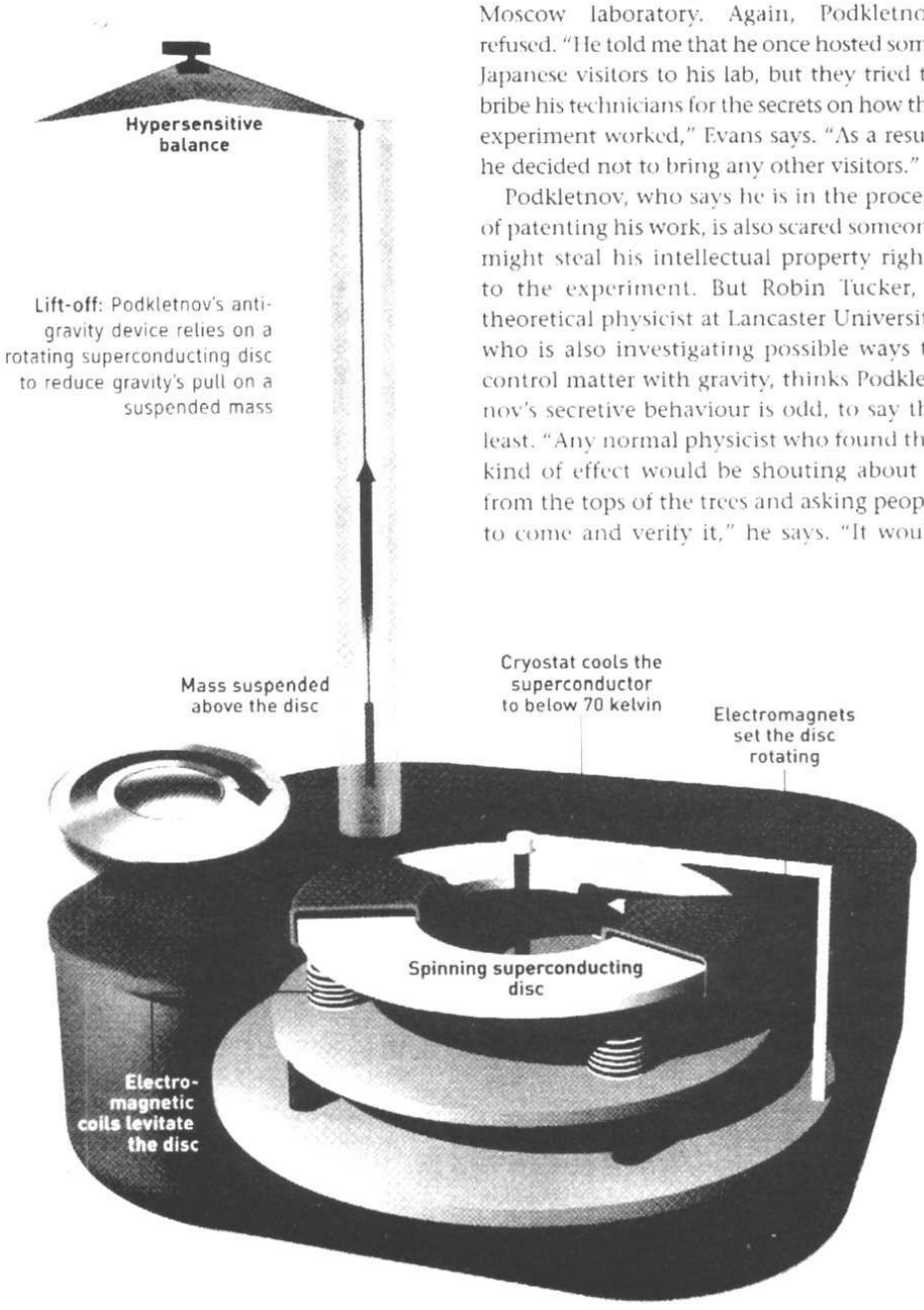
However, when I asked for references documenting these results, Nakamura terminated the correspondence.

Quantum suspects

Podkletnov's only current collaboration is with Giovanni Modanese, an Italian physicist who is trying to build a theoretical explanation for Podkletnov's results. But because physicists have such a poor understanding of the mechanisms behind both gravity and high-temperature superconductivity, his explanations are necessarily vague. He suggests that quantum processes within the superconducting material are interacting with quantum processes in the gravitational field. But, he admits, he can't go far with the work because there are too many unknowns. Again, Tucker is sceptical even of this attempt to formalise what's going on. "I think the correlation between the experiment and the theoretical description is very tenuous," he says.

So, frustrating as it is, that's as much as we know at the moment. I contacted several of Ning Li's ex-colleagues, but all said they did not know of her current whereabouts or the state of her research. NASA and BAE Systems still don't know whether they have been sent up a blind alley by Podkletnov's enthusiasm. But Koczor believes he'll soon have the answer. "Running the experiment will take six months at most," he says. If it fails to confirm Podkletnov's experiment, that will be the end of the matter. But if the experiment succeeds, and they can modify gravity, then who knows what could be possible? In the end, pigs really might fly.

David Cohen is a science writer based in London



THERE *WERE* ABDUCTION CASES AND UFO LANDINGS IN THE USSR! (LETTER TO THE EDITOR)

[One of the interesting overseas groups with whom we link up is the RIAP (Research Institute on Anomalous Phenomena) in the Ukrainian Republic, represented by their Editor Dr. Vladimir V. Rubtsov, who is also a Consultant to FSR.

We have pleasure in reprinting this extremely interesting report by V.K. Zhuravlev from their Volume 7, No. 2/3 (Apr-Sept 2001).

There were abduction cases and UFO landings in the USSR! So far as I can see this is the most definite and most important official statement yet obtained from the former USSR. -G.C.]

Sir, -Publication of the paper *History of State-Directed UFO Research in the USSR* by Yuliy Platov and Boris Sokolov is a really significant stage in the history of scientific ufology. It appeared almost simultaneously in RIAP Bulletin (1999, Vol. 5, No. 3-4) and in the highly authoritative Russian academic periodical-the *Herald of the Russian Academy of Sciences* (2000, Vol. 70,No. 6).

This is quite an event, if for no other reason than that it breaks the secrecy that surrounded the Soviet program of UFO studies in the years 1978-1991, when it was being conducted by academic and military research bodies. Even formally open parts of the program were painstakingly disguised. Now they have become known to the whole reading community.

Future historians of scientific ufology will certainly regard the survey by Platov and Sokolov as a very important document. It could probably be expanded into a book on the same subject matter. Why not also publish concrete scientific results of this program -in particular, those from the fields of atmospheric optics and environmental studies? One day in the future it can certainly become possible.

The present author took part in fulfillment of the *Setka AN* and *Galaktika* UFO study programs as a rank-and-file researcher -working with literature, writing scientific reports, processing photographs and travelling to "hot ufological spots" in the Novosibirsk Region and Altai Mountains. I have also participated in some conferences in Novosibirsk and Moscow, where preliminary results of the program phases were summed up.

Therefore, my impressions of the survey by Platov and Sokolov are not very typical: being rather well aware of many sides of this work "from inside", I cannot perceive it as an outsider. It would be more interesting to learn what impressions are produced by the paper on the readers who are inexperienced in the history of the UFO problem and are still seriously asking themselves: "Do UFOs really exist?"

For me it seems rather strange that Dr. Felix Zigel - the founder of scientific ufology in the USSR, Associate Professor at Moscow Aviation Institute and an expert in astronomy, was presented in the paper as merely another lecturer entertaining his audiences with bizarre hypotheses.

The list of references lacks *UFO Sightings in the USSR* that was published in Moscow in 1993 (five years after Dr. Zigel's death), and also there is no mention of such researchers as V. S. Troitsky, M. A. Zheltukhin, A. N. Dmitriev, B. A. Shurinov... But the sequence of events that led to establishing the official program of UFO studies in the USSR is described in the survey quite impartially.

The authors do not try to conceal the fact that the program was set up under pressure of circumstances. The Academy of Sciences of the USSR, as well as established research institutions of other leading world powers, was never enthusiastic about organizing such studies-even though the UFO problem itself dates as far back as 1947.

Peculiar as it is, this field of knowledge has been "privatized" by a kind of bipolar structure having almost no connections with official science. Nobody ever tried to build this structure, it arose spontaneously in a number of countries, according to the same scheme everywhere:

One pole included informal groups of voluntary enthusiasts of flying saucers, and the other the state intelligence agencies. Relations between these poles were far from cloudless -which has been clearly demonstrated in publications of western ufologists.

According to a logic of events, the Soviet Union could not be an exception to this rule. And suddenly in 1978 there appeared a "third force" -the Academy of Sciences of the USSR! What came of it, one can learn from the survey by Platov and Sokolov.

To put it briefly, spheres of influence have been separated between various departments. Effects accompanying launchings of space and military rockets were studied as something extraordinary due to the regime of secrecy.

For the "authors" of these launchings they were no mysteries at all, appearing as anomalies only to uninitiated Soviet citizens and academic scientists having to solve riddles with a known (to the "initiated" persons) solution.

The main efforts during the 13-year work were wasted by investigating secret illuminations in the night sky. These were not mysteries of nature that are, as a rule, to be studied by the Academy of Sciences, but mysteries of the military-industrial complex.

At the same time, there were recorded very intriguing natural phenomena as well. Some of them are known to science -being, in particular, well described in the classical work *Light and Color in Nature* by M. Minnaert. (There is in this book even a short section dealing with flying saucers.)

It proved, however, evident that not all strange natural phenomena fall into known categories: some of them are indeed new to science. They are rather numerous and various in their origin, being not studied by meteorologists, geophysicists, or oceanographers due to their relative rarity and lack of practicability at the present time.