

# **Trouble Times Two**

**By GEORGE O. SMITH**

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Thomas Lionel Ph.D., M.M. bounded out of bed with a cheerful bit of off-tune song. He glanced at the calendar and then the clock and he grinned because life was just too good to be true.

Everything was according to plan. He'd won his first battle. Up to now it had been touch and go; at last he had established his right to co-occupy the mind along with the engineer. No longer could the engineer claim that he was an expensive detriment. He had forced the engineer into agreeing that his offering, though not directly productive, was a causative factor in the development of success. Then to top it all, he retained enough technology to be a necessary item. He must be permitted to remain if only for a source of information.



The engineer's trap had been excellent. But the trap had turned and caught the engineer. Those reams of data on the poltergeist effect had been the basis for an entirely new science that only a real physicist could appreciate—and no engineer could hope to thread his way through them without a research physicist's assistance.

He stood over the chessboard in the living room for a few minutes. The engineer was not making any great moves. Therefore the physicist thought that he might best consolidate his position. He castled to the queen's side, burying his king behind a bulwark of defenses that would defy a master chess player to penetrate in less than ten or fifteen moves.

During breakfast, he perused a thin volume of recent publication. He did not entirely agree with the theories presented; after all, the book had been written for the express purpose of getting reader's

viewpoints and Thomas knew it. In fact, the book was not too interesting to Thomas but he knew that the engineer would fume, fret, and howl at the idea of having a well-thumbed volume of "*Theory of Multi-Resonant Wave Guides*" in the library.

Thomas wouldn't look at the engineer's volume, laying on the table opposite. It was too un-physical. It was un-erudite. It was "*Basic Theory in Micro-Wave Transmission*" and the edges of the pages were loaded with application formulas, diagrams, and working sketches.

He was near the end of breakfast when the glint of reflected sunshine arrowed through the window and caught his eye. He looked, and wondered who was landing on his lawn in a helicopter.

Then he did a double take.

"Helicopter" stemmed from Greek, the "helix" or screw plus the "opter" a machine. This contrivance did not. It was not operated with air screws.

It looked like a three-wheeled coupé. It looked like the industrial designer's dream of the Plan For Tomorrow, excepting those three wheels. The Plan For Tomorrow should, by all rights, have four wheels. And, if the thing is going to fly, it should have some sort of overhead vanes, or wings, or engines, or jets, or even a skyhook. But there it was, coming down as light as a feather to make a neat landing on the back lawn.

By the time the door was open, and the passenger stepped to the ground, Thomas was standing before the little sky car, looking somewhat dazed at the name:

POLTERGEIST

"Like a dream," said the driver of the sky car.

"It should," said Thomas, covering his ignorance with monosyllabic agreement.

"Handles well, too. I think we could stand a bit more positivity of control, though."

"I'll look into it."

"I wish you would. We've got the jump on the whole world with this. We'd like to keep it. But the thing doesn't answer to the wheel too solidly."

"Uh-huh."

"The chief engineer said, 'Jim, take that crate over to Lionel and see if he will beef up the control force a bit.' So here I am."

"O.K., Jim," said Thomas, offering a prayer for the name that had been given unwittingly. The engineer must have been a busy boy! "How are you going to get back?"

Jim looked up into the sky. "Jerry is following in the pilot model. He'll pick me up and we'll go on back thataway."

Jim nodded skyward, and Thomas looked at the growing speck that must have been the pilot model.

Thomas forgot about the pilot model. What he wanted to know was the whereabouts of the five tons of equipment that had been an integral part of this idea. He looked at the model. He wondered whether the engineer had installed the whole thing, stepping up the power and using the main part of the power to support the equipment. That did not seem possible. Any failure would cause

the little sky car to collapse of its own dead weight. Besides there was not enough room in the little crate to pack all that equipment-tonnage.

The engineer had achieved the impossible. He had done away with the main part while retaining the effect.

The pilot model landed. It was not the finished job of the prototype. The cabin was squarely functional and the landing wheels were not faired into the hull. The rear end, instead of tapering gently into a narrow paraboloid of revolution, was a truncated four-sided pyramid.

Jerry did not emerge. He merely tossed the door open and shouted: "Come on—we ain't got all day!"

Thomas nodded. "I'll call you when I get it fixed."

*Call who?* the physicist wondered, and then forgot about it. He wanted desperately to dig into the sky car. He wanted to find out where the engineer had packed five tons of equipment. He wanted to see what made the wheels go around. No doubt the thing could be returned to its owners without calling in the police. The thing was probably recorded in the precisely kept engineering notebook of the physicist's alter ego.

The pilot model was not completely out of sight before Thomas had the power cowls off, and the whole model stripped of its servicing doors. They had done an excellent job of design; the sky car without its servicing panels was but a skeleton frame, with every line, every connection, and every control rod open for easy servicing.

And it was then and there that the physicist understood what the engineer had been doing.

Instead of the low-voltage high-current supply lines, with their attendant heavy busbars, thin pipes ran about the sky car. Seamless aluminum tubing carried the energizing current. Or, rather the space inside of the tubing carried it. At the generator end, a ten megawatt microwave generator supplied high power at ultra high frequency. At the terminus, rectifiers brought the ultra high frequency down to direct current for operation of the force-field generators.

Thomas nodded. It was not the final tenth of one percent job. It was not direct current. The diagravitic force was not constant. It operated only seven tenths of the time, and was turned off and on fifteen or twenty million million times per second. Nothing short of high-definition test equipment would ever tell the difference, however.

Gone were the massive electromagnetic deflection field coils. In their place was a set of seventy kilovolt electrostatic plates.

Missing entirely were the variable-speed motor generators. In their place was a simple crystalline formation under permanent magnetic stress. "Artificial radio-activated crystals," muttered Thomas. "Good for a couple of years."

But the feed lines. *The feed lines.* The current carrying ability of space itself—not the metallic conductor—did the trick. Using the ultra high frequency bands, the busbars had been replaced with cylindrical wave guides. The depth of penetration was measured in microns at those frequencies—and as long as the guides were properly designed, they offered little loss in power. The current

went down the wave guides by virtue of the magnetic fields created throughout the guides—magnetic fields generated in the space inside of the tubular guides.

The generator itself was one of the new crystal microwave generators and the rectifiers at the receiving end were of the same ilk.

And the five tons of equipment had vanished in a puff of tubular guides, electrostatic plates, and intermittent operation.

Thomas hit a snag for a moment. The engineer had answered his challenge. So he'd come up with the answer to the five-ton-per-fifty-pound answer—and had gone further. Thomas knew that there was no apparent limit to the maximum power or lift. It merely set a fifty pound minimum—actually it was 49.87 pounds by measurement—under which limit no amount of tinkering would produce the effect.

He smiled. There must be something beyond. After all, small stones moved quietly in natural poltergeist manifestation; they would be able to reproduce that eventually. But for now, the engineer was willing to accept the limitation whereas the physicist would not.

He knew now. And he'd leave the sky car until the engineer returned. Let *him* beef up the control force. It was *his* baby.

Thomas put the panels back on the sky car and stood off to admire it. It was a neat job, just what the public wanted. The urge to get in and drive was a most compelling one, and Thomas succumbed. He sat for a moment, inspecting the dashboard until he had the pattern well set. Then he snapped on the power, took the wheel and pulled



back gently. The sky car lifted its nose slightly, and as Thomas pressed the foot pedal, it took off on a side-line straight into the sky. He leveled off at a thousand feet and he did some scurrying back and forth in midair. It did handle a little sloppy but not enough to make the physicist uncomfortable. Yet it wouldn't stand any hedge-hopping or bridge-undercutting without a prayer on the part of the driver. Butter the controls a bit and you could thread a needle with it on the first try.

Yes, the engineer had done it again—all of which made Thomas chuckle. A bit more of this and the engineer would have such an income that he'd no longer worry himself into engineering. Then—

Thomas turned the sky car and drove across the city toward Dr. Hamilton's place. He landed on the psychiatrist's lawn and startled the doctor out of a week's growth.



"I've won," he told the doctor.

"Good," laughed Hamilton. "Mind if I ask which you are today—and how do you know you've won?"

"I'm Thomas Lionel, Ph.D. And the engineer has worked himself out of a job."

"Interesting. But how?"

"He dropped me a mess of cockeyed data, remember? Well, I unraveled it into a most interesting field of science. From it I handed him a slab full of theories and experiments that are just inefficient enough to make him fume. He's come up with several things that make money in vatfuls."

"That, I know and understand. Go on."

"Remember, I am his ideal personality, I am a physicist, a type of person he has always wanted to be. He couldn't be a physicist because of financial reasons and so he went into the engineering field to bolster up his bank account. That was eminently practical. But now that the worry about the bankroll is over, he can turn to theoretical physics and physical research. That's me—and I've won!"

"Suppose he, himself, takes the gradual retreat from engineering into physical research?"

"Um—I don't think he's capable of it. He's been too well conditioned."

"Might well be," admitted the doctor. "Well, as I said before, I'm just a referee. Both of you are well adjusted and good, worthy

additions to society. Either one of you that wins will be a credit to civilization."

"You're a great help," laughed Thomas. "But I don't mind. This is my round, and it's my game. He's licked himself."

"I'll tell him that when I see him," said Dr. Hamilton. "But there is one thing that I must know. I want to know what makes that little tungsten box work."

"I cast the tungsten in—"

"I don't care how you made it," said Hamilton flatly, "unless it has a definite bearing on how it works."

"I made it of tungsten because the engineer would rip it apart if it weren't too tough," grinned Thomas. "Being of tungsten it doesn't matter how it works excepting it would have been more efficient if I'd made it of silver."

"Look, Thomas, stay on the subject. I want to know what's with the works."

Lionel laughed. "What's so important?"

"Look, man, I'm a psychiatrist. The functioning of the human mind is my baby. Or," he added bitterly, "it should be. But, darn it, all we can do is to surmise, theorize, hope and pray. We don't know what makes schizophrenics, or manic-depressives or any of the other mental quirks. We aren't even certain why some people are well liked while others, of almost identical get-together are heartily disliked. But you've come up with a little dingus that causes a switch-over from one personality to another merely by pushing a

button. Find out why and we psychiatrists may some day get to first base in psychoanalysis."

"Um—I suppose a real pathophone would be a help."

"Pathophone is a good word," smiled the psychiatrist, "but to dig into a warped mind without having the erroneous impressions and false evaluation clouding the only entry ... we'd be able to clear up almost any mental condition. Now, how does it work?"

"I am not prepared to say. I was seeking experimental data on the 'epicenter' of the poltergeist phenomena—the poltergeist usually manifests in the vicinity of or because of some central influence—usually a person who is unaware of his potentiality. At any rate, I was setting up a series of local magnetic and electrostatic fields and then trying the micro-microwave spectrum for response. I was running up through the region between long heat radiation and micro-micro radio waves when—blooey!—I was the engineer. I switched back eventually and consolidated my findings into that little tungsten box."

"I want the dope on it."

"I'll give it to you," nodded Thomas. "As soon as I make some final measurements and consolidate my data."

"Fine. Mind telling me what causes the poltergeist?"

"As best I can. The present concept of space is that space itself is under internal strain. Force vectors in cancellation prevail, resulting in a stable continuum. Space is warped by electrostatic effects, magnetic effects, and gravitic effects. These local effects do not create a discontinuity in the space strain, and therefore no eruption takes place. Now enters the epicenter. Radiation from his

mind or brain in thinking goes out and starts a very minor sympathetic oscillation in the warps and strains of space. If these strains are in the right vectorial situation, the minor oscillation builds up the response amplitude—"

"That doesn't make sense," objected the doctor. "Mental radiation must be weak. How can it induce high power?"

"It can't. But if you know radio at all, you'll recall that a high 'Q' circuit will develop very high voltages across the terminals with a very small driving voltage. Well, this is analogous to the epicenter effect. The epicenter wave causes instability in the space strains because the brain wave is not a natural phenomena of space. Then—like two sticks end to end under compression, it takes very little sidewise thrust to make the compression-force collapse, forcing the sticks out at right angles. Follow?"

"But where did this energy or force come from?" puzzled Hamilton. "Isn't that a violation of the Law of Conservation of Energy?"

"Not at all. The law is still valid. It does state that you cannot get more out of anything than is put into it. The guesswork comes in deciding how the energy got there. Coal, for instance, is just a black stone. It has potential energy which was put into it by the eons of solar energy shining on the carboniferous forests. A stone has potential energy for falling. Where did it get it? It may have been carried up the hill; it may have been dropped from space—put out there by the cosmic eruption that caused Creation. Or it may have been on the edge of a gully and the potential drop made by the stream eroding the ground out from under it."

"How about atomic power?"

"You mean, how did the power get locked in the atom?"

"Yes."

"The power in the atom was put there by the universe's atom factories. Sol, and the other suns," explained Hamilton.

"But where did the earth—?"

"Creation," murmured Thomas. "Who knows? I don't. Every time somebody comes up with a perfect answer, someone else comes up with perfect data that proves that the answer couldn't be *anything* that anybody has ever used before.

"The atom factory is the Solar Phoenix. You start with hydrogen and carbon. The solar heat is such that they combine atomically to an unstable isotope of nitrogen which immediately becomes a stable isotope of nitrogen. More hydrogen gets in, making it unstable oxygen and so forth. Oxygen breaks down, releasing energy, helium, and, what do you know, carbon again, which begins to take on hydrogen again, and here we go again. But the thing is uncontrolled hell on wheels. Things go wrong due to the variances of pressure and temperature, and the oxygen doesn't always break down into helium and carbon. It takes offshoots and sidetracks. It'll add hydrogen and become fluorine, for instance, which then adds more and becomes something else, some of which trails off like the branches of a tree and do not break down into recurrent reactions. Hence the other atoms."

"I'll read about it and get the real picture. Know a good book?"

Thomas scratched his chin. "If you can find a copy of 'The Days of Creation,' by Willy Ley, the first part of the book has a description of the Solar Phoenix."

"Well, good enough," said Dr. Hamilton. "But just bear one thing in mind. You think you've beaten the engineer. Your basic trouble is just that the engineer is you, too. He has your ability and your knowledge and your experience upon which to work. He is no fool, and you can take that as a back-handed compliment if you want to. He is just as capable an engineer as you are a physicist. He thinks in different channels, I will admit. But, Thomas, remember that his extra-channellar thinking is done with the same thinking equipment as yours is, and it is no less efficient because of being divergent from your own thought-track. Your battle was won too easily to be conclusive."

"What do you expect?"

"I wouldn't know. I'm no scientist in physics." Hamilton held up a hand as Thomas started to protest. "I use 'scientist' despite your dislike of the word only because there is no term that describes both of the attributes of practical engineer and research physicist. Frankly, I'm hoping for an eventual coalition, but I fear not."

"Why view no-coalition with distaste?" demanded Thomas.

"Because both personalities offer much to the world, to science in general, and to the body that houses both of them."

"I heartily dislike all aspects of practical engineering," stated Thomas flatly. "To be everlastingly forced to retrace your own steps, again and again and again, working out the most insignificant details—bah!"

"The engineer has another viewpoint."

"I know. But the engineer in this case is here only because of his own necessity—which he himself has removed. I am the real entity;

I am the desire of the engineer. I am what he wants to be. *I am what he will become!*"

"Good morning, Frank."

"Morning, Miss Elaine. Mr. Lionel isn't here."

"He'll be back?" asked the girl.

"Oh yes. He went over to see Dr. Hamilton."

"Oh. Frank, the usual question?"

"This morning he is Thomas Lionel, Ph.D., M.M."

"Oh."

"He went to bed Tom Lionel, Consulting Engineer."

"I wonder if he remembers," smiled Elaine.

The *Poltergeist* landed on the lawn. It was silent, but a flash of sunshine caught the sleek side and attracted Elaine's attention.

"Hi," she called as she emerged from the house.

"Howdy," he answered. "What brings you out?"

"Never ask a girl a question like that," she laughed. "You'll never get the right answer."

"Why?"

"If she says 'you' it's either a lie or she's the kind of girl your mother tried to protect you from. If she says anything else, it's either a lie or she's the kind of girl your mother tried to protect you from."



"A man can't win," snorted Thomas.

"Does a man really want to win?"

"Nope," admitted Thomas. "I won't ask questions, Elaine. I'll just be glad you came."

"I'm glad you're glad."

Elaine flirted with him shamelessly, and then turned toward the laboratory building. He followed, and they kept up a running fire of light talk all the way.

"The first thing I have to do is to see what the engineer was doing last," remarked Thomas as he opened the laboratory door.

"You are a strange fellow," smiled Elaine. "You respect each other's possessions and beliefs, though you argue madly through impersonal mediums. Still writing nasty letters?"

"Uh-huh. And playing chess."

"What's he been doing?" asked Elaine innocently.

"Don't really know. Aside from some experiments on the poltergeist effect—reducing them to practice—I wouldn't know. I doubt that he's been doing much else. I do happen to know that he's deeply interested in the epicenter effect. He may find the key to it, too."

The laboratory was about as he remembered it. There were some changes. A few of the pieces of equipment were moved; some of them were converted; and a couple of them had been built in to other, larger pieces. All of the workmanship was clean and shining.

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