

Trouble



By **GEORGE O. SMITH**

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Tom Lionel, Consulting Engineer, awoke with a shake of his head. At once, he was out of bed. He consulted first the calendar and then the clock. The thought struck him funny. He hadn't been drinking, but the idea of looking at a calendar upon awakening might be construed as an admission that he didn't know what time of what day it was.

Or mayhap what month.

"Ding it," he grunted. "I've been away again."

He dressed by stages. At the trousers department, Tom wandered out into the living room and stood over a chessboard, studying the set-up. The opponent had moved the queen to the rook's fourth, menacing his bishop. Tom smiled and moved his knight to his knight's sixth and checked the opponent's king on the rook's first, and the queen simultaneously. He slid the drawer below the table open and removed a little standing sign that said, in red, block letters:

CHECK!

"Let him try that one, will he?" laughed Tom. The move was basic; in checking the king and menacing the queen simultaneously, Tom had—or would upon the next move—collect himself his opponent's queen with no great loss.

At the shirt and necktie stage, Tom Lionel stood teetering on his heels before the bookcase on the right of the fireplace. He took

from the case a slim volume and read the title with considerable distaste:

"Theory of Monomolecular Films in Fission-Reaction"

By A. G. Rodan, Ph.D., M.M., LL.D.

"Yipe!" exploded Tom as he opened the book and glanced at the price: \$9.50. With ease he prorated the price against the thickness of the volume and came to the estimate that the book had cost approximately nineteen dollars per inch excluding covers. He riffled through the pages and paused here and there to read, but the pages themselves were a good average of four lines of text to the rest of the page full of nuclear equations.

Tom Lionel snorted. He ran down through one of the arguments and followed it to conclusion.

"Why can't he get something worth reading?" he yawned, putting the book back in its place. "Darned impractical stuff." As usual with a man who spends much time in his own company, Tom Lionel talked aloud to himself—and occasionally was known to answer himself back. "The whole trouble with the entire tribe of physicists per se is the fact that once, someone told one of them that he was a theorist, an idealist, and a dealer in the abstract. Now the bunch of them are afraid to do anything practical because they're afraid if they do, people won't know they're physicists. Physicists are a sort of necessary, end-product evil."

During the breakfast section of Tom's morning duties, Tom read the latest copy of the "Proceedings of the I.R.E." with some relish. A paper on the "Crystallographic Generation of Microwaves" complete with plainly manipulated differential calculus and

engineering data occupied most of his time. The rest of the time through coffee he was making marks on the tablecloth with the egg-laden end of his fork and trying to fit the crystallographic generation of microwaves into a problem that made the article most timely; the solution for which he had been seeking for a week.

The mail arrived. Three household bills were filed in the desk to await the first of the month. Two advertisements were filed into the wastebasket. One thick letter addressed to Thomas Lionel, Ph.D., M.M., was taken carefully between thumb and forefinger and deposited in a letter file.

Tom then inspected the other letter file and found two letters addressed to Tom Lionel, Consulting Engineer, which he opened and read. One was from a concern in Cedar Rapids that wanted some information on a method of induction heating glued joints selectively without waiting for the normal drying time. The other was a letter from a medium-sized town in Illinois pertaining to some difficulty they were having with police-radio coverage of that area.

Both letters meant money, and Tom Lionel set the first aside while he started to work on the second. From the engineering data supplied by the local engineer, Tom decided that a change in antenna height and a conversion from quarter-wave current fed to a one and one quarter-wave current fed antenna would give the desired coverage. He concluded his letter with four pages of calc, seven diagrams, and as a last measure dropped a photograph of a similar installation in the envelope.

He gloated. That would net him a pretty penny. The guy who hung that antenna on top of the water tank thought he was smart, getting

all that height. But the roof was metal, and therefore the radiation angle took off from the rooftop as a basis rather than the true ground a hundred feet below.

The tank top was greater than three wave lengths in diameter, and conical to boot. Tom grinned at the maze of mathematics that solved it—and as far as he was concerned it was solved, for Tom Lionel was a top-flight engineer.

He checked on his calendar. Metal for the sonic job was not due for a week yet; a minute casting was still being held up for the foundry's pleasure; and the life-test of the bearing-jewel for the Watson Instrument Corporation was still on. Good jewel that. No sign of freeze-up or wear-out after twenty-seven million cycles.

"Theory of Monomolecular Films be hanged," he snorted. "He's the kind of a guy that would try to analyze the brew that MacBeth's three witches were cooking up. And don't ask why!"

What he objected to most was the other's unconcern at spending money. Nine bucks and fifty cents for a book of the most questionable theory—and nine fifty that the other didn't really earn. It was getting worse. The other was really beginning to obtrude. He hadn't minded, particularly, except for the mental anguish. He'd become reconciled to it by sheer rationalization. Way, way down deep in his heart he knew that he'd have enjoyed being a physicist himself. But physicists were not particularly practical, and money was made with practical things. He knew, and recognized, that his retreat from being a physicist himself had given him a dislike for the breed, especially when he knew that solution of a problem was theirs, but reduction to practice was his. He was continuously being forced to take some physicist's wild-haired scheme and

making it cook meat, open cans, or dig post holes. The physicist had all the fun of standing on the threshold and delving into phenomena that abounded just over the line. And then instead of working on the suggestion that the physicist had located in the wilderness, the physicist just tossed it over his shoulder into Lionel's lap and went on digging.

Obviously it must be fun to dig in the unknown, but why in the name of sense—

"Theory of Monomolecular Films in Fission-Reaction," scowled Tom Lionel. "A hypothesis on a theory for an idea, based upon a practical impossibility, and directed at a problem solvable only by concentrated masses. He should be working in a negative universe where nonmatter repels nonmatter disproportionately to the nonmass and inversely disproportional to the not-square of the not-distance between. Holy Entropy."

Tom Lionel went out of the house, mentally tinkering with the glue-joint heating problem. That shouldn't be hard, he thought, high-frequency heating was no trick, though the furniture company probably had no one in the place that knew what high frequency really meant.

He'd take a chair, rip it apart at the joints, and start tinkering with the big radio-frequency heater in the lab. Another fat consulting fee—eminently practical and satisfying—from the simple engineering of a means to accelerate the drying of glue by electronics.

Eminently practi—*hell!*

Lionel stared. The door closed slowly behind him as he walked ever so slowly across the floor of the lab. There was his radio-frequency heater, all right. But it was not in its usual place. It was across the room nuzzling up against another piece of equipment—the latter new, shining, and absolutely alien to the lab.

Tom went over to the set-up and inspected it with critical derision.

The alien piece of equipment had been a standard model of mass spectrograph. Its sleek sides were gaping open, and the high-frequency heater was permanently wired—piped—into the very heart of the spectrograph. Peering into the maze of one-inch copper tubing that led from the output of the high-frequency heater to the insides of the spectrograph, Lionel saw at once what the reason was.

The spectrograph had been overhauled by the physicist. It now contained a pair of "D" chambers.

Operating on the cyclotron principle, the spectrograph was using the output of the high-frequency heater to energize the D chambers. Lionel nodded. The frequency was about right; could be adjusted to the proper value without any trouble at all. He felt an infinitesimally short twitch of admiration for the idea before he started to roar in anguish.

His first impulse was to rip the gadget apart so that he could go to work on something practical. But the engineer's admiration for the idea stopped him.

But this was getting thick.

It had been getting thicker for a long time. It was getting intolerable. He didn't mind too much having volumes of utterly

cock-eyed theory about the place, but when the physicist starts to appropriate equipment for his screwball ideas, it was time to call a halt.

Lionel left the laboratory, returned to his house, and called a psychiatrist.

An hour later he was in Dr. Hamilton's office.

"Why are you here?" asked Hamilton pleasantly.

"I want to get rid of a physicist."

"Tell him to go away."

"Can't. Impossible."

"Nothing is impossible."

"Look, doctor, have you ever tried to light a safety match on a wet bar of soap?"

"Suppose you tell me about it, then."

Tom Lionel was more than talkative for a half hour.

"A clear-cut case of split-personality. A most remarkable cleavage."

Lionel muttered something.

"What did you say?"

"I'd rather not repeat it," said Tom.

"Please—it may have a bearing on your case."

"I was merely thinking of an hypothetical case. Says the doctor to his associate: 'Doctor, look at this magnificent tumor,' and his buddy answers: 'Lovely, but you should see my case of angina; it's positively beautiful.'"

"Oh?"

"So I'm a most remarkable case, huh?"

"You are. There seems to be a deep-seated liking for one another that has been barred psychologically by certain factors in your youth. You play chess. You respect one another's property—"

"That's what you say. The other bird just screwed up my dielectric heater to fiddle up a cyclotron spectrograph."

"Might try putting it to work," observed Hamilton.

"Oh, I will. After all, he can't get ahead of *me*."

"Then why the outcry?"

"Because who knows what he'll do next."

"He's appropriated things before?"

"Only to the extent of buying books."

"What manner of books?"

"The last one he purchased was entitled 'The Theory of Monomolecular Films in Fission-Reaction.'"

"Mind explaining that? It sounds like Greek to me."

Lionel smiled tolerantly. "If you have a flat table and a pile of kid's toy blocks, you can either build a structure or lay 'em on the table

in a single layer. Since molecules are often called the building-blocks of the universe, the analogy is quite clear. The blocks in a single layer form a monomolecular layer. Fission reaction is a self-sustaining nuclear reaction."

"Sounds quite erudite."

"In the first place, no one with any sense would try to make use of it. It is the type of volume that a physicist would write in the hope that he will get letters pro and con on the subject which will be useful in forming a later theory."

"Then it is not a complete waste of time."

"Any time I lay out nine bucks for a half-inch of paper—"

"Expensive, isn't it?" asked the doctor.

"Sure. Those things are not best sellers, usually. The publisher puts it out in the name of science and must at least get his printing cost out of the very limited edition."

"I see. And you want to get rid of this physicist?"

"Who wouldn't? After all, I had this body first. He's an interloper."

"Seems that way."

"It is—and it's annoying."

"We may be able to do something about it," said the psychiatrist. "Permit me to think about this for a few days. We'll have another consultation in a week. We may require another one before I make a decision. But it seems to me that you are both intelligent, useful citizens. Neither of you is irresponsible or dangerous. You have

enough money to afford schizophrenia for a while. Especially if the personality B dreams up things that personality A makes practical, financially advantageous use of. Ergo you need fear nothing for a few weeks."

"Ugh. Means I'll have to go out and buy another high-frequency heater. O.K., doctor. I'll lay low."

Thomas Lionel, Ph.D., M.M., awoke with a shake of his head. At once, he was out of bed. He consulted first the calendar and then the clock. The thought struck him funny. He hadn't been drinking, but the idea of looking at a calendar upon awakening might be construed as an admission that he didn't know what time of what day it was.

Or mayhap what month.

"I've been away again," he grunted.

He dressed by stages. At the trousers department, Thomas wandered out into the living room and stood over the chessboard, studying the set-up.

He removed the little sign that said:

CHECK!

and dropped it into the drawer again. He moved his king aside with a contemplative smile. His queen was gone on the next move, he knew. So he had lost a major piece. So that other bird thought that losing a major piece was bad, huh? Well, winning battles does not count—it is a matter of who wins the last one.

He found the volume on the theory of monomolecular films and started to read with relish. Over coffee, at breakfast, Thomas made notations on the margin of the book with a pencil; checked some of the equations and though he found them balanced properly, the author was amiss in not considering the lattice-effect in his presumptions. No monomolecular film could follow that type of reaction simply because—well, it could follow it, but since the thing was to take place in a monomolecular film, the fission-reaction and the radiation byproducts that cause the self-sustaining nature could only be effective in a plane of molecular thickness. That meant a .999999% loss, since the radiation went off spherically. Fission-reaction might take place, but it would be most ineffective. Besides, the equations should have taken that into account.

He stopped by the desk and wrote for a half hour, filling seventeen pages full of text and mathematics, explaining the error in the author's presumption.

He sealed it up and mailed it with some relish. No doubt that letter would start a fight.

He found his letter in the letter file and read it. It was a request to indulge in some basic research at a fancy figure, but Thomas was not particularly interested. He was thinking of another particular line of endeavor. He dropped the letter into the wastebasket.

He went into the lab and took a look at his cyclotronic spectrograph. There was a letter hung on the front. Thomas opened it and read:

Dear Isaac Newton:

I don't particularly mind your laying out thirty-five hundred bucks for a mass spectrograph.

Appropriating my high-frequency generator didn't bother me too much.

Nor did your unsymmetrical wiring and haywire peregrinations in and about the two of them annoy (too acutely) my sense of mechanical and electrical precision.

But the idea of your using the ##&&%!! spectrograph only once—just for pre-change calibration—makes me madder than mad!

Sincerely,
Tom Lionel,
Consulting Engineer

Thomas grinned boyishly and picked up the notebook on top of the high-frequency heater. It was Tom's, and the physicist riffled through it to the last-used pages. He found considerable in the way of notes and sketches on the cyclotronic spectrograph. Cut in size by about one quarter, the thing would be not only a research instrument of value, but would be of a price low enough to make it available to schools, small laboratories, and perhaps production-lines—if Tom Lionel could find a use for a mass spectrograph on a production line.

Thomas grinned again. If it were possible, Tom would certainly have it included on *some* production line, somewhere.

He looked the spectrograph over and decided that it was a fine piece of apparatus. So it wasn't the shining piece of commercial

panel and gleaming meters. The high-frequency plumbing in it had the touch of a one-thumbed plumber's apprentice after ten days' drinking and the D plates were soldered together with a heavy hand. But it did work—and that's all he cared. The knobs and dials he had added were sticking out at all angles, but they functioned.

And the line-voltage ripple present in the high-frequency generator made a particular mess out of the spectrograph separation. But electronic heaters do not normally come luxuriously equipped with rectifiers and filters so that the generator tubes were served with pure direct current—the circuit was self-rectified which would give a raucous signal if used as a radio transmitter. That generated a ripple-varied signal for the D plates and it screwed up the dispersion. The omission of refinement satisfied Thomas. So it wasn't perfect. It would be by the time Tom Lionel got through with it.

And for the time being, Thomas would leave it alone. No use trying to make it work until Tom made an engineering model out of the physicist's experiment.

Smiling to himself, Thomas went to work in the laboratory. He ignored Tom's experiments and started a few of his own accord.

Some hours later, the doorbell rang and Thomas went to the door to find a letter, addressed to Thomas Lionel, Ph.D. It was from an Arthur Hamilton, M.D.

"Hm-m-m," said Thomas. "Is there something the matter with me?" He slit the envelope and removed a bill for consultation.

"Consultation? Consultation? What in the name of all that's unholy is he consulting a doctor about? Or is the doctor consulting—no,

the bill is rendered in the wrong direction. I know my consulting engineer."

The physicist put on his hat and headed forth. It was not much later that he was sitting again in the same chair, facing Hamilton.

"You're back."

"Nope," smiled Thomas. "I'm here, not back."

"But you were here last week."

"That was another fellow. Look, Hamilton, I think I require your assistance. I have an engineer that is no end of bother."

"Want to get rid of him, huh?" answered Hamilton. The suppressed smile fought valiantly and won, and the doctor's face beamed and then he broke into laughter. "What am I, anyway? Man, I can't take money from both sides. That's ... that's ... barratry, or something."

"I'm the same man."

"Nope. You are not."

"Well, by and large, I thought it might be of interest to you to hear both sides. It might be that I am a useful citizen in spite of what the engineer says."

"The engineer's opinion is that no physicist is worth an unprintable."

"The physicist's opinion is that all engineers are frustrated physicists."

"Might challenge him to a fight."

"Have. But chess isn't too satisfying. I want blood."

"It's your blood."

"That's the annoying part of it all. He seems entirely a different fellow."

"The cleavage is perfect. You would think him a separate entity." Hamilton paused, "But neither of you refer to the other by name. That indicates a psychological block that may be important evidence."

"O.K., what do we do?"

"I must discover the reason for the split personality."

"I can give you that reason. The engineer was forced into being a practical man because money lies in that direction. Upon getting out of college, there was a heavy debt. It was paid off by hard work—a habit formed and never broken. Bad habits, you know, are hard to break."

"Interesting."

"Well, the desire to delve into the physicist's realm stayed with the engineer, but people who had heavy purses were not interested in new ways to measure the ether-drift or the effect of cosmic radiation on the physical properties of carbon. Money wants more perfect pencil sharpeners, ways of automatically shelling peas, and efficient methods of de-gassing oil. All these things are merely applications in practice of phenomena that some physicist has uncovered and revealed and put on record so that some engineer can use the effect to serve his ends.

"At any rate, the desire to be a physicist is strong, strong enough to cause schizophrenia. I, Dr. Hamilton, am a living, breathing, talking example that an engineer is but a frustrated physicist. He is the troubled one—I am the stable personality. I am happy, well-adjusted, and healthy."

"I see. Yet he has his point. You, like other physicists, are not interested in making money. How, then, do you propose to live?"

"A physicist—or an engineer—can always make out well. The bank account at the last sitting was something like ninety-four thousand, six hundred seventeen dollars and thirty-four cents."

"That's quite a lot of money."

"The engineer considers it a business backlog," said Thomas. "Equipment is costly. Ergo—see?"

"I see. Seems you laid out a large sum of money for a mass spectrograph."

"I did."

"And what did he do?"

"He made notes on it and is going to peddle it as a commercial product. He'll probably make fifty thousand dollars out of it."

"I suggested that," admitted the psychiatrist.

"That's all right. I don't mind. It sort of tickles me, basically. I do things constantly that make him roar with anguish. And then his only rebuttal is to take it and make something practical out of it."

"I see."

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