

Issac Asimov

The Three Numbers

I'm always fascinated by puzzles involving numbers or words. In a way, this is a small tragedy, for I am very poor at solving such puzzles.

If you create a puzzle, however, then, of course, you know the solution. You might think there is no fun in knowing a solution from the beginning, but it becomes fun if you then invent a story in which the characters don't know the solution and have to work it out with something important hanging on the event.

This is a story involving a number puzzle and you have no idea how exciting it is to have your characters sweat it out.

When Tom Trumbull arrived—late, of course—to the Black Widowers' banquet, and called for his scotch and soda, he was met by James Drake, who was wearing a rather hangdog expression on his face.

Drake's head made a gentle gesture to one side.

Trumbull followed him, unpeeling his coat as he went, his tanned and furrowed face asking the question before his voice did. "What's up?" he said.

Drake held his cigarette to one side and let the smoke curl blue upward. "Tom, I've brought a physicist as my guest."

"So?"

"Well, he has a problem and I think it's up your alley."

"A code?"

"Something like that. Numbers, anyway. I don't have all the details. I suppose we'll get those after the dinner. But that's not the point. Will you help me if it becomes necessary to hold down Jeff Avalon?"

Trumbull looked across the room to where Avalon was standing in staid conversation with the man who was clearly the guest of the evening since he was the only stranger present.

"What's wrong with Jeff?" said Trumbull. There didn't seem anything wrong with Avalon, who was standing straight and tall as always, looking as though he might splinter if he relaxed. His graying mustache and small beard were as neat and trim as ever and he wore that careful smile on his face that he insisted on using for strangers. "He looks all right."

Drake said, "You weren't here last time. Jeff has the idea that the Black Widowers is becoming too nearly a puzzle session each month."

"What's wrong with that?" asked Trumbull as he passed his hands over his tightly waved off-white hair to press down the slight disarray produced by the wind outside.

"Jeff thinks we ought to be a purely social organization. Convivial conversation and all that."

“We have that anyway.”

“So when the puzzle comes up, help me sit on him if he gets grouchy. You have a loud voice and I don’t.”

“No problem. Have you talked to Manny?”

“Hell, no. He’d take up the other side to be contrary.”

“You may be right.—Henry!” Trumbull waved his arm. “Henry, do me a favor. This scotch and soda won’t be enough. It’s cold outside and it took me a long time to get a taxi so—”

Henry smiled discreetly, his unlined face looking twenty years younger than his actual sixtyishness. “I had assumed that might be so, Mr. Trumbull. Your second is ready.”

“Henry, you’re a diamond of the first water”—which, to be sure, was a judgment concurred in by all the Black Widowers.

“I’ll give you a demonstration,” said Emmanuel Rubin. He had quarreled with the soup which, he maintained, had had just a shade too much leek to make it fit for human consumption, and the fact that he was in a clear minority of one rendered him all the more emphatic in his remaining views. “I’ll show you that any language is really a complex of languages.—I’ll write a word on each of these two pieces of paper. The same word. I’ll give one to you, Mario—and one to you, sir.”

The second went to Dr. Samuel Puntsch, who had, as was usually the case with guests of the Black Widowers, maintained a discreet silence during the prehrninations.

Puntsch was a small, slim man, dressed in a funereal color scheme that would have done credit to Avalon. He looked at the paper and lifted his unobtrusive eyebrows.

Rubin said, “Now neither of you say anything. Just write down the number of the syllable that carries the stress. It’s a four-syllable word, so write down either one, two, three, or four.”

Mario Gonzalo, the Black Widowers’ tame artist, had just completed the sketch of Dr. Puntsch, and he laid it to one side. He looked at the word on the paper before him, wrote a figure without hesitation, and passed it to Rubin. Puntsch did the same.

Rubin said, with indescribable satisfaction, “I’ll spell the word. It’s u-n-i-o-n-i-z-e-d, and Mario says it’s accented on the first syllable.”

“Yoo-nionized,” said Mario. “Referring to an industry whose working force has been organized into a labor union.”

Puntsch laughed. “Yes, I see. I called it un-eye-onized; referring to a substance that did not break down into ions in solution. I accent the second syllable.”

“Exactly. The same word to the eye, but different to men in different fields. Roger and Jim would agree with Dr. Puntsch, I know, and Tom, Jeff, and Henry would probably agree with Mario. It’s like that in a million different places. Fugue means different things to a psychiatrist and a musician. The phrase ‘to press a suit’ means one thing to a nineteenth-century lover and another to a twentieth-century tailor. No two people have exactly the same language.”

Roger Halsted, the mathematics teacher, said with the slight hesitation that was almost a stammer but never quite, “There’s enough overlap so that it doesn’t really matter, does it?”

“Most of us can understand each other, yes,” said Rubin querulously, “but there’s less overlap than there ought to be. Every small segment of the culture develops its own vocabulary for the sake of forming an in-group. There are a million verbal walls behind which fools cower, and it does more to create ill feeling—”

“That was Shaw’s thesis in *Pygmalion*,” growled Trumbull.

“No! You’re quite wrong, Tom. Shaw thought it was the result of faulty education. I say it’s *deliberate* and that this does more to create the proper atmosphere for world collapse than war does.” And he tackled his roast beef with a fierce cut of his knife.

“Only Manny could go from unionized to the destruction of civilization in a dozen sentences,” said Gonzalo philosophically, and passed his sketch to Henry for delivery to Puntsch.

Puntsch smiled a little shakily at it, for it emphasized his ears more than a purist might have thought consistent with good looks. Henry put it on the wall with the others.

It was perhaps inevitable that the discussion veer from the iniquities of private language to word puzzles and Halsted achieved a certain degree of silence over the dessert by demanding to know the English word whose pronunciation changed when it was capitalized. Then, when all had given up, Halsted said slowly, “I would say that ‘polish’ becomes ‘Polish,’ right?”

Avalon frowned portentously, his luxuriant eyebrows hunching over his eyes. “At least that isn’t as offensive as the usual Polish jokes I can’t avoid hearing sometimes.”

Drake said, his small gray mustache twitching, “We’ll try something a little more complicated after the coffee.”

Avalon darted a suspicious glance in the direction of Puntsch and, with a look of melancholy on his face, watched Henry pour the coffee.

Henry said, “Brandy, sir?”

Puntsch looked up and said, “Why, yes, thank you. That was a very good meal, waiter.”

“I am glad you think so,” said Henry. “The Black Widowers are a special concern to this establishment.”

Drake was striking his water glass with a spoon.

He said, trying to elevate his always fuzzily hoarse voice, “I’ve got Sam Puntsch here partly because he worked for the same firm I work for out in New Jersey, though not in the same division. He doesn’t know a damn thing about organic chemistry; I know that because I heard him discuss the subject once. On the other hand, he’s a pretty fair-to-middling physicist, I’m told. I’ve also got him here partly because he’s got a problem and I told him to come down and entertain us with it, and I hope, Jeff, that you have no objections.”

Geoffrey Avalon twirled his brandy glass gently between two fingers and said grimly, “There are no bylaws to this organization, Jim, so I’ll go along with you and try to enjoy myself. But I must say I would like to relax on these evenings; though perhaps it’s just the old brain calcifying.”

“Well, don’t worry, we’ll let Tom be griller in chief.”

Puntsch said, “If Mr. Avalon—”

Drake said at once, “Pay no attention to Mr. Avalon.”

And Avalon himself said, “Oh, it’s all right, Dr. Puntsch. The group is kind

enough to let me pout on occasion.”

Trumbull scowled and said, “Will you all let me get on with it? Dr. Puntsch—how do you justify your existence?”

“Justify it? I suppose you could say that trying to have our civilization last for longer than a generation is a sort of justification.”

“What does this trying consist of?”

“An attempt to find a permanent, safe, and non-polluting energy source.”

“What kind?”

“Fusion energy.—Are you going to ask me the details?”

Trumbull shook his head. “No, unless they’re germane to the problem that’s disturbing you.”

“Only very tangentially; which is good.” Puntsch’s voice was reedy, and his words were meticulously pronounced as though he had at one time had ambitions to become a radio announcer. He said, “Actually, Mr. Rubin’s point was a rather good one earlier in the evening. We all do have our private language, sometimes more so than is necessary, and I would not welcome the chance to have to go into great detail on the matter of fusion.”

Gonzalo, who was wearing a costume in various complementing tones of red, and who dominated the table visually even more than was usually true, muttered, “I wish people would stop saying that Rubin is right.”

“You want them to lie?” demanded Rubin, head thrown up at once and his sparse beard bristling.

“Shut up, you two,” shouted Trumbull. “Dr. Puntsch, let me tell you what I know about fusion energy and you stop me if I’m too far off base.—It’s a kind of nuclear energy produced when you force small atoms to combine into larger ones. You use heavy hydrogen out of the ocean, fuse it to helium, and produce energy that will last us for many millions of years.”

“Yes, it’s roughly as you say.”

“But we don’t have it yet, do we?”

“No, as of today, we don’t have it.”

“Why not, Doctor?”

“Ah, Mr. Trumbull, I take it you don’t want a two-hour lecture.”

“No, sir, how about a two-minute lecture?”

Puntsch laughed. “About two minutes is all anyone will sit still for. The trouble is we have to heat up our fuel to a minimum temperature of forty-five million degrees Centigrade, which is about eighty million Fahrenheit. Then we have to keep the fusion fuel—heavy hydrogen, as you say, plus tritium, which is a particularly heavy variety—at that temperature long enough for it to catch fire, so to speak, and we must keep it all in place with strong magnetic fields while this is happening.

“So far, we can’t get the necessary temperature produced quickly enough, or hold the magnetic field in being long enough, for the fusion fuel to ignite. Delivering energy by laser may be another bet, but we need stronger lasers than we have so far, or stronger and better-designed magnetic fields than we now have. Once we manage it and do ignite the fuel, that will be an important breakthrough, but God knows there will remain plenty of engineering problems to solve before we can actually begin to run the Earth by fusion energy.”

Trumbull said, “When do you think we’ll get to that first breakthrough; when do you think we’ll have ignition?”

“It’s hard to say. American and Soviet physicists have been inching forward toward it for a quarter of a century. I think they’ve almost reached it. Five years more maybe. But there are imponderables. A lucky intuition might bring it this year. Unforeseen difficulties may carry us into the twenty-first century.”

Halsted broke in. “Can we wait till the twenty-first century?”

“Wait?” said Puntsch.

“You say you are trying to have civilization last more than a generation. That sounds as though you don’t think we can wait for the twenty-first century.”

“I see. I wish I could be optimistic on this point, sir,” said Puntsch gravely, “but I can’t. At the rate we’re going, our petroleum will be pretty much used up by 2000. Going back to coal will present us with a lot of problems and leaning on breeder fission reactors will involve the getting rid of enormous quantities of radioactive wastes. I would certainly feel uncomfortable if we don’t end up with working fusion reactors by, say, 2010.”

“*Après moi, le déluge,*” said Avalon.

Puntsch said with a trace of acerbity, “The deluge may well come after your time, Mr. Avalon. Do you have any children?”

Avalon, who had two children and several grandchildren, looked uncomfortable and said, “But fusion energy may stave off the deluge and I take it your feelings about the arrival of fusion are optimistic.”

“Yes, there I tend to be optimistic.”

Trumbull said, “Well, let’s get on with it. You’re working at Jim Drake’s firm. I always thought of that as one of these drug supply houses.”

“It’s a hell of a lot more than that,” said Drake, looking dolefully at what was left of a cigarette package as though wondering whether he ought to set fire to another one or rest for ten minutes.

Puntsch said, “Jim works in the organic chemistry section. I work on plasma physics.”

Rubin said, “I was down there once, visiting Jim, and took a tour of the plant. I didn’t see any Tokamaks.”

“What’s a Tokamak?” asked Gonzalo at once.

Puntsch said, “It’s a device within which stable magnetic fields—pretty stable anyway—can be set up to confine the super-hot gas. No, we don’t have any. We’re not doing anything of the sort. We’re more or less at the theoretical end of it. When we think up something that looks hopeful, we have arrangements with some of the large installations that will allow it to be tried out.”

Gonzalo said, “What’s in it for the firm?”

“We’re allowed to do some basic research. There’s always use for it. The firm produces fluorescent tubes of various sorts and anything we find about the behavior of hot gases—plasma, it’s called—and magnetic fields may always help in the production of cheaper and better fluorescents. That’s the practical justification of our work.”

Trumbull said, “And have you come up with anything that looks hopeful?—In fusion, I mean, not in fluorescents.”

Puntsch began a smile and let it wipe off slowly. “That’s exactly it. I don’t know.”

Halsted placed his hand on the pink area of baldness in the forepart of his skull and said, “Is that the problem you’ve brought us?”

“Yes,” said Puntsch.

“Well, then, Doctor, suppose you tell us about it.”

Puntsch cleared his throat and pursed his lips for a moment, looking about at the men at the banquet table and leaning to one side in order to allow Henry to refill his coffee cup.

“Jim Drake,” he said, “has explained that everything said in this room is confidential; that everyone”—his eye rested briefly on Henry—“is to be trusted. I’ll speak freely, then. I have a colleague working at the firm. His name is Matthew Revsof and Drake knows him.”

Drake nodded. “Met him at your house once.”

Puntsch said, “Revsof is halfway between brilliance and madness, which is sometimes a good thing for a theoretical physicist. It means, though, that he’s erratic and difficult to deal with at times. We’ve been good friends, mostly because our wives have gotten along together particularly well. It became one of those family things where the children on both sides use us almost interchangeably as parents, since we have houses in the same street.

“Revsof is now in the hospital. He’s been there two months. I’ll have to explain that it’s a mental hospital and that he had a violent episode which put him into it and there’s no point in going into the details of that. However, the hospital is in no hurry to let him go and that creates a problem.

“I went to visit him about a week after he had been hospitalized. He seemed perfectly normal, perfectly cheerful; I brought him up to date on some of the work going on in the department and he had no trouble following me. But then he wanted to speak to me privately. He insisted the nurse leave and that the door be closed.

“He swore me to secrecy and told me he knew exactly how to design a Tokamak in such a way as to produce a totally stable magnetic field that would contain a plasma of moderate densities indefinitely. He said something like this, ‘I worked it out last month. That’s why I’ve been put here. Naturally, the Soviets arranged it. The material is in my home safe; the diagrams, the theoretical analysis, everything.’”

Rubin, who had been listening with an indignant frown, interrupted. “Is that possible? Is he the kind of man who could do that? Was the work at the stage where such an advance—”

Puntsch smiled wearily. “How can I answer that? The history of science is full of revolutionary advances that required small insights that anyone might have had, but that, in fact, only one person did. I’ll tell you this, though. When someone in a mental hospital tells you that he has something that has been eluding the cleverest physicists in the world for nearly thirty years, and that the Russians are after him, you don’t have a very great tendency to believe it. All I tried to do was soothe him.

“But my efforts to do that just excited him. He told me he planned to have the credit for it; he wasn’t going to have anyone stealing priority while he was in the hospital. I was to stand guard over the home safe and make sure that no one broke in. He was sure that Russian spies would try to arrange a break-in and he kept saying over and over again that I was the only one he could trust and as soon as he got out of the hospital he would announce the discovery and prepare a paper so that he could safeguard his priority. He said he would allow me coauthorship. Naturally, I agreed to everything just to keep him quiet and got the nurse back in as soon as I could.”

Halsted said, “American and Soviet scientists are co-operating in fusion research,

aren't they?"

"Yes, of course," said Puntsch. "The Tokamak itself is of Soviet origin. The business of Russian spies is just Revsof's overheated fantasy."

Rubin said, "Have you visited him since?"

"Quite a few times. He sticks to his story.—It bothers me. I don't believe him. I think he's mad. And yet something inside me says: What if he isn't? What if there's something in his home safe that the whole world would give its collective eyeteeth for?"

Halsted said, "When he gets out—"

Puntsch said, "It's not that easy. Any delay is risky. This is a field in which many minds are eagerly busy. On any particular day, someone else may make Revsof's discovery—assuming that Revsof has really made one—and he will then lose priority and credit, and a Nobel Prize for all I know. And, to take the broader view, the firm will lose a considerable amount of reflected credit and the chance at a substantial increase in its prosperity. Every employee of the firm will lose the chance of benefiting from what general prosperity increase the firm might have experienced. So you see, gentlemen, I have a personal stake in this, and so has Jim Drake, for that matter.

"But even beyond that—The world is in a race that it may not win. Even if we do get the answer to a stable magnetic field, there will be a great deal of engineering to work through, as I said before, and, at the very best, it will be years before fusion energy is really available to the world—years we might not be able to afford. In that case, it isn't safe to lose any time at all waiting for Revsof to get out."

Gonzalo said, "If he's getting out soon—"

"But he isn't. That's the worst of it," said Puntsch. "He may never come out. He's deteriorating."

Avalon said in his deep, solemn voice, "I take it, sir, that you have explained the advantages of prompt action to your friend."

"That I have," said Puntsch. "I've explained it as carefully as I could. I said we would open the safe before legal witnesses, and bring everything to him for his personal signature. We would leave the originals and take copies. I explained what he himself might possibly lose by delay.—All that happened was that he—well, in the end he attacked me. I've been asked not to visit him again till further notice."

Gonzalo said, "What about his wife? Does she know anything about this? You said she was a good friend of your wife's."

"So she is. She's a wonderful girl and she understands perfectly the difficulty of the situation. She agrees that the safe should be opened."

"Has she talked to her husband?" asked Gonzalo.

Puntsch hesitated. "Well, no. She hasn't been allowed to see him. He—he—This is ridiculous but I can't help it. He claims Barbara, his wife, is in the pay of the Soviet Union. Frankly, it was Barbara whom he—when he was put in the hospital—"

"All right," said Trumbull gruffly, "but can't you get Revsof declared incompetent and have the control of the safe transferred to his wife?"

"First, that's a complicated thing. Barbara would have to testify to a number of things she doesn't want to testify to. She—she loves the man."

Gonzalo said, "I don't want to sound ghoulish, but you said that Revsof was deteriorating. If he dies—"

"Deteriorating mentally, not physically. He's thirty-eight years old and could live

forty more years and be mad every day of it.”

“Eventually, won’t his wife be forced to request he be declared incompetent?”

Puntsch said, “But when will that be?—And all this still isn’t the problem I want to present. I had explained to Barbara exactly how I would go about it to protect Matt’s priority. I would open the safe and Barbara would initial and date every piece of paper in it. I would photocopy it all and give her a notarized statement to the effect that I had done this and that I acknowledged all that I removed to be Revsof’s work. The originals and the notarized statement would be returned to the safe and I would work with the copies.

“You see, she had told me at the very start that she had the combination. It was a matter of first overcoming my own feeling that I was betraying a trust, and secondly, overcoming her scruples. I didn’t like it but I felt I was serving a higher cause and in the end Barbara agreed. We decided that if Revsof was ever sane enough to come home, he would agree we had done the right thing. And his priority would be protected.”

Trumbull said, “I take it you opened the safe, then.”

“No,” said Puntsch, “I didn’t. I tried the combination Barbara gave me and it didn’t work. The safe is still closed.”

Halsted said, “You could blow it open.”

Puntsch said, “I can’t bring myself to do that. It’s one thing to be given the combination by the man’s wife. It’s another to—”

Halsted shook his head. “I mean, can’t Mrs. Revsof ask that it be blown open?”

Puntsch said, “I don’t think she would ask that. It would mean bringing in outsiders. It would be an act of violence against Revsof, in a way, and—Why doesn’t the combination work? That’s the problem.”

Trumbull put his hands on the table and leaned forward. “Dr. Puntsch, are you asking us to answer that question? To tell you how to use the combination you have?”

“More or less.”

“Do you have the combination with you?”

“You mean the actual slip of paper that has the combination written upon it? No. Barbara keeps that and I see her point. However, if you want it written down, that’s no problem. I remember it well enough.” He brought out a little notebook from his inner jacket pocket, tore off a sheet of paper, and wrote rapidly. “There it is!”

12R 27 15

Trumbull glanced at it solemnly, then passed the paper to Halsted on his left. It made the rounds and came back to him.

Trumbull folded his hands and stared solemnly at the bit of paper. He said, “How do you know this is the combination to the safe?”

“Barbara says it is.”

“Doesn’t it seem unlikely to you, Dr. Puntsch, that the man you described would leave the combination lying about? With the combination available, he might as well have an unlocked safe.—This row of symbols may have nothing to do with the safe.”

Puntsch sighed. “That’s not the way of it. It isn’t as though the safe ever had anything of intrinsic value in it. There’s nothing of great intrinsic value in Revsof’s

house altogether, or in mine, for that matter. We're not rich and we're not very subject to burglary. Revsof got the safe about five years ago and had it installed because he thought he might keep papers there. He had this fetish about losing priority even then, but it wasn't till recently that it reached the point of paranoia. He did make a note of the combination for his own use so he wouldn't lock himself out.

"Barbara came across it one day and asked what it was and he said that it was the combination to his safe. She said, 'Well, don't leave it lying around,' and she put it in a little envelope in one of her own drawers, feeling he might need it someday. He never did, apparently, and I'm sure he must have forgotten all about it. But she didn't forget, and she says she is certain it has never been disturbed."

Rubin said, "He might have had the combination changed."

"That would have meant a locksmith in the house. Barbara says she is certain it never happened."

Trumbull said, "Is that all there was written on the page? Just six numbers and a letter of the alphabet?"

"That's all."

"What about the back of the sheet?"

"Nothing."

Trumbull said, "You understand, Dr. Puntsch, this isn't a code, and I'm not expert on combination locks. What does the lock look like?"

"Very ordinary. I'm sure Revsof could not afford a really fancy safe. There's a circle with numbers around it from 1 to 30 and a knob with a little pointer in the middle. Barbara has seen Matt at the safe and there's no great shakes to it. He turns the knob and pulls it open."

"She's never done that herself?"

"No. She says she hasn't."

"She can't tell you why the safe doesn't open when you use the combination?"

"No, she can't.—And yet it seems straightforward enough. Most of the combination locks I've dealt with—all of them, in fact—have knobs that you turn first in one direction, then in the other, then back in the first direction again. It seems clear to me that, according to the combination, I should turn the knob to the right till the pointer is at twelve, then left to twenty-seven, then right again to fifteen."

Trumbull said thoughtfully, "I can't see that it could mean anything else either."

"But it doesn't work," said Puntsch. "I turned twelve, twenty-seven, fifteen a dozen times. I did it carefully, making sure that the little pointer was centered on each line. I tried making extra turns; you know, right to twelve, then left one full turn and then to twenty-seven, then right one full turn and then to fifteen. I tried making one full turn in one direction and not in the other. I tried other tricks, jiggling the knob, pressing it. I tried everything."

Gonzalo said, grinning, "Did you say 'Open sesame'?"

"It didn't occur to me to do so," said Puntsch, not grinning, "but if it had, I would have tried it. Barbara says she never noticed him do anything special, but of course, it could have been something unnoticeable and for that matter she didn't watch him closely. It wouldn't occur to her that she'd have to know someday."

Halsted said, "Let me look at that again." He stared at the combination solemnly. "This is only a copy, Dr. Puntsch. This can't be exactly the way it looked. It seems

clear here but you might be copying it just as you thought it was. Isn't it possible that some of the numbers in the original might be equivocal so that you might mistake a seven for a one, for instance?"

"No, no," said Puntsch, shaking his head vigorously. "There's no chance of a mistake there. I assure you."

"What about the spaces?" said Halsted. "Was it spaced exactly like that?"

Puntsch reached for the paper and looked at it again. "Oh, I see what you mean. No, as a matter of fact, there were no spaces. I put them in because that was how I thought of it. Actually the original is a solid line of symbols with no particular spacing. It doesn't matter, though, does it? You can't divide it any other way. I'll write it down for you without spaces." He wrote a second time under the first and shoved it across the table to Halsted.

12R2715

He said, "You can't divide it any other way. You can't have a 271 or a 715. The numbers don't go higher than thirty."

"Well now," muttered Halsted, "never mind the numbers. What about the letter R?" He licked his lips, obviously enjoying the clear atmosphere of suspense that had now centered upon him. "Suppose we divide the combination this way":

12 R27 15

He held it up for Puntsch to see, and then for the others. "In this division, it's the twenty-seven which would have the sign for 'right' so it's the two other numbers that turn left. In other words, the numbers are twelve, twenty-seven, and fifteen all right, but you turn left, right, left, instead of right, left, right."

Gonzalo protested. "Why put the R there?"

Halsted said, "All he needs is the minimum reminder. He knows what the combination is. If he reminds himself the middle number is right, he knows the other two are left."

Gonzalo said, "But that's no big deal. If he just puts down the three numbers, it's either left, right, left, or else it's right, left, right. If one doesn't work, he tries the other. Maybe the R stands for something else."

"I can't think what," said Puntsch gloomily.

Halsted said, "The symbol couldn't be something other than an R, could it, Dr. Puntsch?"

"Absolutely not," said Puntsch. "I'll admit I didn't think of associating the R with the second number, but that doesn't matter anyway. When the combination wouldn't work right, left, right, I was desperate enough not only to try it left, right, left; but right, right, right and left, go left, left. In every case I tried it with and without complete turns in between. Nothing worked."

Gonzalo said, "Why not try all the combinations? There can only be so many."

Rubin said, "Figure out how many, Mario. The first number can be anything from one to thirty in either direction; so can the second; so can the third. The total number of possible combinations, if any direction is allowed for any number, is sixty times sixty times sixty, or over two hundred thousand."

"I think I'll blow it open before it comes to trying them all," said Puntsch in clear disgust.

Trumbull turned to Henry, who had been standing at the sideboard, an intent expression on his face. "Have you been following all this, Henry?"

Henry said, "Yes, sir, but I haven't actually seen the figures."

Trumbull said, "Do you mind, Dr. Puntsch? He's the best man here, actually." He handed over the slip with the three numbers written in three different ways.

Henry studied them gravely and shook his head. "I'm sorry. I had had a thought, but I see I'm wrong."

"What was the thought?" asked Trumbull.

"It had occurred to me that the letter R might have been in the small form. I see it's a capital."

Puntsch looked astonished. "Wait, wait. Henry, does it matter?"

"It might, sir. We don't often think it does, but Mr. Halsted explained earlier in the evening that 'polish' becomes 'Polish,' changing pronunciation simply because of a capitalization."

Puntsch said slowly, "But, you know, it is a small letter in the original. It never occurred to me to produce it that way. I always use capitals when I print. How odd."

There was a faint smile on Henry's face. He said, "Would you write the combination with a small letter, sir?"

Puntsch, flushing slightly, wrote:

12r2715

Henry looked at it and said, "As long as it is a small *r* after all, I can ask a further question. Are there any other differences between this and the original?"

"No," said Puntsch. Then, defensively, "No significant differences of any kind. The matter of the spacing and the capitalization hasn't changed anything, has it? Of course, the original isn't in my handwriting."

Henry said quietly, "Is it in anyone's handwriting, sir?"

"What?"

"I mean, is the original typewritten, Dr. Puntsch?"

Dr. Puntsch's flush deepened. "Yes, now that you ask, it was typewritten. That doesn't mean anything either. If there were a typewriter here I would typewrite it for you, though, of course, it might not be the same make of typewriter that typed out the original."

Henry said, "There is a typewriter in the office on this floor. Would you care to type it, Dr. Puntsch?"

"Certainly," said Puntsch defiantly. He was back in two minutes, during which time not one word was said by anyone at the table. He presented the paper to Henry, with the typewritten series of numbers under the four lines of handwritten ones:

12r2715

Henry said, "Is this the way it looked now? The typewriter that did the original did not have a particularly unusual typeface?"

"No, it didn't. What I have typed looks just like the original."

Henry passed the paper to Trumbull, who looked at it and passed it on.

Henry said, "If you open the safe, you are very likely to find nothing of

importance, I suppose.”

“I suppose it too,” snapped Puntsch. “I’m almost sure of it. It will be disappointing but much better than standing here wondering.”

“In that case, sir,” said Henry, “I would like to say that Mr. Rubin spoke of private languages early in the evening. The typewriter has a private language too. The standard typewriter uses the same symbol for the numeral one and the small form of the twelfth letter of the alphabet.

“If you had wanted to abbreviate ‘left’ and ‘right’ by the initial letters in handwriting, there would have been no problem, since neither form of the handwritten letter is confusing. If you had used a typewriter and abbreviated it in capitals it would have been clear. Using small letters, it is possible to read the combination as 12 right, 27, 15; or possibly 12, right 27, 15; or as left 2, right 27, left 5. The 1 in 12 and 15 is not the numeral 1 but the small version of the letter L and stands for left. Revsof knew what he was typing and it didn’t confuse him. It could confuse others.”

Puntsch looked at the symbols openmouthed. “How did I miss that?”

Henry said, “You spoke, earlier, of insights that anyone might make, but that only one actually does. It was Mr. Gonzalo who had the key.”

“I?” said Gonzalo strenuously.

“Mr. Gonzalo wondered why there should be one letter,” said Henry, “and it seemed to me he was right. Dr. Revsof would surely indicate the directions for all, or for none. Since one letter was indubitably present, I wondered if the other two might not be also.”