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NOISE LEVEL

The problem handed them was a nice, simple, clear-cut item: They saw that one man had done the impossible—and they saw, too, that they had to duplicate his feat.

BY RAYMOND F. JONES

Illustrated by von Dongen



Dr. Martin Nagle studied the paint on the ceiling of the outer anteroom of the Office of National Research. After ten minutes he was fairly certain which corner had been painted first, the direction of advance across the ceiling, and approximately how long it had taken.

It was a new building and a new paint job, but these facts were evident in the brush marks and brush hairs left in the paint. On the whole, the job was something of an indication of how things were in general, he thought somewhat sadly.

He studied the rug. Specifications should have been higher. The manufacturer undoubtedly operated on the principle of "don't throw away seconds; you can always sell them to the Government."

His watch showed twenty-five minutes spent in the study of the anteroom. It was all he was going to give it. He picked up his briefcase and top coat and moved toward the door.

He almost collided with a gray-suited figure, then backed away in pleasant recognition.

"Berk!"

The face of Dr. Kenneth Berkeley lighted as he gripped Martin Nagle's free hand and clapped him on the shoulder.

"What are you doing out here in this waiting room, Mart?"

"I got invited to some conference

with all the top dogs and high brass, but the boys in blue wouldn't let me in. I was just on the way back to California. But you're one of the last I expected to meet here. What are you doing, Berk?"

"I work in ONR. I'm on this conference myself. They sent me out to look for you. Everybody else has arrived."

"I saw the parade from here. Dykstra of MIT, Collins of Harvard, and Mellon from Cal Tech. A high-powered bunch."

"It is. And they're all waiting on you! Come on. We'll talk later."

Mart jerked a thumb towards the office opening off the anteroom. "The boys in there seem to have doubts as to whether I can be trusted not to pass things on to the Comrades. I can't wait around. It'll probably take six weeks to clear me. I thought all that would have been taken care of. Evidently it wasn't. Give my regards to everybody, and tell Keyes I'm sorry I hadn't been cleared for classified projects. I guess he didn't know it."

"No, wait—this is absolutely silly," said Berk. "We've got to have you in there. Sit down and we'll have this thing cleared in five minutes!"

Mart sat down again. He had never worked on any classified projects. The fingerprinting and sleuthing into the past of his colleagues had always seemed distasteful to him. He knew Berk didn't have a chance now. He'd

seen more than one good man twiddle his thumbs for six months to a year while his dark past was unearthed.

Rising voices from the inner office of the FBI agent became audible. Mart caught snatches of Berk's baritone roar. "Utterly ridiculous . . . top drawer physicist . . . electro fields . . . got to have this man—"

After the FBI office there were still the offices of Military Intelligence and Naval Intelligence to hurdle. It was a fantastic triple barrier they had woven about this conference. On coming in he had chuckled at this further evidence of frantic bureaucrats to button up the secrets of nature which lay visible to the whole world.

In a moment Berk came striding out, red-faced and indignant. "You stay right there, Mart," he said furiously. "I'm going to get Keyes on this thing, and we'll find out who's got a right to get into this place besides the janitor!"

"Look, Berk—I don't mind. I don't think you ought to bother Keyes with this—"

"I'll be right back. This thing has gone too far."

Mart felt rather foolish. It was not his fault he couldn't get by the security officers, but that failure induced a faint sense of guilt.

Berk returned within minutes. With him were two men in uniform, a brigadier general, and a naval captain. With them was Dr. Keyes,

Director of ONR. Martin knew him only by reputation—which was very top-drawer indeed. Keyes approached with a direct friendly smile and offered his hand.

"I'm very sorry, Dr. Nagle, regarding this delay. I had no idea that you would be stopped at the security desk. I issued instructions in plenty of time for the conference that everyone invited be properly cleared. Somehow this formality was overlooked in your case. But I am sure that we shall be able to make satisfactory emergency arrangements within a few moments. If you will wait here while I confer with all these gentlemen—"

They closed the door of the inner office, but Mart could not help straining his ears at the rumble of sounds that filtered through. He caught a phrase in a voice that belonged to one of the security officers: ". . . Demanded these triple security screens yourself—"

And another from Keyes: ". . . The one man who may be able to crack this thing for us—"

Mart had come reluctantly. His wife had protested, and the two children had set up a tremendous wail that it might mean no summer vacation at all.

He rather wished he had heeded their protests. The moment a man became involved in something so classified it required triple passes from the Army, Navy, and FBI and

he could say good-by to freedom. He wondered how Keyes had become involved in such a circuitous business. Keyes had done monumental work on electromagnetic radiation.

And he wondered, too, what Kenneth Berkeley was doing here. It was way out of his field. Berk was a top psychologist in the mechanics of learning, and experimental training procedures.

It looked to Mart as if both of them were wasting their time in security clearance wrangles.

He was not particularly intrigued by the possible magnitude of the problem under consideration. A man sitting by a mountain stream under an open summer sky had the most ponderous problems of nature before him if he chose to consider them. None couched in hush-hush terms behind closed lab doors could have any greater import.

At last the door opened. Mart arose. Dr. Keyes led the procession out of the room. All of the men were a little more strained in their expressions than when they went in, but Keyes took Mart's arm.

"It's all right. You have full clearance now. Your papers will be issued and ready when you come out. But let's get to the conference at once. We've kept the others waiting."

As Mart stepped inside the conference room he caught his breath involuntarily. Besides the brilliant

array of his colleagues in fields closely allied to his own, there was a display of gold splashed uniforms of all military services. He had quick recognition of several lieutenant generals, vice admirals, and at least one member of the JCS.

Berk ushered him to a seat in the front row. He felt doubly guilty that these men had been kept waiting, although it was no direct fault of his.

At the front of the room a projection screen was unrolled on the wall. A sixteen mm. projector was set up near the rear. On a table on the far side a tarpaulin covered some kind of irregular object.

Keyes stepped to the front of the room and cleared his throat briefly.

"We will dispense with the formality of introducing each of you gentlemen. Many of you are acquainted, professionally or personally, and I trust that all will be before this project is many hours old.

"The top classification nature of the material we are about to discuss has been emphasized to you by the triple filter of security officers who have passed upon your admission to this room. That which is discussed here you will properly regard as worthy of protection with your own life, if such an extreme consideration should be forced upon you at some future time."

The military members of the audience remained immobile, but Martin Nagle observed an uneasy shifting

among his fellow scientists. All of them were to some degree uncomfortable in the presence of the military assumption that you could lock up the secrets of nature when they lay all about like shells upon the seashore.

But Keyes wasn't a military man. Mart felt his muscles become a little more rigid as the significance of this penetrated.

"Ten days ago," said Keyes very slowly, "we were approached by a young man, an inventor of sorts, who claimed to have produced a remarkable and revolutionary invention.

"His name was Leon Dunning. He had an unusual regard for his own abilities, and expected, apparently, that everyone else would have the same regard on sight. This trait led him to a rather unpleasant presentation of himself. He would talk with no one but the Director of the Office, and made such a nuisance that it became a question of seeing him or calling the police.

"His case was drawn to my attention, and I finally chose to see him. He had some rather startling claims. He claimed to have solved the problem of producing an antigravity machine."

Martin Nagle felt a sudden sinking sensation within him—and an impulse to laugh. For this he had canceled the kids' summer vacation! Maybe it wasn't too late to get back—

He glanced at his colleagues. Dykstra was bending over and rub-

bing his forehead to hide the smile that appeared on his lips. Lee and Norcross gave each other smiles of pitying indulgence. Berkeley, Mart noted, was almost the only scientist who did not move or smile. But, of course, Berk was a psychologist.

"I see that some of you gentlemen are amused," continued Keyes. "So was I. I wondered what was the best means of getting rid of this obnoxious crackpot who had forced his way into my office. Again, it was a question of listening until the ridiculousness of his claims became self-evident, or having him thrown out. I listened.

"I tried to draw him out regarding the theories upon which his device operated, but he refused to discuss this in detail. He insisted such discussion could be held only after a demonstration of his device.

"With a free Saturday afternoon that week, I agreed to watch. Dunning insisted that certain military personnel also be invited and that films and tape recording equipment be available. Having gone as far as I had, I agreed also to this and rounded up some of the gentlemen who are with us this afternoon.

"He wanted no other kind of publicity, and so we arranged to meet at the small private airfield at the Dover club. That was just one week ago today. He demonstrated.

"A small pack was attached to his shoulders by straps. I assisted him in putting it on. It weighed perhaps

thirty-five or forty pounds. It had no visible means of propulsion such as propeller or jets, and no connection to an external power source. Seeing it, I felt extremely ridiculous for having invited my military guests to such a futile performance.

"We stood in a circle about ten feet in diameter around him. When the pack was fastened, he gave us a kind of pitying smile, it seemed, and pressed a switch at his belt.

"Instantly, he rose straight up into the air in a smoothly accelerated climb. We spread apart to watch him. At about five hundred feet, he came to a stop and hung motionless for a moment. Then he dropped back down to the center of the circle."

Keyes paused. "I see a variety of expressions on your faces. I presume some of you consider us who observed it as victims of hallucinations or out and out liars. We agreed afterwards that it was very fortunate that Dunning insisted on motion pictures of the demonstration. These we have for your inspection. If you will, please—"

He signaled to his assistants. The shades were drawn and the projector at the rear started with a whirr. Mart found himself leaning forward, his hand clutching the desk arm of the chair. This was something he didn't even *want* to believe, he thought!

On the screen there appeared a scene of the encircling men. In the center, Dunning appeared to be in his

late twenties. Mart could detect at once the type that Keyes had described—a snotty young jerk who knew he was good and figured others better catch on to that real fast. Mart knew the type. You run in to them in senior engineering classes in every school in the country.

He watched the circle back from Dunning. There was a clear shot of the alleged inventor standing with the weird pack on his back. He fumbled a moment with the key switch at his belt, then rose abruptly from the ground.

Mart stared. The picture panned up jerkily as the operator evidently retreated for a longer range view. He watched closely for any sign of emanation from the pack. He had to remind himself of the foolishness of looking for such. There was certainly no type of jet that could operate this way.

But antigravity—Mart caught a feeling that was a cross between a prickle and a chill moving slowly along the upper length of his spine.

The motion on the screen came to a halt. Then slowly Dunning lowered himself to the middle of the circle once more.

The screen went dark, and lights flashed on in the room. Mart jerked, as if waking from a hypnotic spell.

"We paused at this point," said Keyes. "Dunning became more talkative and discussed somewhat the basic theories of his machine. For this we used the tape recorder he had

insisted on bringing along.

"Unfortunately, the record is so poor due to high noise level and distortion that it is next to unintelligible, but we will play it for you in a moment.

"Following the discussion, he agreed to make another demonstration showing an additional factor, horizontal flight control. We'll have the movie of this, now."

He touched the light button. The scene appeared once more. This time the circle opened at one side and Dunning rose in a rather steep arc and leveled off. Against the background, he seemed about as high as the roof of the hangar beyond. For about a hundred feet he drifted slowly, then accelerated his pace. Mart felt a wholly irrational impulse to laugh. It was Buck Rogers in full attack.

Abruptly the screen flared. A puff of light exploded from the pack on Dunning's back. For a terrible moment he seemed suspended in an attitude of violent agony. Then he plunged like a dropped stone.

The camera lost him for an instant, but it caught the full impact of his body on the field. During the fall, he turned over. The pack was beneath him as he crashed. His body bounced and rolled a short way and lay still.

Keyes moved to the light switch, and signaled for the raising of the shades. Someone rose to do this. No one else moved. The room seemed

caught in a suspension of time.

"There you have it, gentlemen," said Keyes in a quiet voice. "You will begin to understand why you were called here today. Dunning had it—antigravity. Of that we are absolutely sure. And Dunning is dead."

He drew a corner of the canvas from the table by the far wall. "The remains of the device are here for your examination. So far, we see only burned and bloody wreckage in it. Under your supervision it will be carefully photographed and dismantled."

He dropped the cover and returned to the center of the platform. "We went immediately to Dunning's house with a crew of investigators from ONR assisted by security officers of the services.

"Dunning's quite evident paranoia was carried out in an utter lack of notes. He must have lived in constant fear that his work would be stolen. His laboratory was excellent for a private worker. What his income was we don't know as yet.

"He also had an astonishing library—astonishing in that it covered not only the sciences, but almost every occult field as well. This, too, remains somewhat of a mystery.

"We investigated his college background. He appears to have had difficulty in getting along at any one college, and attended at least four. His curriculum was as varied as his library. He studied courses in electri-

cal engineering, comparative religion, advanced astronomy, Latin, the theory of groups, general semantics and advanced comparative anatomy.

"We managed to contact about twenty of his instructors and fellow students. Their uniform opinions describe him as paranoid. He was utterly without intimates of any kind. If he communicated his theories to anyone, we do not know about it.

"So the only record we have of the expressions of the man who first devised an antigravity machine is this poor quality tape."

He nodded again to the operator at the rear of the room. The latter turned on the recorder whose output was fed to a speaker on the table in front.

At once the room was filled with a hissing, roaring garble. The sound of planes taking off—the everyday noise of the airport. Beneath the racket was the dead man's voice, a thin, rather high-pitched sound carrying through the background noise a tone of condescension and impatient tolerance.

Mart listened with ears strained to make sense of the garble. His eyes caught Berk's and reflected his despair of ever getting anything out of the mess. Keyes signaled the operator.

"I see that you are impatient with this recording, gentlemen. Perhaps there is no purpose in playing it in this conference. But each of you will

be given a copy. In the privacy of your own laboratories you will have opportunity to make what you can of it. It is worth your study simply because, as far as we know, it contains the only clues we possess."

Mart raised a hand impatiently. "Dr. Keyes, you and the others at the demonstration heard the original discussion. Can't you give us more than is on the tape?"

Keyes smiled rather bitterly. "I wish that we could, Dr. Nagle. Unfortunately, at the time it seemed that the semantic noise in Dunning's explanation was as high as the engineering noise on the tape. We have however, filled in to the best of our recollection on the written transcript, which we will give you.

"This transcript gives what has been pieced together by phonetic experts who have analyzed the tape. Observers' additions are in parentheses. These were added only if all observers agreed independently, and may or may not be accurate. Is there any other question?"

There were, they all knew, but for the moment the impact seemed to have stifled the response of the whole audience. .

Keyes took a step forward. "I wonder if there is any one of you who underestimates the seriousness of this problem now. Is there anyone who does not understand that this secret must be regained at all cost?

"We know that within the field of

present knowledge there lies the knowledge necessary to conquer gravity—to take us beyond the Earth, to the stars, if we wish to go.

"We know that if one young American could do it, some young Russian could also. *We have to duplicate that work of Dunning's.*

"The full facilities of ONR are at your disposal. Access to Dunning's laboratory and library and the remains of his machine will be granted, of course. Each of you has been selected, out of all whom we might have called, because we believed you possess some special qualification for the task. You cannot fail.

"We will meet again this evening, gentlemen. I trust you understand now the necessity for absolute security on this project."

II.

A long time afterwards, Martin Nagle recalled that he must have been in a partial stupor when he left that conference room. He felt a vague and unpleasant sensation about his head as if it had been beaten repeatedly with a pillow.

He and Kenneth Berkeley went out together. They paused only long enough to make polite greetings to his fellow physicists whom he had not seen for a long time. But he was in a hurry to leave. To get rid of that feeling in his head.

In front of the ONR building he



stopped with his hands in his pockets and looked over the unpleasant gray of the city's buildings. He could close his eyes and still see a man rising straight up into the air—soaring at an angle—dropping like a plummet.

All at once he realized he hadn't even stopped to examine the remains of the instrument under the tarpaulin. He turned suddenly on Berkely.

"The psychology of this thing—is that where you're in on it, Berk?"

His companion nodded. "Keyes called me in when he wanted an investigation into Dunning's past. I'm staying, I guess."

"You know it's impossible, don't you?" said Mart. "Utterly and completely impossible! There's nothing in our basic science to explain this thing, let alone duplicate it."

"Impossible? Meaning what?"

"Meaning that I've got to . . . that everyone of us has got to shift gears, back up, retrace who knows how far—twenty years of learning—five hundred years of science? Where did we go off the track? Why was it left to a screwball like Dunning to hit it right?"

"He was an odd character," mused Berk. "Astrology, mysticism, levitation. There's quite a bit in the tape about levitation. That's not so far removed from the concept of anti-gravity at that, is it?"

Mart made a rough noise in his throat. "I expect to hear any moment that his first successful flight was

aboard a broomstick."

"Well, there's quite a bit of lore about broomsticks—also magic carpets and such. Makes you wonder how it all got started."

The shock was slow in wearing down. Martin returned to the hotel after the evening conference, which was spent mostly in examination of the wreckage.

It was as Keyes had said, hopeless. But there was an indefinable something about gazing upon the remains of what had been the realization of an impossible dream. Mart felt a kind of frantic yearning to reach out and touch that mass and convert it back to the instrument it had once been by sheer force of will. As if believing it possible would make it so.

And wasn't there some essence of truth in this, he thought? Dunning had believed it could be done and had done it. Reputable men in science didn't believe such things possible—

Now, in his hotel room, Mart sat on the edge of the bed looking out the window and across the night lights of the city. There were certain things you had to accept as impossible. The foundation of science was built upon the concept of the impossible as well as the possible.

Perpetual motion.

The alchemist's dream—as the alchemist dreamed it, anyway.

Antigravity—

All man's experience in attempting

to master nature showed these things could not be done. You had to set yourself some limitations. You had to let your work be bounded by certain Great Impossibles or you could spend a lifetime trying to solve the secret of invisibility or of walking through a brick wall.

Or trying to build a magic carpet.

He stood up and walked to the window. There had been growing all afternoon a sense of faint panic. And now he identified it. Where could you draw the line? It had to be drawn. He was sure of that.

It had been drawn once before, quite definitely. In the 1890s they had closed the books. Great minds believed then that science had encompassed the universe. All that was not known belonged to the Great Impossibles.

Then had come radium, the Roentgen tube, relativity, cosmic rays.

The line vanished. Where was it now? A few hours ago he would have said he could define it with fair accuracy. Tonight he did not know.

He went to bed. After an hour he got up and called Kenneth Berkeley. The clock said almost midnight. It didn't matter.

"Berk," he said into the phone. "Mart. I've just been thinking. The whole crowd will be going through Dunning's lab and his library. What's the chance of you getting me out there first thing in the morning? Just the two of us. I'd like to beat the

crowd."

"I think I can arrange it," said Berk. "Keyes wants each of you to work as you wish. I'll tell you more about that tomorrow. I'll call you as early as I can."

It rained during the night, and when Berk called for Mart in his car, the city was dismal with fog, lessening even further the reality surrounding them.

"Keyes wasn't much in favor of this," said Berk as they drove away from the hotel. "It's liable to make some of the others mad, but frankly, I'm sure he's convinced that you're the member of the class most likely to succeed."

Mart grunted. "Least likely, I'd say. I'm not sure that I'm convinced yet that Dunning didn't have some terrific joker in here somewhere."

"I know what you mean, but you will. It comes gradually. And easier for you. You're the youngest of the group. Keyes thinks some of the older men may spend all their time proving Dunning couldn't do it. How do you feel about that? Is that the way you're heading, or are you going to try to find out what Dunning did?"

"Anything a jerk like Dunning can do, Nagle can do double—once Nagle is convinced that Dunning did it."

Berk threw back his head and laughed. "Keyes will love you, boy. He's been afraid he wouldn't find a single top John in the country who

would really try."

Dunning's place was in the shabby, once fashionable sector of town where the owners of the gingerbread monsters were no longer able to meet the upkeep or sell them to anyone who was.

It had been learned that the house actually belonged to an uncle of Dunning, but so far he had not been located.

A guard was on duty at the front entrance. He nodded as Berk and Mart showed their passes.

"Dunning's laboratories and shops are on the first floor," said Berk. "Upstairs, is his library. He slept in one of the third floor bedrooms, but the rest are vacant. A lot of cooking seemed to have been done in the back kitchen. He left a well stocked larder. Where do you want to start?"

"A quick look through the labs to begin. I want to get the feel of the layout."

On the right of the entrance hallway, they came into a small but extremely well equipped chemistry laboratory. The place seemed well used, but immaculate. A complex fractionating setup was on the worktable.

"Almost the only piece of writing in the whole place was found on a small pad here," said Berk. "A bit of scratch work computation without any formulas or reactions."

Mart grunted and moved on to the adjacent room. Here was the more familiar hodgepodge of the electronic

experimenter, but even in this there was instantly apparent the mark of a careful workman. Breadboard layouts were assembled with optimum care. Test leads were carefully made of rubber covered or shielded wire and equipped with clips instead of being the usual random lengths of colored connecting wire hastily stripped and tied to a terminal.

A sizable bank of rack and panel mounted equipment was not recognizable at once as to function. It appeared to be a setup that might belong to any careful experimenter who had no regard for his bank account.

This would need further study, but Mart continued moving through to the next room, a machine shop, as well equipped for its functions as the previous rooms. A six-inch lathe, a large drill press, and a milling machine were the chief items.

Mart whistled softly as he stood in the middle of the room and looked back the way they had come.

"When I was a kid in high school," he said, "this is exactly the kind of a place I thought Heaven would be."

"And it had to belong to a person like Dunning, eh?" said Berk with a slow smile.

Mart turned sharply. His voice became low and serious. "Berk—whatever Dunning may have been, he was no jug-head. A paranoid, maybe, but not a jug-head. He could do things. Look at this."

He picked up a weird looking assembly from a nearby table and held it up in the light. It gleamed with a creamy sheen. A silver plated bit of high frequency plumbing.

"That's beautiful," said Mart. "There're not more than three or four university shops in the whole country that can turn out a piece like that. I've had to fight for weeks to get our machinists to come up with anything that complex and then it would be way out of tolerance."

He hefted the piece of plumbing lightly. He knew it was just right. It had the feel of being made right.

Berk led the way across the hall. He opened the door for Mart. There, against the walls of the room, were panels of a compact digital computer, and on the other side an analogue computer.

"But you haven't seen anything yet," said Berk. "The surprise of your life is upstairs."

Gravity was a force, Mart thought as he climbed the stairs. You only lick force with force—in the world of physics, at least. In politics and human relations, force might yield to something more subtle, but if Dunning had licked gravity it was with some other—and presently known—force. Physics was at least aware of every force that existed. There were no gaps except perhaps the one temporarily occupied by the elusive neutrino.

Dunning's machine was ingenious.

But it could be nothing but a clever application of well known laws and forces. There was no miracle, no magic in it. Having decided this on a slow, verbal basis, Mart felt somewhat more at ease. He followed Berk into the library.

There was not simply one room of it, but an entire suite had been converted and shelved. There were certainly several thousand volumes in the place.

"This is the one that may interest you most." Berk stepped into the nearest room on his left. "A is for Astrology," he said. He gestured toward a full section of shelving.

Mart scanned the titles: "Astrology for the Novice," "Astrology and the Infinite Destiny," "The Babylonian Way," "The Course of the Stars."

He hopefully pulled the latter volume from the shelf against the possibility it might be an astronomy text. It wasn't. He quickly put it back with its fellows.

"Well read, too," said Berk. "We examined quite a number and they have copious notations in Dunning's handwriting. This may be the one place we can find real clues to his thinking—in such marginal notes."

Mart waved a hand in violent rejection of the somber volumes and shoved his hands deep in his pockets. "Junk!" he muttered. "This has no bearing on Keyes' problem at all, of course. But it certainly ought to be a problem of interest to you."

"A guy would need two separate heads to hold an interest in the things downstairs and in this nonsense at the same time."

"But Dunning had only a single head," said Berk quietly. "Maybe it's all part of a whole that we don't see—and that Dunning did."

Mart pursed his lips and looked at the psychologist.

"I'm serious," said Berk. "My field is primarily the human mind, and only secondarily the subjects with which the mind deals. But we see in Dunning a single mind that can whip the matter of antigravity, that can hold an interest in the fields represented by the laboratories below, and can digest the material of this library.

"Now, actually, there is no true schizophrenia. In the skull of each of us is only a single individual, and anyone examined closely enough can be found to have a remarkably consistent goal, no matter how apparently erratic his activities.

"Perhaps much of the material Dunning found in both the library and in the laboratory proved redundant, but I would say that Dunning's genius apparently lay in his ability to extract relevant material from the redundant without categorically rejecting entire areas of human thought."

Mart smiled tolerantly and turned away. He found himself facing a section of shelves covered with works

on East Indian Philosophy. Six or eight feet of space was devoted to the subject of Levitation. Mart jabbed a finger at the titles.

"Anything those boys can do by hocus-pocus Nagle can do twice as fast by x's and y's and by making electrons jump through hoops."

"That's all Keyes wants. How soon can you deliver?"

III.

After lunch, they returned to ONR. Mart was assigned an office and given a copy of the Dunning tape. He put aside the prepared transcript, as Keyes had suggested, and prepared to listen, unbiased.

He turned on the recorder and winced at the garble of sound that blared forth again. With one hand on the volume control he rested his chin on his arm in front of the speaker and strained to hear through the noise the scarcely audible voice of Dunning.

Near the beginning, he caught the word "levitation" mentioned many times. There was a full phrase, "levitation which was first successfully demonstrated to the Western world by the English medium—." The buzz of a plane cut off the rest of it.

Mart rewound the tape and listened to that much of it again. At each mention of levitation an image flared up in Mart's mind. An image of a dirty, scrawny Indian fakir equipped with a filthy turban, a coil of rope

over one arm, and a basket with a snake in the other hand.

But Dunning had produced anti-gravity.

What semantic significance had *he* found in the word?

Mart growled to himself in irritation and let the tape run on. There was nothing more in those first few feet of it. He perked up his ears at a phrase "earth effect" separated by a garble from "distribution of sunspots unexplained to date by astronomers, and politely ignored by all experts—."

It struck a faint bell of recollection in Mart's mind. He scratched a note on a pad to check on it.

The sound dissolved again to hissing and roaring, through which the dead man seemed to taunt him. He gathered that much talk was on the subject of "planetary configurations—." Astrology. He groaned aloud and closed his eyes through a comparatively long stretch of audibility: "Magnetic storms on Earth predictable through movements of the planets in terms of quadrature—fields of data observed through thousands of years and do not fit explanations now accepted for other phenomena."

It shifted apparently, after many minutes, to comparative religion. "Galileo and Newton," Dunning said, "affected man's thinking more than they knew. They clipped from religion its miracles and from physics its imagination . . . of India there's more conquest of the physical uni-

verse than in a score of American research laboratories."

And that was the last of it. The tape fizzled out in a long garble of buzzing planes and faulty recording. Mart turned off the machine.

That was it. The mind and work of the first man to directly conquer gravity!

With an almost physical weariness he turned to the transcript and scanned through it. There was more, but it was astonishing how little additional information was actually added from the memories of the original observers. Mart supposed Dunning's words were such a shock to those military and scientific minds that they were stunned into semi-permanent amnesia in respect to the things he said.

He leaned back in the chair, summing up what he had heard. Dunning's thesis seemed to be that much sound data had been excluded by conventional scientists from standard theories. The dead man had believed much of this data could be found and explained in the various realms of astrology, East Indian mysticism, movements of sunspots, the levitation of mediums, and a host of other unorthodox areas.

Where was the thread of rational thought that could find its way through this? He closed his eyes again, trying to feel for a starting point.

There came a knock on the door, and a voice. "May I come in, Dr.

Nagle?"

It was Keyes. Mart rose and offered a chair. "I have just finished the tapes and transcription. There is very little to go on."

"Very little indeed," said Keyes. "When you were a youngster entering a contest for the first time you had a feeling for it. You know what I mean. It's in your throat and chest, and in your stomach. It goes all the way through your legs to your toes."

"It's the feeling of your entire organism—a feeling that you haven't got a chance to win—or that you are going to a quit yourself to the maximum ability within you, regardless of the strength of others. Do you understand me?"

Mart nodded.

"What kind of a feeling do you have about this, Dr. Nagle?"

Mart relaxed and leaned back with his eyes half closed. He understood Keyes. He had gone through the range of all possible feelings since yesterday afternoon. Which one of them had remained with him?

"I can do it," he said quietly to Keyes. "I could wish for more data, and I'm not wholly in sympathy with Dunning's approach. But I can examine the data he had, and re-examine the data I have. And I can do it."

"Good!" Keyes stood up. "That's what I came in to find out. And your answer is what I hoped to hear. You may expect that your reaction is not quite universal among your colleagues,

although I feel all will co-operate. But some of them will be licked before they start, because they will feel, and persist in feeling that the thing ought not to be."

Dr. Kenneth Berkeley had never ceased to wonder at the constitution of man. When he was very young he had wondered why some of his fellows believed in fairies, and others did not. He wondered why some could believe the moon was made of green cheese, and others were equally sure it could not be so.

He grew to wonder intensely just how man knew anything for sure, and that long road of wonder led to the present moment of his status as fellow in psychology at ONR.

He was grateful for the privilege of being on this project under the leadership of Dr. Keyes. Keyes appreciated more than any other physicist that he had known the importance of the fact that an individual is a man first and a scientist second—that there is no true objectivity in science. There is no divorcing the observer from the observed, and every scientific theory and law, no matter how conscientiously propounded and objectively proved is nevertheless coloured by the observer.

Berkeley was intrigued by the study of the physicists' reactions to the situation in which Dunning's discovery and death had placed them.

Martin Nagle had reacted approxi-

mately as Berkeley expected. They had known each other well during undergraduate days in college, drifting apart later as their professions diverged.

Through the day Berkeley conducted the rest of the scientists through the house. A number of them had made requests to go privately as Mart had done. Others went in groups of three or four. But by the end of the day all had visited the place except Professor Wilson Dykstra.

During the first day, Dykstra confined himself to a study of the tape and transcription. He did not present himself for a visit to the Dunning house until the following morning.

Berk called at his hotel. He kept the psychologist waiting fifteen minutes before he finally appeared through the revolving doors.

Dykstra was a small, round man in his late sixties, owlish in heavy framed glasses. His jutting lower lip seemed to signify his being perpetually on the defensive, as if he couldn't believe the world were really as he saw it. But Berk knew he was a great man in his own field. He had contributed much to the elucidation of Einstein's work in relation to gravity, which was the reason for his being invited to participate in the project.

The sky was threatening, and Dykstra clutched a black umbrella to his chest as he emerged from the hotel. Berk waited with the car door open.

"Good morning, Dr. Dykstra. It looks as if we'll be alone this morning. Everyone else took a visit to Dunning's yesterday."

Dykstra grunted and got in. "That's the way I wanted it. I spent a full day yesterday going over that ridiculous tape recording."

Berk moved the car out into the line of traffic. He had rather felt from the very first that the project could get along just as well without Dykstra.

"Were you able to derive anything at all from it?"

"I have reached no conclusion as yet, Dr. Berkeley. But when I do, I do not believe it is going to be that young Dunning was the unadulterated genius some of you people consider him. Surely you, a psychologist, can understand the type of mind that would produce such a mixture of unrelated and irrelevant, not to say mythological material!"

"There are many strange things about the human mind, which we do not know," said Berk. "One of the least understood is the point at which genius ends and nonsense begins."

"In physics the march is steadily upward! We have no doubt as to which way lies progress."

Berk let that one ride. A man who saw in the world such terrible simplicity might ultimately find Dunning's mystery completely transparent. He couldn't risk that possibility by arguing.



They drew up to the old mansion Dunning had occupied. Dykstra surveyed it from the car. "The kind of a place you would expect," he grunted.

It was difficult to estimate what was going on in the physicist's mind as he came into the laboratories.

In the first room he scanned the shelves of reagents. He took down a dozen bottles and examined their labels closely. Of some he removed the stoppers and sniffed cautiously, then replaced them all on the shelf in mild disdain.

He spent a long time examining the fractionating setup in the center of the room. He spotted the pad of

computations left there and drew an old envelope from his pocket and did some comparison scribbling.

In the electronics room he turned to look through the doorway. "Why would any man want two such laboratories as these?"

His inspection was much more thorough than that of any of the others, including Martin Nagle. Berk supposed that Mart and many of the others would be back, but Dykstra was going through with a fine toothed comb the first time.

He poked through the machine shop. "Well equipped," he muttered, "for a man who likes to tinker."

But he was highly impressed by the computer room. He examined the settings of the instruments and the chart papers. He opened every desk drawer and shuffled through the scattering of papers inside.

Red-faced, he turned to Berk. "This is absurd! Certainly there would be charts, papers, or something showing the man's calculations. These instruments are not here for show; they've obviously been used. Someone has removed the computational material from this room!"

"It's just as we found it," said Berk. "We don't understand it any better than you."

"I don't believe it," said Dykstra flatly.

The reaction of the physicist to the library was the thing Berk was most interested in. He let Dykstra look at will over the strange and exotic collection of volumes.

At first Dykstra reacted like a suddenly caged animal. He ran from the shelves of mythology, got a glance at the section on astrology, hurried from there to the books on faith-healing, and made a spiral turn that brought him up against the region of material on East Indian philosophy.

"What is this," he bellowed hoarsely, "a joke?"

The pudgy figure seemed to swell visibly with indignation.

"The next room would interest you most, perhaps," said Berk.

Dykstra almost ran through the

adjoining door as if escaping some devil with whom he had come face to face. Then, catching sight of the titles here, he began to breath easily and with an audible sighing of relief. He was among friends.

With an air of reverence, he took down a worn copy of Weyl's "Space Time Matter," and a reissue of the relativity papers.

"It isn't possible," he murmured, "that Dunning owned and understood both of these libraries."

"He understood and conquered gravity," said Berk. "And this is the place in which he did it. This is the last of the clues we have to show you."

Dykstra put the books carefully back on the shelves. "I don't like it." He glanced back to the other room as if it were a place of terror.

"There's something wrong," he murmured. "Antigravity! Whoever heard of such a thing? And how could it come out of a place like this?"

IV.

That afternoon, they met again in conference. There was agreement that they would tackle the problem. Only Professor Dykstra exhibited a continuing belligerence toward the affair, yet he made no move to withdraw.

Full co-operation of military facilities were pledged by the representatives of the services. The center of investigation was to be at ONR, however, with branching research

wherever needed.

No one had conceived even a tentative starting point which he cared to discuss with his colleagues. Most of them had spent the morning re-reading the relativity papers and staring at the ceiling of their respective offices. They agreed to work as loosely or as closely as the problem demanded. Until some working program could be initiated by some of them, it was decided to hold daily seminars to try to spark each other into creative thought.

A minor honor came to Mart in his election as chairman of the seminar. It gave him uneasiness because he was junior in age and profession to all of them. But his eminence in electro-fields made him a likely coordinator of the project.

Mart selected a representative sample from the occult section of Dunning's library and took it to his own office. He settled down amid an aura of astrology, spiritualism, mysticism, religion, sunspot data, and levitation. He had no specific purpose, only to expose his own mind to the atmosphere in which Dunning had operated. Dunning had found the goal. The tracks he walked in had to be located, no matter where they were picked up.

Some of the stuff was boring, much could be nothing but sheer delusion. Yet his dogged pursuit left him intrigued by some of the material.

The reports on poltergeist at

Leander Castle near London, for example. They were well reported. Independent cross references verified each other very well. The works on levitation were far more difficult to credit. There was a hodgepodge about purification of the body and the soul, of reaching assorted states of exaltation above the ordinary degree of mortal.

Yet levitation had occurred, according to reports of witnesses who might not be considered too unreliable.

And what did this have to do with religion—in which Dunning had had tremendous interest, to judge by the notations he made?

There were miracles in religion, Mart reflected.

Antigravity was a miracle.

Miracle: that which is considered impossible and which cannot be duplicated by the observers, even after it has been seen.

In scientific law there is a difference. It can be applied by anyone with sufficient IQ. But the worker of miracles does not come out of the laboratory or halls of learning.

He rises spontaneously out of the mountains or out of the wilderness, and gathers novices who seek with all their hearts to equal the Master. But they never do. Always there is a difference. The magic of miracles seems unteachable. It has its own spontaneous majesty, or is nothing but old-fashioned hoodwinking. There

seemed, to Mart, no in-between.

Antigravity.

Was it natural law, or miracle? Had Dunning found the bridge that made only a single category of the two? Or was he a performer of miracles, whose art could not be taught, but would arise spontaneously, full blown?

Mart slammed the books shut and pushed them to the rear of the desk. He pulled a scratch pad out of the drawer and began penciling furiously the basic Einstein equations.

By the end of the first week there was little to report. The daily seminars had been held, but outside of re-educating each other in the exotic concepts of the relativity world they had achieved nothing.

Or so it seemed to Mart. Keyes seemed quite pleased, however, and Berk mentioned that they should be congratulated on their progress. As if they had taken a major step forward in merely meeting and agreeing to undertake the project.

And maybe they had, Mart thought.

He found himself in difficulty as chairman of the seminar. Invariably, in such a group there is a member who undertakes to educate his colleagues anew in all the basic sciences. In this case, it was made doubly difficult because the self-appointed instructor was Professor Dykstra.

That he was capable of teaching them a good deal, there was no ques-

tion. But on the Saturday at the end of this first week he arose with a particularly triumphant expression and strode to the blackboard where he began scrawling his barely legible chicken marks.

"I have achieved the thing for which I have been looking, gentlemen," he said. "I am able to show that no such instrument as we have had described to us is possible without a violation of Dr. Einstein's postulate of equivalence. If we admit the correctness of this postulate—as we all do, of course—then you will see from Equation One that—"

Mart stared at—and through—the equations that Dykstra had scrawled. He listened with half an ear. It looked and sounded all right. But something had to be done about Dykstra.

Dykstra was wrong—even with his equations being right. Where was it, thought Mart. It was something you couldn't name or scarcely define. Maybe it was in the *feeling* that Keyes talked about, the feeling that goes all through you down to your toes. He knew what Dykstra's feeling was, all right. It touched him like the proximity of a thousand-ton refrigeration unit going full blast. Dykstra thought they were fools to be monkeying with this project, and remained with it only because he considered it his solemn duty to show them this irrefutable fact.

He was dragging the feet of the whole group. But in spite of him, all

the rest were pulling in the other direction, Mart knew. In this week, they had all achieved an acceptance of the validity of Dunning's accomplishment. And that, after all, *was* something of an achievement, he decided.

In Mart's vision, the equations on the board became surrounded by fuzzy signs of the Zodiac. Dykstra had completed his argument and Mart stood up.

"Since you have presented us with such elegant proof of your thesis, doctor," he said, "and since we have all become aware of the reality of Dunning's accomplishment, the only conclusion we can make is that the basic premise is at fault. I would say you have submitted very excellent reasons for doubting the validity of the postulate of equivalence!"

Dykstra stood a moment as if he could not believe his ears. He turned to his seat indecisively as if trying to make up his mind to ignore or answer the statement. Finally, he grew red and his body seemed to swell as he faced Mart.

"My dear Dr. Nagle, if there is anyone in this room who does not understand that the postulate of equivalence has been established beyond any possibility of refutation I would suggest that he resign from this project immediately!"

Mart restrained a grin, but warmed to his subject. He had no purpose but to needle Dykstra, and yet—

"Seriously, doctor—and I throw this out to all of you: What would happen if the postulate of equivalence were not true?"

"You've been as shocked as I by the items from Dunning's library, but I would like to ask: What is the significance of the postulate of equivalence in the accomplishment of the medium who is able to rise unsupported from a couch, in what is certainly a well authenticated instance of levitation?"

"Why is the literature of the East so full of material on levitation? I think Dunning asked that question and got some sensible answers. If the postulate of equivalence doesn't fit those answers, perhaps we had better re-examine the postulate. As a matter of fact, if we ever expect to duplicate Dunning's work, we will have to examine every postulate we've got that pertains in any way to gravity."

Professor Dykstra abandoned what he considered had become a disorderly argument. He resumed his seat with a grandiose appeal to the equations on the board.

Unexpectedly, Jennings, a thin dry man from Cal Tech took the floor.

"I agree wholeheartedly with Dr. Nagle," he said. "Something has been happening to me this past week. I see it in most of you, also, whether you are aware of it or not."

"By the age of forty the average research physicist seems to acquire an

intuitive ability to fend off anything that doesn't jibe with the Laws as he knows them.

"Then we become heads of departments while the younger fellows come along and assimilate the data that didn't fit in our generation, and get credited with the discoveries we have passed over.

"We seem to establish a sort of gateway in our minds, floodgates if you will, through which the mass of physical universe data flows. As we become older and more learned we adjust the setting of this gate to the point where nothing new can be trapped behind it. We cling to that which we had in our youth and abruptly we are creatures of history.

"I feel the experiences of the past week have jarred my mental floodgates on their very hinges. Once more, I feel able to accept and retain data which I have not encountered before. I think Dr. Nagle is right. We have to re-examine all we have learned to this point concerning gravity. If any factors of East Indian lore or spiritualism prove relevant, I do not think Physics will be shattered to its foundations if we assimilate such data.

"We cannot escape the fact that one man solved antigravity. Eight days ago not one of us would have admitted the possibility. Today we are charged with the responsibility of moving forward in time and catching up with it."

Mart was tired after that seminar. It became—a stormy affair. There seemed a kind of anger submerged not far below the surface of each of them. An anger at themselves for having been on the wrong track for so long, a kind of diffused rage at the whole physical universe for playing such tricks when asked a straightforward question.

More than one had balked at Mart's drastic suggestion. Sanders had said, ". . . and there can be no revision of the postulate of equivalence. Any data which indicates it automatically leaves the observer of that data suspect."

Mart called Kenneth Berkeley's office as soon as the seminar was ended.

"Hi, Berk," he said.

"Yeah—how's it coming? I've been wanting to get over your way the last couple of days. I haven't noticed any of you boys moving out into the machine shops yet. I suppose you are still in the paper-work stage."

"We haven't got *there*, yet," muttered Mart. "I have more important things than antigravity to discuss with you. How are you set up for a couple of days' fishing?"

"Fishing? I could probably make it. All work and no play and that sort of thing—I don't need to remind you, of course, of the need for top speed on this Project Levitation—"

"I'm going fishing," said Mart. "You coming along or not?"

"I'm coming. I can get the loan of a cabin on the best trout stream the other side of Fulton's Fish Market. When will you be ready?"

"I'll have to rent some gear. If you know a good place, I can be ready in an hour and we can pick it up on the way."

"I'll have to check my own gear, provided Judith hasn't thrown it out in the last three years since I used it. It's about a two hundred mile drive. We can make it by midnight."

Mart and Berk had done a good deal of fishing together one summer following their Junior year. They had spent much of that year and all of the summer settling the abstruse problems of the Universe with quite divergent results.

At the end of the summer Mart had been of the total conviction that life was wholly soluble in terms of the external world. If a man had something good and useful to do in shaping the world to his own dream, he would be a sane and happy man.

Berk had arrived at the opposite pole in the conviction that man's life lay within the thin shelter of his own skin. Now each of them had moved a good way towards the other's camp.

Mart thought of this as they drove through the night. He reminded Berk of it.

"If the world were as college Juniors see it, all our troubles would be over," said Berk. "There is probably no

time in a man's life when he is so completely of a single minded point of view."

"I don't know. There's Dykstra. He hasn't changed an opinion since he was a Junior. He's going to prove Dunning didn't have antigravity or bust. He knows it can't be done."

"How about the others?"

"This week has been a period of metamorphosis. They've changed. We're where we can do some work, now."

There was a caretaker on the property Berk had borrowed. He had things ready when the two men arrived. Mart determined to put everything connected with ONR out of his mind while he was there. He sat down and wrote a letter home, which helped in that direction.

In the morning he arose in the clear mountain air, and to the enormous song of birds in the pines beyond the house, and he felt that he had truly forgotten all else but this. The smell of bacon and eggs floated in from the kitchen as he met Berk outside the door.

"It's nice to know a psychologist who knows a millionaire. Could we have had breakfast in bed if we had ordered it?"

Berk laughed. "Not on your life. Wait till Joe gets you out in the woods. Then you'll see how much coddling you'll get."

"Let's not take him along," said Mart. "I'd like to be alone as much

as possible."

"Sure. Joe won't mind. He's the one who knows all the good fishing holes, though—"

"The fish don't matter," said Mart.

The forest was moist with dew, and the pre-dawn chill remained in the ravines through which they descended towards the river. It was still shadowed by the mountains here, and quiet except for the few birds who had not abandoned its gray light for the pink tipped hills above.

Mart knew at once that this was what he needed. He donned the hip boots and tested the spring of the new glass rod he had rented.

"I guess I'm old-fashioned," he said. "I like the feel of the old ones better."

"I'm still using mine," said Berk. "Matter of fact, I believe it's the same one I had the last summer we were together."

They sloshed out into the water a little way above a quiet pool. It wasn't wide enough for both of them there, so Mart moved along upstream. "Some guy published an article the other day," he said, "in which he claimed the average time of catching a fish in a stream like this is two hours and nineteen minutes. Didn't we do better than that?"

"Seems like we did a lot better. If we don't, we'll have to get Joe to make a lunch today."

They did considerably better. By noon, Mart had six and Berk had

seven good trout.

"I'll write the fish researcher a letter," said Mart, "and your family will eat trout for a week."

After lunch they sat with their backs against a tree on the bank and watched the water flowing past.

"Have you got any attack on the project at all?" said Berk.

Mart told him about the last seminar. "Dykstra may be entirely right. His math makes a pretty picture. But I was serious when I suggested the re-examination of the postulate of equivalence—at least as it now stands."

"You're ahead of me," said Berk. "What is the postulate of equivalence?"

"It was proposed by Einstein in one of his first papers, the 1907 one, I think. He postulated that the effects of inertia are equivalent to those of gravity.

"That is, in an object propelled at a constant rate of acceleration, a man would feel effects that could not be distinguished from those of gravity. He could walk, function, and would have weight just as if he were on a large mass having gravitational attraction.

"Conversely, an observer inside a freely falling elevator in Earth's gravitational field would observe no effects of gravity inside that elevator. He could stand on a scale, and would register no weight. Liquid would not

pour from a glass. It has been stated that no mechanical experiment could ever reveal the presence of Earth's gravitational field in the interior of any such frame of reference moving freely in this field of gravitation. We have accepted this assumption for a long time.

"There are good reasons for accepting it, good, sound mathematical reasons. Yet we have not empirically exhausted all possible means of detecting a gravitational field under such conditions, and it is foolish to exclude the possibility.

"So—Dykstra has made a good point in his fairly rigorous demonstration that a mechanism such as Dunning's would demand the abandonment of the postulate of equivalence. It may well be that the postulate is an unwarranted assumption, based upon inadequate data. If so, that's a good starting point. What the next step might be, I don't know."

"Is gravity a kind of a something that can be identified otherwise than as a mathematical symbol—or through the observation of a falling apple?"

"No. That's all it is, actually. A symbol in our formulas that stands for an unidentified something which manifests itself in the attraction between masses."

"How about a flowing something, like this stream?"

"Could be. Nobody knows."

The water eddied about a projecting rock near the bank. Berk threw in a

handful of sticks he had been idly breaking in his hand. Swiftly, they flowed together and converged in the center of the whirlpool by the rock.

"Might be a point of view," he said, "in which it could be postulated that those sticks gravitated toward each other under a mutual attraction."

"It wasn't attraction in them," said Mart thoughtfully. "It was forces pushing and pulling on them. Gravity—a pushing and pulling, maybe. But a pull or a push of what? That Dunning! He knew!"

Sitting on the porch in the dark, after dinner, Mart had a feeling of satisfaction, a vague sense of having accomplished something during the day. He didn't know what, but it didn't matter. It was something—

"You know," he said suddenly, "the thing we need to know, and that you psychologists ought to be able to tell us is where ideas come from.

"Take the first cave man with two brain cells big enough to click together. Where did he get the idea to put a fire in his cave? I think that's the problem you and I tried to solve a long time ago. Where do they come from—inside or outside?" He paused and gave the mosquitoes his attention.

"Keep going," said Berk.

"I haven't any further to go. I'm thinking about gravity again."

"What are you thinking?"

"How to get a new idea concerning

it. What does a man actually do when he cooks up a new theory, a new mechanism? I feel like I'm being sucked into *that* problem constantly, instead of the one I'm supposed to be attacking."

"Well, what are you doing? You're trying to cook up a new idea—"

"I'm thinking right now about this afternoon. Something flowing—but it would be something you couldn't get a picture of—like space-time. Now that it's been brought into the open, I think I really have never liked the postulate of equivalence. Just a feeling knocking around through a few molecules in my cranium. The postulate is wrong."

"Then I try to picture something flowing through the dark of space. It couldn't be a three-dimensional flow like a river."

He sat up straighter and slowly withdrew the cigar from his mouth. "It couldn't be— But it *could* be a flow— He stood up suddenly and turned towards the house. "Look, Berk, you've got to excuse me, if you don't mind. I've got some math to do."

Berk's cigar tip brightened in a long, glowing moment. "Don't mind me," said the psychologist.

V.

Berk had no idea what time Mart went to bed that night. In the morning he found him in the same position

working furiously, and had the impression Mart had not retired at all. He observed he'd changed clothes, at least.

"The fish are calling," said Berk.

Mart glanced up. "Give me another half hour. Look, the fish can wait. I've got to get back to the office as soon as possible. There's something here I want to keep on with."

Berk grinned agreeably. "Go to it, boy. I'll get the car packed. You say when."

In town he went directly to his own office without seeing anyone. There, he continued the work begun the night before. As he proceeded, some of his initial enthusiasm waned. It would be two or three days before he would be ready to invite inspection. One of his manipulations several pages back turned out to be in error. He retraced slowly through the maze.

A little after three there came a knock. He looked up in irritation as Dykstra walked in.

"Dr. Nagle! I'm glad you're in. I tried and couldn't find you yesterday."

"I took a day off for fishing. Can I help you?"

Dykstra slid into the chair on the other side of the desk with an almost furtive motion. Mart frowned.

"I have something of extreme importance to discuss regarding the project," said Dykstra. He leaned forward confidentially, his eyes squinting a little behind the owlish glasses.



"Do you realize," he said, "that this entire project is a fraud?"

"Fraud! What are you talking about?"

"I have been over the Dunning house, so called, with a fine toothed comb. I proved to you in our last seminar that the postulate of equivalence denied the possibility of any such device as this Dunning is supposed to have invented. Now, I can assure you that Dunning never existed! We are the victims of a base fraud."

He clapped the palms of his hands upon the top of the desk in triumphal finality and leaned back.

"I don't understand," murmured Mart.

"You shall. Go over that laboratory. There is no consistency. Examine the shelves of reagents. Ask what possible chemical endeavor could be carried out with such a random selection of materials. The electronics section is as hodgepodge as the corner television shop. The computers have never been used in the room they are in. And that library—it is obvious what an intellectual packrat's rest that is!"

"No, Dr. Nagle, for some inconceivable reason we are the victims of a base fraud. Antigravity! Do you



suppose that anyone here actually thought they could make us believe it?

"Now, what I want to know is why we have been sent on this fool's errand when the nation needs the talents of each one of us so badly?"

Mart felt a faint sickness in the pit of his stomach. "I'll admit there are strange things about this presentation. If what you say should be true, how can the eyewitness accounts be explained?"

"Perjury!" snapped Dykstra.

"I can hardly imagine a member of the JCS involved in such. I am sorry, but I do not share your opin-

ion. As a matter of fact, I have done a good deal of work toward our goal.

"As of this moment, I am prepared to say definitely that the postulate of equivalence is not going to hold."

Red-faced, Dykstra stood up. "I'm extremely sorry you hold such views, Dr. Nagle. I had always believed you a young man of great promise. Perhaps you shall yet be when proper light is thrown upon this abominable fraud perpetrated upon us. Good day!"

Mart didn't bother to rise as Dykstra stomped out the door. The visit bothered him. Absurd as the accusations were, they threatened the foundation upon which he worked. If he could not be sure that Dunning's device had performed as described he was subject to the buffeting of all his prior assurance that antigravity was nonsense.

But the JCS involved in a reasonless and silly fraud as Dykstra proposed—!

He turned back to his sheets of computations with almost frantic energy. When it was almost time that most of them would be leaving he reached for the phone and called Jennings. The man was an able mathematician and could work this through if any one could. It was not as far along as Mart would have liked it, but he had to know if he were at the entrance to a blind alley.

"Can you come over for a mo-

ment?" he said. "I've got something I'd like to show you."

In a few moments Jennings appeared. As he came in the door he gave Mart the momentary impression of an old-time country preacher ruffled with righteous indignation at the sins of his congregation.

He blurted out before Mart had a chance to speak. "Did you see Dykstra this afternoon running around with some cock and bull story about the project being a fraud?"

Mart nodded.

"Why Keyes ever let an old fool like him in here—Dyk has been a fine man. But he's shot his wad. I called Keyes at once."

"I guess all of us have had natural suspicions like Dykstra's," said Mart, "but not enough to go completely overboard as he has."

"I've talked to several of the others. They are upset, some of them. I tried to lift them out of it. But what is it you've got? Anything that looks like an answer?"

Mart slid the sheets across the desk. "The postulate of equivalence is out. I'm pretty sure of that. I've been computing the possible field of motion circulating through curved space. It turns out to be an eight-dimensional thing, but it makes sense. I'd like you to look it over."

Jennings' eyebrows raised. "Very good. Of course, it's not easy for me to accept the renunciation of the postulate of equivalence, you under-

stand. That's been around for forty-five years now."

"We may find something to fit in its place."

"You have no other copy of this?"

Mart shrugged. "I can do it again."

"I'll take good care of them."

Jennings put the papers in an inside pocket. "But suppose you do demonstrate the possibility of such a flow? Where do we go from there? Have you any idea?"

"Some," said Mart. "I watched a whirlpool yesterday. Ever watch what happens to sticks when they are thrown into one. They go toward each other. That's gravity."

Jennings frowned. "Now wait a minute, Mart—"

Mart laughed. "Don't get me wrong. Consider this flow. I don't know what properties it might have. It would have to take place through four of the dimensions involved. But when we get through, we'll develop the expression for the curl of such a flow through material substance."

"Suppose such a curl exists. Whirlpools appear. It's a crude analogy. Your mind can't get hold of it. We need the math. But perhaps we can show that the curl is in such a direction as to cause a reduction of spatial displacement between masses causing the curl. Could that make sense?"

Jennings had been sitting very still. Now he smiled and spread his hands on the desk top. "It could. The curl of an eight-dimensional flow would

be fairly complex. But if it develops all right, what then?"

"Then we build a device to streamline matter through this flow, so that curl will not develop."

Jennings sat back in his chair as if suddenly limp. "Holy smoke, you've got it all figured out! But wait a minute, that would simply nullify gravity. How about antigravity?"

Mart shrugged. "We find a way to introduce a reverse curl vector."

"That does it, boy, that does it."

Mart laughed and walked to the door with him. "Yeah, I know how the thing sounds, but, look—I'm really not kidding. If this gravitational flow expression works out, the rest of it could follow. It could, Jennings."

Jennings faced him with all amusement gone out of his face. "I'm not laughing, Mart," he said, "not at you, anyway. If we get the answer to this whole thing it's going to be something like that. It's just that everything we've postulated up to now has so completely blocked any thinking of this kind that a man has to be prepared to consider himself slightly rocky to even talk about it."

It was a day later when Berk called him. "Hey, Mart, why didn't you let us know right away about Dykstra? If Jennings hadn't called, we might have got to him too late."

"What do you mean?"

"This story he's been giving about

the project's being a fraud. I hope you weren't bothered by it."

"Not much. Are you going to kick him off the project?"

"That follows, naturally. He's in a rest home now. His mind was so congealed that he couldn't accept the reality of Dunning's work. He flipped his lid in a mild sort of way. He'll be all right in a few weeks and can go back to teaching."

"I'm sorry about it. We almost have the answer he was afraid to face, I believe."

Impatiently, Mart threw his thesis open to the whole seminar that day. It was a bit hard to take for some who had been inclined somewhat in Dykstra's direction, but the math was clean enough to appeal to all of them. They pitched in almost as a solid unit to try to obtain a formulation convertible to metal and electrons and fields.

Jennings was the one who carried it all the way. He rushed into Mart's office three days later without knocking and slapped some sheets on the desk.

"You were right, Mart," he exclaimed. "Your field does show curl in the presence of material substance. We're on our way to Dunning's flying belt!"

But when it came, Mart was dismayed. The entire group worked in a thirty-six hour seminar to whip the work into final shape. The result was

that an antigravity machine could be built. But it would be the size of a hundred ton cyclotron!

Mart told Keyes what they had. "It's a far cry from Dunning's flying belt," he said. "We'll continue trying to boil it down if you want us to, or we can submit a practical design that will work now in the shape we've got it in."

Keyes glanced at the sketches Mart had prepared. "It isn't exactly what we'd expected, but I think we'd better build it. The important thing right now is to get a practical antigravity machine functioning. Refinements can come later. The shops are yours. How long will it take?"

"It depends on what you wish to put into it in the way of men and machines. With a round-the-clock crew I believe the model could be ready in about three weeks."

"It's yours," said Keyes. "Build it."

It was actually over four weeks before the first demonstration was scheduled in the big machine shop protected by the triple security seal that had shrouded the whole project.

Those in attendance were the ones present at the first conference plus a few of the workmen who had helped build the massive device.

The demonstration was simple, almost anticlimactic after the hectic seminars they had sweated out the past weeks. Mart stepped to the

switchboard that seemed diminutive under the high, steel-arched ceiling of the shop. He threw the main power switches and then adjusted slowly a number of dials.

Almost imperceptibly, and without wavering, the enormous disklike mass rose in the center of the shop. It hovered without visible support three feet above the floor.

The disk was thirty feet in diameter and three feet thick. Its tonnage was evident in the long crack in the concrete floor beneath the I-beams laid temporarily to support it.

Dr. Keyes reached out a hand to touch the mass. He pushed with all his might.

Mart smiled and shook his head. "It'll move if you push long enough and hard enough. But it has almost the inertia of a small battleship. A far cry, as I said, from Dunning's flying belt. But we'll keep trying."

"It's a monumental achievement," said Keyes, "and I congratulate you all."

While they watched, Mart touched the controls again and slowly lowered the mass to the I-beam supports. He cut the power.

"I would like all of you to return to the conference room at this time," Keyes said. "There, we have some additional data to give you."

Mart fell in step beside Berk on the way out. "What's up now?" he said. "Are they going to pin tin medals on us?"

"Better than that," said Berk. "You'll see."

Once more they found themselves seated almost as they had been that eventful day weeks ago. Keyes took his usual position at the head.

"There is no need of telling any of you gentlemen what this achievement means to our country and for all mankind. Antigravity will revolutionize the military and peacetime transport of the world—and in time will take man to the stars."

"Now—I have someone I would like to introduce to you."

He stepped aside and beckoned through the doorway to the next room behind him. Someone came through in response. Then Keyes stood aside.

A startled gasp went through the audience. Before them stood Leon Dunning.

He smiled at the group a little wryly. "I see you know me, gentlemen. I hope none of you will bear me any hard feelings or consider me the repulsive character I have been painted. The script called for it. An unpleasant young jerk, is the way it was described I believe."

Jennings was on his feet. "What is the meaning of this, Dr. Keyes? I think we are entitled to an explanation!"

"Indeed you are, Dr. Jennings. And you shall have one." Keyes replaced Dunning who took a seat. "To a considerable extent, our friend,

Professor Dykstra, was correct. The original data given you at the beginning of this project was a hoax."

A wave of startled cries and protests arose from the assembly. Keyes raised a hand. "Just a moment, please. Hear me out. I said that the initial data was a hoax. There was no Leon Dunning, inventor of antigravity devices. We put on a show, and faked a film. There was no antigravity."

"Today, there is an antigravity machine in existence. I want you to consider very carefully, gentlemen, just where the hoax in this matter truly lies." He paused for a moment, looking into the eyes of each of them, then stepped aside. "Our chief psychologist, Dr. Kenneth Berkeley, will give you the remainder of the story."

Berk got to his feet and moved to the front as if reluctant to do what had to be done.

"If any of you are angry," he said, "I am the person to whom it should be directed. Project Levitation was the direct result of my proposal."

"Do not think, however, that I am apologizing. I object to the term hoax, or fraud, which Professor Dykstra called it. How can we call it a hoax when out of it has come a thing with potentialities that cannot be grasped by any of us at this time?"

"But why, man, why?" Jennings exploded impatiently. "Why this hocus-pocus, this nonsense, this irrelevance about astrology, levitation, and mysticism! Why wasn't it set up

as a straightforward project. We aren't a bunch of high school kids to be tricked into something we don't want to do!"

"Suppose you give me the answer to that?" said Berk. "How would you have responded to a letter from Dr. Keyes inviting you to take part in a project to build an antigravity machine? How many of you would have remained in your safe and sane universities where crackpots are not allowed to spend the people's money as they are in Government institutions?

"We are thankful we had no more than one Professor Dykstra on the project. He refused to accept the data we provided and his goal became to prove antigravity impossible. How many of you would have come with the same goal if our little make-believe had not spurred you on?

"Dykstra could not face the data in a rational manner. As a result he suffered a nervous breakdown, which was, of course, the result of a long chain of previous incidents.

"On the other hand, those of you who could accept the data we handed you were able to knock out the preconceptions about antigravity and achieve that which you had considered impossible.

"Essentially, this was a project in psychology, not physics. We could have chosen something besides antigravity. The results, I predict, would have been the same. I have observed

many scientists at work in the laboratory and library. I have studied the educational preconceptions they bring to their work. Before a problem is tackled, a decision is already made as to whether it is possible or impossible. In so many cases, as exemplified by Professor Dykstra, the interest in the problem is only to the extent of proving the decision correct.

"If you will forgive me for using you for guinea pigs in my project, I submit to you that I have given a far more powerful technique for scientific investigation than you have ever possessed before. The technique of the conviction that any desired answer can be found. You have not been hoaxed at all. You have been shown a new and powerful scientific method.

"If you could and did lick a problem previously impossible to you, in a matter of weeks, how many more of your own research problems are just waiting for this new approach?"

There was a good deal more said at the meeting. Some of it was highly confused. Berk's explanation was not understood at all by several of them.

It would take a long time for it to sink in thoroughly, even for him, Mart thought. There was just a trace of anger within him that he found hard to put down. But he chuckled at the smooth way in which Berk had engineered the project. He'd bet the psychologist had some uneasy moments because of Dykstra!

There was a sort of stunned feeling in his mind as he began to recognize the absolute truth of what Berk had demonstrated. He saw it reflected in the faces of some of the others, a sort of blank, why-didn't-somebody-tell-me-this-before look.

It was finally agreed they would meet again the next day to thresh out their reactions to what had been done.

As soon as they were able to break away, Berk took Mart's arm. "I almost forgot to tell you, you are invited to dinner tonight."

"*That* had better not be a hoax," said Mart.

After dinner, the two of them went out into the patio with which Berk struggled to give his city lot the dignity of an estate. They sat down on a garden seat and watched the moon come up through the neighbor's television antenna.

"I want the rest of it," said Mart.

"The rest of what?"

"Don't be coy. The rest of the guys are going to get it out of you in the morning, but I want it first."

Berk was silent for a while then he started speaking. He lit a pipe and got it going well. "Jennings almost had it in that speech about the flood-gates of the mind which you mentioned. You and I almost had it back there when we were trying to solve the problems of the Universe in school.

"It boils down to the thing you

asked me up in the mountains: What is the process of thinking? Where does original thought come from?

"Consider the abstruse equations you cooked up in a matter of days on the gravitational flow around the curvature of space. Why didn't you do it ten years ago? Why didn't somebody else do it a long time ago? Why you, and nobody else?"

"I wanted you on the project especially, Mart, because I want you to give me a hand with this thing, if you will. It's a little more than I can handle. I don't know whether it's physics or psychology or some weird cross between the two."

"Anyway, here's where I started: You know communication theory. You know that any kind of data can be put in code form consisting of pulses. For example, a complex photograph codified in terms of half-tone dots. There are many possible methods of coding information into pulses. The code can use dot-dash, it can use time-separation between pulses, it can use pulse amplitude, a thousand different factors and combinations of factors. But *any* information can be expressed as a special sequence of pulses.

"One such sequence is: 'Every body in the universe attracts every other body in the universe'; another, 'The secret of immortality is—', and still another, 'Gravity is itself the result of the action of—and it can be nullified by—'

"Any answer to any question can be expressed in terms of a special sequence of pulses, wherein some relationship between the pulses is a codified expression of the information.

"But, by definition, pure noise is a completely random sequence of pulses, containing pulses in all possible relationships.

"Therefore: any information-bearing message is a special subclass of the class 'noise.' Pure noise, therefore, includes all possible messages, all possible information. Hence, pure noise, which is actually another term for pure probability, is omniscient!

"Now, that isn't just an exercise in scholastic logic. It is a recognition that all things can be learned, all things can be achieved."

Mart stirred and blew a violent cloud of cigar smoke at the moon. "Hold it!" he exclaimed. "There's got to be some limit to the territory you take in."

"Why? Is my logic wrong in regard to noise and information?"

"Gad, I don't know. It sounds good. It's right, of course, but exactly what does that have to do with the operation of the human mind and Project Levitation?"

"From a structural standpoint, I can't answer that question—yet. Functionally, it appears that there must be in the human mind a mechanism which is nothing but a pure noise generator, a producer of random impulses, pure omniscient noise.

"Somewhere else there must be another mechanism which is set to either filter the production of random noise or control its production so that only semantically meaningful forms are allowed to come through. Evidently, the filter is capable of being set at any level to filter out anything we choose to define as noise.

"So we go through the rough process of growing up, we go to school, and get educated, we get a red line setting on the noise filter which rejects all but a bare minimum of data presented by the external universe, and our internal creativeness as well.

"Facts in the world about us are rejected from then on when they don't fit. Creative imagination is whittled down. The filter takes care of it automatically once we give it a setting."

"And your project here," said Mart, "the stuff on Babylonian mysticism, astrology, and the rest of that crud—"

"The whole pattern was set to be as noisy as possible," said Berk. "We didn't know how to produce antigravity, so we gave you a picture of a man who did, and made it as noisy as possible to loosen up your own noise filters on the subject. I offered you a dose of omniscient noise on the subject of antigravity, and the one inescapable conclusion that it had been done.

"Everyone of you had previously set your filters to reject the idea of antigravity. Nonsense! No use looking

for that. Work on something useful.

"So I suggested to Keyes we assemble a bunch of you double-domes and slap you solidly with the fact that it ain't nonsense, it can be done, Bud. Give you some omniscient noise to listen to, loosen up your filters, and let the answer come through out of your own mental productiveness.

"It worked. It always will work. All you've got to do is get the lead out of your pants and the rocks out of your head, and the arbitrary noise filter settings corrected on a few of the other things you've always wanted to do—and you can find a proper answer to any problem you care to investigate!"

Mart glanced up at the moon

spreading silver across the sky. "Yeah —there's the stars," he said. "I've always wanted the stars. Now we've got antigravity—"

"And so you can go to the stars—if you want to."

Mart shook his head. "You and Dunning—first we've got it, then we haven't.

"You get us to produce antigravity. And it becomes a mere gimmick! Sure we could see the planets, maybe even go beyond the solar system before we die. But I guess I'm going to stay here and work with you. A paltry planet or two isn't so much, after all. If we could learn to utilize the maximum noise level of the human mind we could master the whole Universe!"

THE END