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Things Pass By

A Novel by MURRAY LEINSTER

I

FAR, far away, multiple billions of miles off in empty space, Things moved toward our sun. They were arranged as a warlike space fleet. There were scouts and advance guards fanned out ahead. One of the scouts had already passed beyond Sol. The main body of the Things was an enormous distance behind, but there were thousands of them.

They moved at a rate almost inconceivable to human beings. Their engines were powered by forces yet un-

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Illustrated by VIRGIL FINLAY





*The Things from deep space were moving toward the sun . . .
and Dirk Braddock knew that they would destroy civilization!*

dreamed-of by men. They did not decelerate as Sol drew relatively near. Our sun was a convenience in space navigation—no more.

The occupants of the Things had no interest in it. That it had planets was a matter of no concern to them. That two billion human beings lived upon one of the planets affected them no more than knowledge of an ant city in its path would affect an army.

The peoples of Earth might be obliterated, as an ant city would be destroyed by the passage of an army, but the occupants of the Things could not know, and would not have been interested. To them, it would not have seemed important.

However, it happened that on the ant-hill called Earth there was a man named Dirk Braddick. Because of him, Earth is not now an uninhabited, crumpled ball, with its continents mere salt-mud marshes, and its seas swept by five-mile-high tidal waves as the Things go by.

The Things have not the faintest idea what happened. They probably do not care. But we do. This is the story of Dirk Braddick. . . .

THE first of the cosmoquakes was relatively mild. Earth's seismographs went crazy, and Sun's photosphere burst into frenzied eruption. There were casualties here and there, and earthquakes of varying intensity followed. Possibly a thousand people, together, died as a result of the first cosmoquake. But it was really very mild indeed.

Two weeks after it happened, but not at all as a result of it, something came down out of black, swiftly-moving clouds above Dirk Braddick's laboratory. It was night, and the clouds moved swiftly toward the north.

The inverted, cup-shaped thing swayed crazily as it descended. The dangling object below it oscillated wildly. When it was a thousand feet high, it was two miles south of the laboratory.

When it was five hundred feet up, it was still a mile away, and the agglom-

eration of buildings which enclosed a square courtyard was utterly invisible. There was not a light to be seen.

The parachute came on down, swaying and spinning, flung through the darkness by the wind. The inert, pendulum-like object under it made no effort to guide it by tugging at the shrouds. There was nothing in sight to seek to avoid or to try for. There was only a noise underneath, which was tree branches clashing in the wind.

They were very near. Something whipped at the descending figure. Then there was clear space below. The oscillating object swung high and cleared the ridge-pole of the big shed—latest addition to the laboratory. The figure under the parachute missed the ridge-pole, dropped crazily just beyond. The parachute spilled air in the eddies of air above the buildings—and the figure hit the ground.

The parachute, at the same instant, hit the projecting corner of a building and ripped noisily, flapped wildly for a moment, then lay caught and torn against a building wall.

The figure struggled up, staggered, and collapsed again. It lay still. The dark clouds overhead hurried on to the northward. A broadcast-powered plane above the ceiling emitted a bleating, panic-stricken call on a secret wave group.

Dirk Braddick slept the peaceful sleep of a man who has worked contentedly at something on which he wants to work, and will resume the process in the morning.

In the corner of one of the laboratory buildings, an electronic watchman hummed softly. Its circuits circled the laboratory, shifting current-values in unpredictable patterns so that no neutralizer could possibly analyze the fields and allow an intruder to approach the buildings unnoticed. But it had not scanned the sky overhead. It made no report.

A long time later the sky cleared. Later still, the sun rose and morning

came. Dew dried, bird songs became commonplace. The sun floated high over the horizon. The still figure on the ground among the laboratory buildings stirred again. It got weakly to its feet.

It was a girl, who stared about with a haunted, hunted look in her eyes.

Then Dirk Braddick came out of a door and saw her, and stopped short. The girl seemed to shrink at sight of him. She turned as if to flee, but only walls and closed doors surrounded her.

She turned and faced him defiantly, white to the very lips.

"Hello!" Braddick said evenly. "So Atomic Power is using girl spies now, eh? And dropping them by parachute! I'll have to put some detector-fields overhead."

He saw by the girl's clothing that she had hit hard. When she moved, he saw her wince a little.

"Hurt yourself?" he asked. "I'll get a doctor if you like, and have him take you in to town. I'm not especially harsh to spies. In fact, one might be useful right now."

The girl's pallor increased, if anything. She gasped:

"Please—no doctor! Don't tell anyone where I am! Not anyone . . . Who are you?"

Braddick raised his eyebrows.

"You don't know? All right. I'll play! I'm Dirk Braddick. This is my laboratory. And you're a lady spy for Atomic Power, I think. Aren't you?"

"No! No! I—I'm—" Then she caught her breath and wrung her hands. "I don't know! I—don't—know—who I am! Oh, help me, please!"

HER distress and terror, at any rate, were real. But Braddick looked even more suspicious, for an instant.

"You'd better sit down and have a cup of coffee or something. Do you hurt any place particularly?"

"All over," she said unsteadily. "But I don't think there are any bones broken. I—know your name. I can't remember anything about myself, but realize that

I know your name. You're an inventor. You invented the broadcast-power tube, and the D.C. transformer, and something to do with metal casting, I think."

She looked at him with a hunted hopefulness. He nodded.

"I don't like the term inventor," he said drily. "Those things were byproducts of definite scientific research. But there's nothing very wrong with your brain."

He led the way into the house. Robot servants produced coffee, and then a complete breakfast. The girl sat down, trying hard to keep calm and cool. But her hands trembled. She drank the coffee while Braddick took an extra cup. The hunted look in her eyes increased as she contemplated her own thoughts.

"Look here," Braddick said presently. "Even if you're telling the truth, you've had a bad scare. After you've had something to eat, go and lie down. Sleep a bit. You'll wake up feeling like yourself. Then you can set about spying or whatever you came for. If you don't feel all right then, I'll call a doctor."

"No! Please!" She went instantly into something like a panic. "Please don't call a doctor! I've got to hide!"

"Why?" asked Braddick casually.

"Because I—because—" The helpless terror in her expression was pathetic. "I don't know! I don't know who I am or anything! But I know I've got to hide."

"The police?"

"I'm not any more afraid of them than anybody else," the girl said helplessly, after an instant. She made a hopeless gesture. "I feel queer. I don't know who I am, but that doesn't frighten me so much, now. I have a feeling that if—if I can only stay hidden for a time, it will all come out right."

"It sounds," said Braddick drily, "like a very bad excuse for a spy to hang around my laboratory. I'm really a sort of psychologist, you know. My specialty is the mechanics of research. But I test my theories about how to make discoveries by using them to make discoveries.

As you mentioned, I've made a few. Atomic Power wants to know what I'm up to now. I've been trying to get something from them, and they think I've something up my sleeve. If you're a spy, a good report from you might help me to make a deal. Hence my cordiality."

The girl licked her lips. She seemed tense. She saw his eyes upon her.

"Atomic Power—that means something to me," she said shakily. "It frightens me—I mean, the name of the company. I . . . Do you really think I'm a spy for them?"

Braddick shrugged. "Maybe. Maybe not. But they certainly want to get into my laboratory. I've had to fire the few men who did work for me, because every one had been got to with threats or money."

"You're working on something secret?"

Braddick shrugged again. "I wouldn't say secret. Just impossible. There was a rather queer phenomenon a couple of weeks ago. They called it a cosmoquake. Remember?"

The girl's expression changed. Braddick's lips quirked wryly. She remembered that. But it would be hard to imagine any shock obliterating the sensations of a cosmoquake. It was called that because there had never been such a thing before, and "earthquake" certainly did not describe it. Earth seemed to have been shaken, not in one place but all over, as a terrier shakes a rat.

Speaking roughly, for one and a half seconds at 14:06 Greenwich mean time of May 1, 1992, everybody on nearly all the northern hemisphere felt the ground seem to drop away underfoot in a slanting direction. That was the first phase.

THEN, without a pause, the sensation reversed and the ground seemed to rise horribly for another second and a half. In the southern hemisphere, the effects were exactly reversed—the feeling of rising came first, and that of falling afterward. But it was not exactly the same at any two spots on the globe.

Slanting across the equator over a wide belt of territory, it seemed that Earth was being jerked from underfoot so that people and things were tumbled generally to the northward, and later that it was being jerked in the opposite direction so that they tumbled generally to the southward again.

The force of the cosmoquake was nowhere overwhelming. Water in small shallow ponds tended to overflow. Mostly, however, the two impulses were so nearly equal in duration, and so nearly opposite in sign that there was no great damage.

Some chimneys fell. There were a great many traffic accidents. But the damage done by the cosmoquake itself was much less than that caused by violent local earthquakes which followed wherever geologic faults existed.

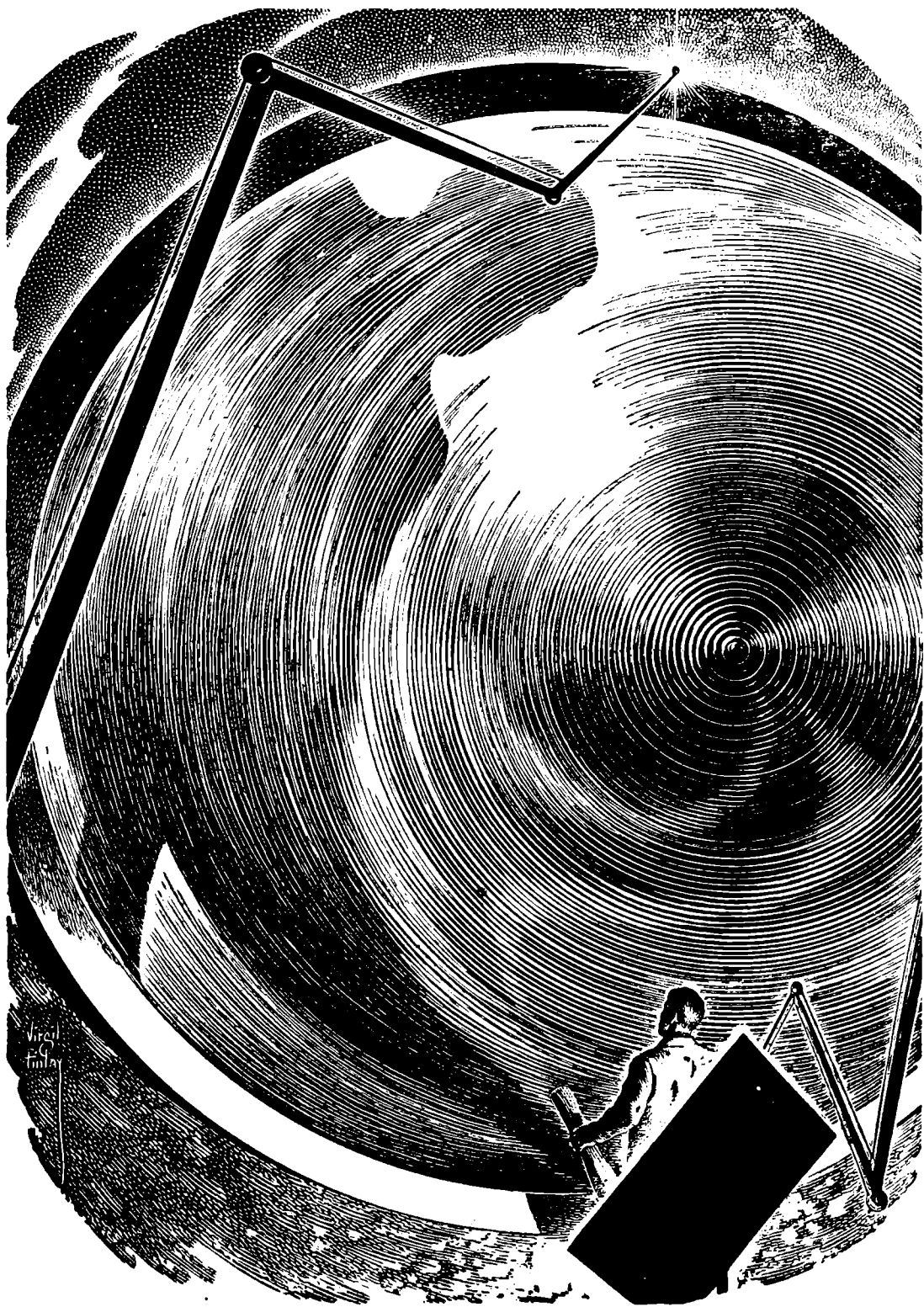
The thing was inexplicable. It really appeared that not only Earth but the whole cosmos had experienced some hitherto unknown phenomenon. There was a monstrous increase in solar disturbances to lend color to the theory.

But Braddick had used a new discovery in his own specialty—the study of research methods—and within three days had submitted a paper to the *Philosophical Journal* on the cosmoquake.

In it, he pointed out that the observed effects on the Earth and Sun could have been produced by a body of twelve solar mass passing through the Solar System at a speed approaching that of light, along a line from Polaris toward the Southern Cross and at a distance of some six hundred million miles from Earth.

The paper was rejected, but its contents leaked out. Someone who had read it quoted it at length as an example of how wrong a man like Braddick might be. His explanation, of course, was as impossible as the event had been.

It reached the daily papers and was a source of much hilarious publicity as diverse eminent scientists condescended to point out how completely ridiculous it was.



The aim made gradually enlarging circles about that spot

But Braddick had continued to work on the problem.

In his dining room, now, he spoke detachedly.

"I have a queer and much-laughed-at idea of what may have caused that cosmoquake. There is a possibility that the same thing may happen and be much worse. So I want to get ready for it. To get ready I need mass-time fields. I've been trying to get them from Atomic Power. They won't listen, because they suspect I have something up my sleeve to break their monopoly over power. I haven't, but meanwhile they've been annoying me with spies, trying to break into my laboratory, steal my stuff and—I suspect—if necessary, kill me in defense of the corporation's business."

The girl had gone pale again.

"Yes. They would kill. They're terribly ambitious. They're ruthless!"

"Your memory's improving," Braddick said politely.

The girl flushed. A tide of crimson swept upward from her throat. It covered all her face. Then it receded, and she was pale again.

"You think I'm lying?" she asked steadily. "About not remembering?"

Braddick made a noncommittal gesture with his hands. . . .

Far away in space, one of the scout patrols of the Things drew nearer to the Solar System. It had been a thousand million miles away. It hurtled onward at a speed which was literally inconceivable.

While Braddick first questioned the girl from the parachute out of doors, the thousand million miles had halved. While the girl sipped her coffee and seemed to search desperately for memory, the distance of the hurtling object lessened still more.

When she spoke brokenly, denying that she lied or that she was consciously a spy, monstrous gaseous prominences burst from the Sun at greater speeds than had ever before been observed. Because as the Thing flung onward through empty space. . . .

IN THE laboratory, an alarm bell rang sharply. Braddick's face grew dark. He put his hand to the table to push back his chair. And the Earth groaned. Literally. There are millions of people who will always swear that they experienced the shocking vibration of the cry of a tortured Earth. And then horrible things happened.

It is not possible to describe them all. There were areas where human beings found themselves completely weightless, and were driven mad by the feeling that they fell upward into an empty, cloud-flecked sky.

There were other areas in which people felt themselves pressed to the Earth as if by an intolerable weight. Those sensations reversed themselves within the term of the three seconds to which cosmoquakes seemed to be limited by the nature of things. But the areas in such uncomplicated phenomena showed were the lucky ones.

There were not many casualties in Australia nor in the northeastern United States. But elsewhere!

In Rio de Janeiro, the streets were crowded. It was a normal, brisk autumn morning. Then, suddenly, for just one and a half seconds, everything in the city strained savagely toward the northeast. The crowds surged that way, screaming suddenly.

They piled up in kicking masses against brick walls, or through plate-glass windows, or they ran in irresistably racing, shrieking panic where there was no solid obstacle to check them. And they were pursued.

Buildings leaned to the northeast, and collapsed, and bounding masses of masonry rolled and leaped after the fleeing humans. Everything, animate and inanimate, acted as if the city had been turned on edge. Everything fell toward the abyss which was the horizon.

In the forests outside the city, the jungle trees leaned and crashed. The waters of the great estuary which is the River of January began a mighty surge. For one and a half seconds.

Then the impulse ceased and reversed. Those who still remained upright found themselves hurtling in almost the opposite direction. It was not quite opposite. The impulse this time was almost due south. They ran or were flung into the rubble and the still-tumbling walls of buildings.

Those who had fallen or were crushed lay beneath walls which had not yielded to the northeastward impulse. And most of those walls now yielded to the second, reverse impulse, and crashed upon and buried the dazed injured who had been intent upon commonplace things only a scant few seconds before.

The giant *Mundo* Building, the pride of Rio, resisted the first phase of the cosmoquake. It bent dangerously northeastward, and dripped down most of its wall panels of brick and glass, but the steel frame stayed intact during the first phase.

When the second came, however, it swung in a giant arc and crashed in ruins to southward, its thousand-foot bulk covering three blocks of what had been the heart of the city. The casualties in Rio alone from this cosmoquake were comparable only to those from a saturation bombing of an undefended place.

And Rio was only a sample. Quito and Guayaquil ceased to exist. All around the globe, destruction reigned. Naples was a rubbish heap, with Cairo. Calcutta no longer was. Teheran was a dust-pile.

And—somehow more pathetically—in that wide band of death all around, it was not only large cities that were struck. Isolated villages and hamlets, even individual houses, crashed in ruins, all too often upon their occupants.

In three successive seconds the peoples of Earth suffered destruction and death to a degree they had not been able to inflict upon themselves in two world wars. Then it ended. Earth was still again.

In Dirk Braddick's laboratory he went desperately white. His eyes burned.

"That," he said in a forced calm, "was a second cosmoquake. It was worse than the first. There will be others still, and they will be worse yet! I don't think I'm exaggerating when I say that I think the end of the world is at hand if something isn't done about it. Now—are you a spy for Atomic Power?"

The girl licked her lips. Her eyes were strange and troubled, but they met his desperately.

"I'm not," she said unsteadily. "Honestly! I'll swear it by any oath you can contrive!"

"That's too bad," Braddick said grimly. "I've got to make that deal somehow, and if you were a spy you could help. I suspect it's going to be a tough one, but I've got to go ahead." He smiled sardonically. "The worst of it is, I'm afraid they'll take it as a business matter, and a swell opportunity to murder me. The men who run Atomic Power are that sort!"

He rose from the table and headed for the communicator. On the way, with a scornful gesture, he flung on the switch of the broadcast visiphone.

II

THE Atomic Power Company, you may remember, was founded by a young man named Brent who made a mass-nullifier on purpose, and discovered that he had made a time-field by accident. In consequence he had found the secret of atomic power.

He made a field generator which lessened the mass of any object within the circuit of the cable through which the field-generating impulses surged. As a necessary corollary, it increased the time rate of the object affected.

A watch, for example, put into the mass-nullifying field with its mass reduced to one-hundredth of normal, ran one hundred times as fast. But the field could reduce the mass of an object contained in it almost to actual zero, with a time rate to be expressed only in astronomical figures.

And when Brent, after divers adventures put mildly radio-active elements in the mass time field, he speeded up their rate of disintegration under strict control so that they were highly useful sources of power.

In fact, before his death, Atomic Power produced more than half the horsepower used in Earth's industries. In twenty years more it produced ninety-seven-point-three per cent of all the fixed generator power used on the planet. And the power tubes lately invented by Dirk Braddick promised to give the corporation a monopoly of all the power used on Earth in any form.

But it was not an amiable corporation by that time. It was too big to be human. Its higher executives were in positions of power, with riches practically equal to the headship of nations. They were the subject of such feverish ambition as no other "private" employment ever fostered.

By the very nature of the mass time field, too, it was too dangerous a device for its principles to be publicly known. Power was generated by its means in giant power stations turning out millions of kilowatts.

The few technicians who understood the process were sworn to secrecy, enormously rewarded, and guarded by national as well as company secret police against threats or attempts at bribery. But the business policies of Atomic Power were under no such guard to prevent the undesirable.

In 1992, Atomic Power was nearly a tyranny. Its monopoly of cheap power gave it almost life and death power over industries. And obviously the little men in the organization, hoping feverishly for promotions, developed a cold-blooded ruthlessness for the purpose of impressing their bosses.

An explosion apparently wiped out all of Brent's heirs, in 1991. The ownership of the majority of the company's shares was thrown into trusteeship for the courts to settle, while the men who managed the company no longer had to ac-

count to anyone but purely hypothetical future owners of the majority stock.

They then set to work to secure themselves in their jobs and their power, which was great enough to begin with. For a time, it looked as if Atomic Power would end up trying to run Earth.

But to Dirk Braddick, that morning, it looked as if there soon might not be any Earth left to run. He put in a call for the head of the giant corporation, and while he waited for the call to go through, the broadcast visiphone verified his worst fears.

A commercial visisplay was still being broadcast when the screen lighted up. Before he put in his call, the commercial was abruptly cut. A well-known NAB newscaster announced curtly that a second cosmoquake had shaken the whole of Earth. An impromptu sequence of newscasts would follow until the damage had been assessed.

Instantly a dark-featured man with a cut on his temple read hoarsely from flimsy sheets in his hands. His hands shook. The entire Amazon River basin had been wiped out. Belim was a shambles, made so by fires which had sprung up in the debris caused by the cosmoquake.

He turned his head to receive a fresh batch of flimsies, and blood trickled down the side of his face and into his collar. He read on, his face twitching and his voice hoarse. Rio—Pernambuco.

HE WAS cut off. The first newscaster cut in again.

"Damage in the United States is great, especially in the southern parts and in California. Transport planes are being made ready to carry doctors, nurses, and medical supplies to areas of greatest destruction. Notice to all doctors and nurses. If casualties in your community are less than one per cent of the total population, report to the Red Cross for orders."

His face flashed off. A sun-browned man spoke harshly:

"Mauna Loa, here in the Hawaiian Islands, is beginning its greatest eruption in history. Evacuations are proceeding at top speed. Honolulu is partly destroyed. Earth shocks of mounting intensity are practically continuous. We do not know what is coming—"

Braddick's private visiphone call came through. The face of the head of Atomic Power looked out. Rogers, chairman of the board, was obviously shaken by the event just past, but his features would never really thaw.

He said crisply, "My secretary said you called me about this thing that has just happened. What is it?"

"They call it a cosmoquake," said Braddick. "I know what it is. There are more coming and worse—much worse! I have a chance of doing something about them. I need mass time field power units and a technician—an engineer who can design and build the units I want in the sizes and for the purposes I'll specify. I can work out the field if I have to, but I'm in a hurry. How much?"

"It's impossible!" said Rogers sharply. "We don't allow outside experimental work with our fields!"

"Your own men will handle this one," said Braddick, "and I'm in no mood to bargain. I need those field units, and I need them fast! Your life as well as mine is in the balance, and the life of everybody else on Earth. Your company won't be worth much if Earth is depopulated!"

Behind him, newcasters flashed successively on the screen, each with a curtly told tale of tragedy. In the Baltic, the cosmoquake impulse had not been overhead and then underfoot, but almost half the way around the horizon. In consequence, a tidal wall of water a hundred feet high had overwhelmed lower Sweden.

"You're an alarmist," said Rogers, though still pale from his own experience in the cosmoquake. "You're an inventor, not a scientist. I'll wait and see what the physicists say."

[Turn Page]

"Meaning," Braddick said coldly, "you want to know what I'll offer. All right. I'll waive all royalties Atomic Power owes me, while I have a technician at my disposal."

Rogers' expression was frankly that of a shrewd bargainer now. A dyed-in-the-wool business man will be a business man until the heavens fall.

"Not good enough."

The visiphone muttered behind Braddick. All along the western edge of Europe cities lay in wreckage from the twisting effects of the cosmoquake there. Eastern Asia was hard hit. Southern Africa was smashed. The loss of life was terrific.

"Then I'll give you the things outright!" snapped Braddick. "That's presenting you with a monopoly of broadcast power! If you don't know how worthless money is right now, I do! I've got a job to do!"

Rogers looked smug.

"You'll transfer those two patents," he said shrewdly, "and take a salary while our technician is working with you. Then we'll own any discoveries you make while using a mass time field. It's a deal on that basis, but no other."

"All right! I accept it!" Braddick said savagely. "One technician. No spies."

"He has to have a guard," said Rogers.

"No!" snapped Braddick. "I've no intention of being killed by an 'accident' when you think you've got everything you can. Send your man here fast!"

BRADDOCK cut off the visiphone. Almost at the same instant the girl shut off the broadcast instrument. She was as white as marble.

"There've been more people killed in the last five minutes," she said shakily, "than—than in centuries of wars!"

"Quite so," said Braddick, seething, "and the rest of us are slated to follow them. Look here! I've just made a deal with Atomic Power." He repeated the terms of the bargain, his voice sardon-

ic. "That's the price I have to pay for trying to save Rogers' neck, among others. I'm telling you this because I still think you're a spy. If you are, you'll have a decent technical education, most likely, and I need technical help badly. Will you work for me for awhile? You'll still be working for Atomic Power!"

The girl went white. "I told you I was afraid of the name of Atomic Power! If its men come here—"

"They're coming," said Braddick grimly, "even if you're telling the truth. You don't count. I don't count. Nothing counts but getting this job done, and I can't spare the time to try to work out the mass time field for myself. But if by any chance you're really trying to hide from somebody—do you want to leave? Are you broke? By the way, have you looked in your pockets for identification?"

She licked her lips and nodded.

"I looked. There's nothing. But if you really beggared yourself to get something you need to work with, if it's that important, I'll stay here and try to help."

"What can you do?" he demanded. "I've got to build a spaceship. I've got to design a space drive. I've got to—Heaven only knows what I've got to do or how long I've got to do it in!"

"I'm a fair draftsman," she said unsteadily, "and I do know some physics. But you can't make a space drive! There's never been a spaceship except rockets, and they—"

"There's going to be one now!" said Braddick. "It's going to be made right here! I've got some gadgets that will help. Come on over to the drafting board. Since you don't know your name, I'm going to call you Jane. . . ."

Far, far away, the Things hurtled on. Two of the far-flung scouts—light weeks ahead of even the advance guard—had already passed Sol. They went on toward their unguessable destination. Their velocity was an infinitesimal fraction less than the speed of light.

Because of their speed, the mass of

the Things was monstrous. Einstein first established the law by which objects near the speed of light gain mass. At their speed, the Things had an effective mass of twelve sols each—twelve times the mass of the Sun which is the center of the Solar System.

Yet they were not large. They would not have showed even as pinpoints in the largest telescopes on Earth.

But in their light fast progress through Sol's family of planets, each of the first two had shaken the Sun to fury, and the first had made a turmoil on Earth, and the second had wrought havoc. With thousands of others to follow. . . .

For the next twenty-four hours, Braddick worked in a frenzy of sustained effort. He was perhaps a queer sort of person to save the Earth, and probably a queerer one still to have made three fortunes by really practical inventions.

His real line was psychology, and his passion was the technique of research. It was his lifework to study the methods by which discoveries are made, and to devise new techniques by which research could become more effective.

He discovered a neglected principle of discovery and set to work to write a paper explaining it. To show how it worked, he undertook research to make a direct current transformer.

He carefully noted down every single step in the effort.

WHEN his paper was published, he absently noted that he had a valuable property in the discovery he'd made to prove a psychological point.

A second paper on another point of research technique yielded as a by-product a vacuum power tube, which handled unprecedented amounts of power without even a heated filament.

A third paper had to be illustrated by an actual bit of research, so Braddick made a step-by-step log of the process of discovering a new method of casting metals, by which castings could be made

with such accuracy that they needed no machining.

It had not occurred to him that he would make machine tools almost obsolete, except for the making of first models—but he did. And he did not have to worry about money after that.

His laboratory had been built on an isolated sixty-acre tract he'd bought with the proceeds from the DC transformer, and made nearer to his heart's desire with the profits from others. Now, in the heterogenous mass of machinery and apparatus in the various silent buildings, he could work on any type of problem he chose, in order to test his theories of research methods.

While he worked frantically, setting up the foundation for his present self-assigned task, Jane labored earnestly to translate his sketches into a highly specialized type of working drawing. A good deal of Braddick's labor was the conversion of perfectly normal bits of apparatus to uses merely allied to their original purposes.

Then the Atomic power helicopter arrived with the technician. His name was Thorn, and he was gray-haired and bulky, with an air of enormous repose and complacency. But there was another man with him—Hamlin.

Hamlin definitely was not a technician. He had the hair-trigger manner of a minor Atomic Power executive, all driving urge and dynamic air, who would perform any antic or cut any throat to impress his superiors of his company loyalty and fitness for a better job than he had.

Braddick took them straight to the big shed.

"I've got an impossible job on my hands," he told them, "and if I succeed at it, there's an inconceivable one to follow. To show you the start of it, here's a construction machine I've built. Ordinarily, you make a specialized machine-tool to turn out one particular part, and it will produce that part cheaper than any other method can do. But if you try to change the product, the ma-

chine is useless. You get efficiency at the cost of flexibility. For that reason, there aren't any mass production machines for big objects like ships and so on. It's cheaper to be inefficient and flexible.

"But this constructor is both efficient and flexible. I feed magnetronic plastics—the stuff they make houses and ships of nowadays—into this moving arm. It makes drawings in the air following drawings it scans with photo-cells. But plastic comes out of the end of the drawing arm and hardens as it comes. This thing will start at one end of a ship or a house and build it complete to the other end, following drawings only.

"It's ready to make a spaceship hull now. I need one. To power that ship I'm going to need three and possibly four mass time units. One is to include the whole ship in its influence when it's turned on. Two others are to be set up along a tube fore and aft. They needn't be big. Come along and I'll show you the rough sketches, and you can plan them out, Thorn."

The big, white-haired man shook his head condescendingly.

"A mass time field isn't a space drive, Mr. Braddick," he said tolerantly. "I can do anything you say if Mr. Hamlin authorizes it, but—"

"He authorizes it," said Braddick. He looked at Hamlin.

"Oh, surely—surely!" said Hamlin, beaming.

Braddick asked gently. "You're the trigger-man, aren't you, Hamlin?"

"Eh? What?"

"It's an obsolete term," said Braddick. "You're to see that I have an accident if I seem likely to do Atomic Power any harm, aren't you?"

HAMLIN'S mouth dropped open. He looked scared for a moment.

"Oh, don't worry!" Braddick told him. "I'm a sucker, this time—another obsolete term. I'm not a business man. There's some dangerous stuff coming this way, and I want to go out and meet

it. "My purpose is not to make profits, but to keep people from being killed. Quaint, eh? But I'm one of the people I don't want killed. Here's the drafting room."

He opened the door. The girl he called Jane was bent over the drafting board, making a working drawing in three-colored inks, taking extraordinary pains to be accurate. She looked up, her eyes fearful. They flickered swiftly from one to the other of the men who represented Atomic Power. A vast relief seemed to fill her.

Then she turned back to her work. But Braddick had seen Hamlin's face as he'd caught the first glimpse of Jane. Hamlin had started and stared as if an enormous inner excitement filled him. He had fairly quivered, and his hand had made an obscure movement, instantly checked.

"My assistant, Jane—er—Smith," said Braddick. "Thorn, look over those sketches. I've marked where I need the smaller time mass fields. As I said, a field has also to enclose the whole ship. Give Miss Smith the outside dimensions of the apparatus you'll make to generate the fields, and tell her where they'll have to be placed. She'll provide for them. Hamlin, come here a moment."

He led Hamlin through two doors.

"I'll take that flash-pistol, Hamlin," he said quietly. "In this pocket." He pointed to the pocket toward which Hamlin had made an arrested gesture on sight of Jane. "I wouldn't try to use it. Definitely not!"

Hamlin had had a shock. He had been terrifically excited. This was a new shock. Braddick took the flash-pistol.

"Who is she that you want to kill her the instant you see her? What's Atomic Power got against her?"

Hamlin protested vehemently. Braddick listened. Then he spoke.

"She's my assistant now, Hamlin. If you touch so much as her little finger, I'll kill you. You've run into somebody at work meeting an emergency. Don't make me use emergency methods."

The first line of scouts, of which two had passed through the Solar System, drove through space toward the Southern Cross. There was an infinitesimal resistance to their movement, caused by the one atom per cubic centimeter to be found in even the remotest part of interstellar emptiness, so the drive of the Things stayed on.

They needed to maintain their velocity. Their speed gave them mass. Their mass gave them invulnerability. An object with the mass of twelve suns will not be injured by collision with a meteorite or even an asteroid.

A plunge through a planet the size of Earth itself would hardly be noticed—but the planet would explode after the Thing had gone on.

There were thousands more Things on the way. After the scouts came the advance guard. The main body was behind that.

III

JUST three men and a girl were at work to save Earth. One of the men was useless, and one was condescendingly unbelieving, but he did make mass time units of the size and power Braddick dictated. The third man was Braddick, who got things done.

In the center of the big shed, the plastic constructor worked tirelessly. It was an ungainly contrivance with an awkward-seeming arm mounted on a truck with motors and pumps and a long hose trailing from it. A cable led to a table at the side of the shed, where vivid lights showed upon drawings pinned in the vision-range of scanners.

The arm made clumsy but precise gestures, following the drawings off to one side. It had begun by putting a blob of magnetronic plastic on a stout upright at the end of its steel track. Then, for awhile, it made gradually enlarging circles about that spot.

The result was rather remarkable, because plastic flowed through the hose to the end of that moving arm; and as it

came out of the end it was shaped and hardened. It formed a cone. The forming arm, in fact, simply poured out plastic as it described a circle, and the plastic was hardened as it emerged.

A cone resulted when the circles widened, and the arm drew back. The process was exactly that of an insect, spinning a cocoon, save that the result was no mass of gummed-together threads, but a solid wall of glass-hard plastic, strong as steel, but vastly lighter. It was, moreover, practically a non-conductor of heat and electricity.

Presently the shape became more complex. The growing object ceased to be merely a cone. Guided by drawings under the harsh light of scanning lamps, the constructor built on. The cone swelled and curved.

The movements of the moving arm became more complicated. It sealed off the cone with a solid wall. Interior walls started from that. There were openings in some of them. In three hours, fifteen feet of the length of a rounded hull had been made.

Braddick stopped the constructor and fitted items of machinery into place. The constructor took up its task again and sealed the machines in as it built on further. The hull swelled still more. Its interior design became more complicated and more detailed.

The forming object grew more slowly. It took six hours to make the second fifteen feet. But the interior fittings and supplies were in place for all the completed section. From then on, the hull grew more slowly still.

Braddick's handling machines brought heavy objects and put them in place. Thorn argued tolerantly, then condescendingly installed first one and then the second of the small mass time fields Braddick demanded.

They consisted simply of tiny generators and a circular cable in which the field was formed. When fifty feet of the hull was completed—nearly thirty-six hours after the start—Braddick was red-eyed and gaunt from weariness, but

he went on doggedly.

It was then that Hamlin broke out with angry complaints. Braddick stopped work to listen to him.

"Yes," he said tiredly, "I did put on the locks so you can't go out of the laboratory. I did cut off the visiphone so you can't call anybody. I did shut off the broadcast phone so you can't even receive. I don't want to be interrupted on this job."

Hamlin sputtered. He began to threaten.

"You act," said Braddick, "as if you were aching to tell somebody about Jane, and you deny that you know anything about her. She doesn't want to be bothered. I don't know why, or care, but she means something to you, and I suspect she wouldn't like you to tell anybody's she's here. So I'm going to keep her from being bothered as long as possible. Especially since she's helping in an emergency. If you want something to think about, you might watch that contrivance over there. And if it starts to register, it would be a good idea to pray."

HE WAVED his hand at an improvised gravitometer. It was a bulky iron sphere in a cup of diamagnalloy, that artificial diamagnet which repels all magnetic substances as powerfully as even alnico magnets attract them.

The iron sphere remained at rest, free of physical contact with any other object except for infinitely thin threads which led to amplifiers. It would register any variation of gravity of even the fraction of a dyne.

The Moon's pull when overhead—which makes a difference of a twentieth of an ounce in barometric pressure—turned the appropriate dial needle one hundred points on the scale. The Sun's gravitational pull was clearly evident.

But they would not ring the alarm, because that was adjusted to show a trace of gravitational pull only from another direction—the direction of the North Star. Braddick hoped to get as

much as four hours' notice of the approach of an interstellar object with a mass of twelve sols, even though its velocity was near to that of light.

He went doggedly back to his work. He was installing oxygen tanks, clumsy and absurdly heavy, but available. Racked in place by a handling machine, they became surrounded by plastic and were then a part of the hull.

He adapted a small gas-liquefying unit to work intermittantly, freezing carbon dioxide out of part of the ship's air, ejecting it and restoring the heat and moisture to the purified air, with an addition of oxygen equal to the ejected carbon dioxide. It would keep the air breathable.

It was an enormous task that he had set himself. There was food and a robot kitchen to be installed. There were power units to be put in place—not atomic ones. There were instruments and mathematical tables and calculating machines and volumes of astronomical data and vision communicators.

There was a control-board to be wired to handle a space drive as yet untried, and which had been installed by a technician who tolerantly explained that it could not possibly work. Thorn informed Braddick, kindly, that the drive mechanism was simply an assembly of machinery which would run without having any result whatever.

And besides all this, there were doors which had to be airtight, scanners to be mounted outside the ship, and high-altitude suits to be modified.

It could not possibly be done. Braddick had a deadline which was simply any attainable time less than the minimum time possible. He worked without rest for three days. His cheeks were hollow. He moved stiffly. His eyes were dull. Then Jane caught him by the arm.

"Wake up!" she cried fiercely. "Wake up!"

He looked apathetically down at her.

"I'm awake," he said heavily. "I'm working."

"You're working in your sleep!" she cried. "And Mr. Hamlin is out in the courtyard signaling to some helicopters overhead!"

Braddick pulled himself together. He had closed the circuit of his laboratory buildings, of which the dwelling was a part, so that Hamlin could not possibly get out. It had been his thought that the space drive mechanism would be so clear to the Atomic Power technician that he would try to report it immediately to the corporation.

And then, almost certainly, Atomic Power would try to keep it as secret as the mass time fields, and by the same methods.

They would involve an immediate "accident" which would be fatal to Dirk Braddick.

His thought had been wrong, as it turned out. Thorn knew one thing by rote and was filled with a vast complacency which made it seem unnecessary for him to learn or understand anything else.

He did not fully understand the space drive.

But there was also Hamlin's desperate excitement at the sight of Jane, his furious protests over his inability to communicate some discovery to his superiors. The discovery of Jane was the only thing of importance so far. It was probably that, and Braddick was determined to protect Jane until he had time to find out about her for himself.

BUT now Hamlin had helicopters overhead to signal to. Braddick went swiftly to a doorway to the courtyard. Hamlin was waving his handkerchief wildly in an ordered but varying pattern, evidently some company code.

Braddick glanced upward. He was so tired that he had trouble focusing his eyes. Then he looked down, and Hamlin had finished. He seemed to preen himself. He looked enormously triumphant, as if he had achieved something which would send him far in the service of the company.

Then he saw Braddick, and Braddick looked at him with dull eyes, having to drive his brain by sheer will power to the contemplation of something other than the completion of the spaceship.

Hamlin went white. He shivered in terror.

Braddick did look formidable.

But then the gravitometer alarm rang stridently within the shed. It was, of course, much more important than treason or anything else. Braddick went heavily and looked at the dials. The three needles moved perceptibly as he stood there.

There was a new source of gravitational pull acting upon the iron ball. So far, the effect was so minute that only an instrument so delicate would have recorded it. The pull was less than a hundred-thousandth of the gravitational pull of Earth.

But it increased detectably as he watched. And it came from an unprecedented direction. This new, infinitesimal drag was in the direction of the North Star—Polaris. It might be a mass of twelve sols or more at a distance of multiple astronomical units, upon a course bound for the Southern Cross. By the rate of increase of the field, it must be traveling nearly at the speed of light.

"This," said Braddick, "is it. Thorn, can we test the main time field now?"

"Oh, surely," said Thorn, with condescension. He was fresh. He had worked the hours prescribed for technicians of the Atomic Power Company. He had rested and read and blandly ignored the fact that there was no broadcast reception in the laboratory.

And he had conscientiously installed the mass time field units where Braddick wanted them, and with the properties Braddick had desired. But he was aloof, with an air of bland superiority to a mere independent experimenter who was not employed by a giant corporation like Atomic Power. The ringing of the alarm-bell meant nothing to him.

IV

BRADDICK dismissed Hamlin's treachery from his mind. He surveyed the long, eighty-foot hull of plastic. He was unbearably tired, and he wondered dully if anything had been forgotten. In preparation for just such a premature warning, he had loaded materials for the completion of the spaceship inside the hull as it was built.

Less than an hour since, the constructor had sealed off the bow. The hatches were tight. There was yet no working drive, but the whole ship could be put into a mass time field by the main field cable wrapped around its middle. That, though, was all.

"What do you want done?" asked Jane, tugging at his arm. "Tell me, and I'll do it!"

"We'll test the time field," said Braddick heavily, "and I think I'll take a nap. We've all the time in the world, now."

It sounded like delirium. Braddick motioned Jane to the ladder. Thorn mounted after them. Braddick closed the outer airlock door. The inner one opened. They were in the spaceship.

It was extraordinarily unfinished. Every cubicle was piled with materials loaded in while construction went on. Braddick went to the control room and switched on the scanners outside the hull. The interior of the shed became visible on the screens.

"All set, Thorn?" demanded Braddick wearily.

"Of course," said Thorn smugly.

Braddick set the calibrated switch at thirty-six hundred and threw it. There was an odd sensation as of a sudden chill. Then everything was normal again within the spaceship—everything but the image on the vision screens. Those images swirled violently as the fixed-brightness amplifiers reacted.

The mass time field was on. The ship and everything within it had acquired a time-rate thirty-six hundred times normal. Time was telescoped within the

mass time field so that thirty-six hundred seconds inside the field exactly equaled one second outside.

While a clock ticked once in the shed or the rest of the laboratory, the clocks in the spaceship showed an hour to have passed. And of course, the frequency of the light by which the shed was visible in normal time was much too low to affect the speeded-up vision scanners on the hull.

Only the hardest of X-rays, bordering upon cosmics, had a frequency which would give the effect of visible light. The interior of the shed was shadowless. There were no variations in color. Everything seemed a single, sullen shade of red. And the metal wall panels seemed mistily transparent.

Braddick nodded exhaustedly, feeling now the three days he had worked on the spaceship hull without rest.

"We've got to test our air supply," he said heavily, "and a few other things. There's a third cosmoquake on the way, so we'll have to do everything on time field from now on. Eight hours of this time will take eight seconds of normal time. We'll know how the air works by then, anyhow."

He leaned against a wall, trying to summon energy to go on. But Jane spoke fiercely.

"You need to rest! I can test the air. You sleep, and you'll be fresher to work! We have to wait for the air test anyhow and you can do your work after sleeping just as well or better!"

Braddick considered slowly. He was worn out.

"Maybe you're right. But I don't know what Hamlin signaled to Rogers. Maybe it was about you, Jane. They can't do much in eight or ten seconds, though. Wake me if anything goes wrong."

He stumbled to one of the cubicles that had been intended as a cabin. He unrolled a bundle of bedding which had been tumbled in there as the ship was being built. He dropped on the bundle and slept instantly.

After a little, Jane looked in on him. He had not laid down; he had dropped. She went in to put a pillow under his head. As she moved him, a flash pistol fell out of his pocket. She looked at it oddly and put it back.

TIME passed. At intervals the air machine worked, freezing carbon dioxide out of the air and returning it to circulation rewarmed and its oxygen replenished. The air was intermittantly diluted, thus, with a batch of purified air, which was vastly more practical than a continuous air-purification process.

The girl glanced at the air-purity indicators from time to time. Thorn, the Atomic Power technician, strolled through the ship, yawned and blandly investigated the few books on board. There was nothing in his line. He sat down and complacently went to sleep.

More time passed, and more. The girl lunched in the robot kitchen. There was no sound anywhere but the gentle, self-satisfied snores of Thorn. Braddick slept like a dead man.

The girl had designed the ship, in a sense. At any rate, she had translated Braddick's sketches into working drawings the construction machine could use. When she finished lunch she restlessly went over the whole interior. It occurred to her to put a pump on the airlock. A vacuum in the airlock chamber would check the seals on the two doors. They were tight.

Presently she regarded the cryptic

mechanism Braddick had said could be a space drive. It was utterly simple and apparently useless. There was a powerful turbo-pump designed to produce pressures up in the thousands of atmospheres. It was installed to pump a slightly compressible liquid to the bow end of a straight, strong tube running lengthwise of the ship.

There were two mass time field generators alongside the tube. The field cables were inside the tube. When the liquid had passed through both of them, it would go back to the pump to be forced back to the bow again.

The power of the pump seemed futile. The thing was not a space drive. It was just an elaborate system of pumping water through a pipe.

Jane sat down and thought it over. Nothing could result from pumping a liquid through a pipe, however often and at however high a pressure. But Braddick had seemed sure. Jane had worked from his sketches in designing the ship, and she knew how accurately his brain worked. There must be something. The only oddities about the setup were the two mass time field generators.

Suddenly her eyes opened wide. An expression almost of shock came to her face. She got up and went to the cubicle in which Braddick slept. She regarded him respectfully. Then she went back to the useless drive, hesitated an instant, and carefully and deliberately opened

[Turn Page]

the case containing the field generating unit at the bow end of the tube.

She looked at the inside of the generator without surprise or curiosity. She deftly and deliberately reversed two leads. Then she took two sections of cable and as deliberately—and very proficiently—cross-connected one part of the stern field generator to a similar part of the bow unit.

These, of course, were the small field units. They were inside the ship and they were not in operation. They were in the field generated by the master time field unit, which held the whole ship in accelerated time.

She went back to the control room, moistened her lips, and started the giant pump at slow speed. For a bare instant she touched the switch which now handled both of the small mass time fields.

The whole spaceship stirred, and was still again.

She sat at the control board and looked at nothing, with shining eyes.

A long time later she rose to check the air supply again. She glanced almost automatically at the dull red images on the vision screens. She blinked. There was a change in the look of things outside.

A GREAT hole gaped in the shed outside the spaceship. Steel girders were bent and broken. Some floated in mid-air. She stared at them, but their apparent motion was slowed thirty-six hundred times by the time field which enclosed the spaceship.

The picture was like that of an instantaneous photograph of an explosion. But the explosion was still taking place. With seemingly infinite slowness, to be sure, but with irresistible force, she saw more of the side wall of the shed bending in, to be shattered in the slowest of slow motion.

She ran to Braddick and shook him anxiously.

"Wake up! Quick! *Please!*"

He opened his eyes and was instantly awake.

"What's the matter? The air?"

"No! Come to the vision screens!"

It had taken her perhaps a ship minute to realize what she saw, to run to him, and to have him back in the control room with her. In the interval, events had progressed on the vision screen as they advanced in the sixtieth of a second in normal time.

Half the wall of the construction shed was down. A girder floated with seeming leisureliness toward the spaceship. But its mass relative to the spaceship in its time field was enormous. Its impact would be slow, but irresistible.

"They're bombing!" said Braddick sharply. "Hamlin signaled them something—probably about you—and they've just had time to get orders and drop bombs, or maybe they had orders anyhow! And the drive isn't working yet! I've got to threaten Thorn into fixing it for me."

"It *is* working," said Jane, very pale. "Try it. I did. I looked at the arrangement and saw what you meant to do. So I adjusted the bow field to increase mass instead of decreasing it, and . . . Try it!"

He thumbed the pump switch in. He touched the field switch. The ship stirred. It dragged forward. Braddick reached to other switches. A tiny vane in the drive tube thrust out.

The ship lifted a little. It swept lightly to the end of the shed. The rear view scanners showed the monstrous steel girder float slowly and deliberately through the space the ship had just left.

"The whole thing will be coming down," Braddick said through set teeth. "I didn't build this ship to stand bombing, and I can't smash out through normal time stuff while we're in a time field. I've got to get out through that blast hole!"

His hands touched controls here and there. They fitted into his hands as if by long practice. He had more than long practice. He had made every particle of the ship. Gyros hummed somewhere. The ship backed, swung lightly

and maneuvered delicately through a slow-motion catastrophe.

It was a nightmare. The vision screen glowed sullen, tawny red. Only the outlines of objects appeared. But even in those outlines it was obvious that Braddick's laboratory was ruins.

There were three centers of motion visible even at this time rate, which meant three simultaneous explosions. The dwelling was a slowly swirling mass of debris. The tool shop was already flattened to earth. Above the warehouse in which were stores for any conceivable type of experimentation, a slender, deadly thing seemed to hang poised. But it was descending, though with a startling slowness. It was another bomb.

"There's Mr. Hamlin!" Jane said shakily.

They saw the frozen, rust-colored image which was Hamlin. He cringed from the destruction from above. He had signaled to the planes overhead, telling them something upon which Atomic Power should act. The action was destruction—including destruction of himself.

"I'm a fool," said Braddick angrily. "I'm risking too much! But—"

The spaceship settled quickly. He turned to the girl.

"When you hear me yell, turn off the main time field. When I yell again, turn it on again—and fast!"

SHAKING, Jane seated herself in the control chair. She heard Braddick fumbling at the airlock door. There was the rush of air into the vacuum she had made in the lock for testing. He went in.

"Turn it off!"

She could see everything in the vision screens. As she flicked off the main time field, the spaceship reverted to a normal time rate. Colors leaped into view, with a dazzling effect. Instantly the slow motion of retarded action became infinitely swift and deadly destruction.

The spaceship rocked with the savage crash of explosives. But Jane watched the middle right screen. She saw Brad-

dick leap into view out of the airlock, seize the pertified, horror-struck Hamlin and leap back into the airlock with him.

"Turn it on!"

Instantly the screens were tawny red again. The girl thrust in the lift control and the forward drive, and the spaceship was again silent save for the hum of gyros. It rose swiftly and sped forward. The airlock closed. Braddick came forward, breathing heavily.

"Good girl!" he said. "I don't know why I wanted to save him. I risked too much to do it. I was a fool!"

There was an astounded babbling behind them. Thorn had waked with the cataclysmic roar of the explosions. It had taken him seconds to become thoroughly awake, and then he saw Hamlin—who had not been in the ship at all—in a state of gibbering panic before him.

"Thorn," Braddick said drily, "has just realized that things are happening. Here, now, sit down in this chair. The control room swings, you remember. I'm going to put on the power."

The feeling of weight, even in the time field, had been normal. Now the sensation of heaviness increased slightly. The images in the vision screens revolved, and there was a slight shock as the drive went on to full power.

Almost instantly thereafter there were tiny, unwinking specks of light in most of the vision screens and the background behind them went dark. But there was a tawny-red mass astern and an angry-seeming dark red disk with projecting streamers off to the right.

The tawny mass behind was Earth. The specks were stars, the disk the Sun. The spaceship was out in open space, already beyond the atmosphere.

V

THERE was the curious sensation of a mass time field collapsing, and the vision screens adjusted to give the effect of normal brightness. The normal sky appeared again, all around the ship. The

stars were infinitely tiny specks, un-winking and of surprisingly diverse colorings.

The spaceship headed toward Polaris, the North Star, at right angles to the plane on which all the planets lie. The northern polar cap Earth lay below, with the northern hemisphere curiously foreshortened at the edges of the globe. It looked singularly unfamiliar.

"I'm going to get oriented and a good fix on our course," said Braddick, "before we go back into the time field. We can't make speed in a normal time rate. We couldn't make contact with what we've got to hit either, not to mention that we couldn't live half a second if we did."

There was a feeling of unusual weight. The drive of the spaceship adjusted somewhat to its mass. There was an acceleration of about two gravities, which in normal time rate meant discomfort—bearable, but unpleasant.

As Braddick worked delicately at the control board, there were frantic shouts from below. Hamlin was half-crazed by shock and terror. After three days of restless impatience in the laboratory, unable to communicate with his superiors, he'd seen helicopters hovering overhead.

Their appearance meant that Atomic Power officials wanted to know what was going on. He'd signaled the single important bit of news he knew. He had felt triumphant, because it was very important indeed.

The helicopters hovered just long enough for his news to be relayed to high officials of the corporation and for orders to come back. Then bombs had fallen. It was the one thing Hamlin had not anticipated, but it was the most natural thing in the world.

There had been an extraordinary series of accidents to everybody who had tried to make unauthorized experiments with mass time fields. It appeared that when a man set to work to duplicate Atomic Power fields, they invariably caused terrific explosions which killed

the experimenter and destroyed his apparatus.

The reason was now clear. And there had been a curious, unexplained explosion which had apparently wiped out all the direct heirs of the founder of the Atomic Power company. As a result of the disaster, ownership of the majority stock was now tied up in court proceedings which would go on for years—and the officials of the company had a free hand.

But to Hamlin, cringing and screaming as tiny black dots dropped toward him, there came despairing knowledge that the secret police of Atomic Power had become a sort of Gestapo or Okhrana, destroying all those who opposed the company or who knew too much. And Hamlin knew too much.

But he couldn't adjust to his new understanding.

He had been with the company all his life. He couldn't believe that it had meant to kill him.

And despite the fact that he was alive only because Braddick had risked his own life—and much more—to drag him into the spaceship and away, Hamlin was hysterically resolute to prove to the company that his loyalty was unquestionable and his services of infinite value.

He began to climb to the control room, and the ship went back into normal time.

The sudden extra weight tore loose his grip on the hand holds along the wall of what had been a corridor. He fell back on Thorn and bore him to the bottom of the central well. Both men yelled as they tumbled.

Thorn shook himself and climbed purposefully again. He had no great native intelligence, but Hamlin's half-gibbered explanations had filled him with apprehension.

He meant to find out what was actually forward.

But neither had the faintest idea that the spaceship actually worked, or had left Earth's atmosphere behind.

WHEN Hamlin climbed after the technician, he had only one real thought in his mind. Somehow he must prove himself afresh to the company officials who would have let him be murdered with Braddick and Jane.

They reached the control room. Its fittings had swung about to the seeming of the vertical. Braddick was making finicky adjustments of the controls so that Polaris would center on two cross hairs on the forward vision screen. As the two others climbed into the control room Braddick was talking.

"Of course we haven't good calibration, Jane. We couldn't have. But we've nothing close to aim at anyhow. We only know the approximate course."

Thorn was struck speechless by the stars and Sun and Earth, all visible together, that he saw in the vision screens. Hamlin took one look, and the breath—and all immediately desperate resolution—went out of him. He moaned softly. But Thorn presently managed to take his eyes off the incredible sight outside.

"Look here, Mr. Braddick," he said uneasily, his air of condescension gone for once, "Mr. Hamlin has been telling me—"

His eyes strayed back to the screens, and he was unable to speak again. The Sun was off to the right. The Earth was below, so far below that it had long since ceased to have the look of a flat plain. It was a ball. The spaceship was at least four thousand miles up and still rising fast, now with an acceleration of two gravities.

"Oh, yes," said Braddick. "The helicopters bombed the lab. They blew it to bits. But we got out—on time field—and we're headed for where we've got to go."

"But"—Thorn made a little choking sound and jerked his eyes away from the screens—"this—this can't be right, Mr. Braddick! Something's happened to the scanners!"

"Of course," said Braddick, drily. "They've been moved out into space. So

have we. We're moving away from Earth."

"But we can't be!" protested Thorn. He grew almost hysterical in his effort to hold to sanity by clinging to the teachings of the technical department of Atomic Power. "I assure you, as a technician who understands the mass time field thoroughly, that it cannot possibly serve as a space drive!"

"All right," said Braddick. "Hold the thought. Meanwhile, I'm using it for one. I'm going back on time field now."

He threw over the master time field switch and the feeling of excess weight vanished. It is one of the oddities of the field that acceleration within it is entirely different from gravitation.

A person in a time field, on Earth, feels that he weighs exactly as much as before. The amount of substance in his body is exactly the same as before, despite his loss of mass, and therefore it is attracted as before. But its inertia, its resistance to gravitational acceleration, is decreased so that its response to gravitational pull is faster.

Since in normal time a man will fall at a certain speed, in accelerated time he will fall the time rate times faster, and his feeling is the same as that of normal impact of his feet upon the ground.

Under mechanical drive in free space, the resistance to acceleration is due only to any remaining mass. The mathematics may be found in any book on space navigation, but in a time field of thirty-six hundred it will be found that an acceleration in feet per second equal to sixty gravities is needed to maintain the sensation of normal weight.

Earth, turned a tawny red again by the operation of the time field, drifted visibly behind. Braddick punched a locking key and turned to the others.

"I'm going to shut off power presently and float free," he said composedly. "Better come down to the kitchen and have your lunch. Will you come, Jane?"

Jane stood there a moment, waiting to see if the discussion were finished. As

she turned to go, she knew there was plenty more to be said, judging by the unsatisfied expression on Thorn's face. These technical arguments never did seem to come to any conclusive end.

THORN said in a curiously nerve-racked fashion, "But it's impossible, Mr. Braddick! The mass time field is not a space drive. In all the years it has been in use, with all our research, nothing of the sort has been found. It can't be!"

"Only it is. Still"—Braddick spoke comfortingly—"by the terms of my deal with Atomic Power, its use as a space drive belongs to them even if they did try to blow me up. You can content yourself with that!"

He followed Jane down the ladderlike hand holes on the side of the main corridor. She stepped off into a doorway and nodded at the robot kitchen. It had swung sideward and now hung in a serviceable position, though what had been a side wall when the ship was being built was now the floor. She smiled faintly at Braddick.

"You thought of everything!" she said.

"Not quite." He pressed the buttons which would cause two ready-prepared meals to be heated and served. "I had the fills for the kitchen on hand, of course. What I didn't think of was that—well, anybody but Thorn would be able to fix that bow time field for me. I begin to think he would have considered it sacrilege."

She took the tray the service robot handed her.

"It's a beautiful solution!" she said warmly. "How did you ever think of it?"

He looked at her for an instant before he took his own tray. Then he shrugged.

"Oh, I imagined how nice it would be to have something of the sort. The trouble with rockets is that they throw away the stuff that drives them. This way, we pump a liquid into the pipe. It goes into the first time field, which makes it

much heavier. We push it astern, and get a forward reaction. Then when it gets to the stern mass field, all the extra weight is taken out again, and the sternward reaction takes place, of course, but with much less mass. Consequently it isn't equal and we go ahead. It uses up a lot of power, but—"

"No," said the girl. She looked at her plate. "I—cross-connected the two units. Putting mass into the water to push astern consumes power. But taking it out again yields it. I put the two circuits together. The second field furnishes the power to run the first one."

VI

DIRK BRADDICK put down his knife and fork.

"This hurts," he said to Jane wryly. "Look! You know all about those fields, and nobody but technicians for the company are supposed to know, and they're all men. You say you don't know who you are—but that doesn't bother you. And Hamlin was enormously excited when he saw you. I think it at least possible that his signaling was to tell the helicopters who you were, and the bombs were meant to kill you instead of me. Certainly he couldn't have told them anything about me that would have made them want to smash my laboratory before they'd looked it over! Would your mind telling me—"

"I ought to know about them," Jane said quietly. "I'm Jane Brent. Didn't you know? You guessed my first name right?"

"It fitted you," said Braddick. Then he stared, realizing. "You're supposed to be dead! You and your cousins were killed in an explosion, and the ownership of Atomic Power is tied up in the courts."

"We found out how the company was being run," she said, as quietly as before. "We decided to clean house. But a good many of the higher officials didn't want to lose their jobs and power, so—" She spread her hands, added bitterly; "I

wasn't killed. I woke up in what was supposed to be a small private insane asylum. Actually it was a prison for people Atomic Power found dangerous and didn't want or dare to kill.

"By the death of my cousins I actually have come to own control of the company. I imagine it was intended to let the court action drag out as long as possible and then produce me, by which time I'd have become—amenable. But something happened, and one of the prisoners escaped. They were afraid the place would be investigated. I was packed into a plane to be taken to some other place, and I managed to jump with a parachute. You know the rest."

Braddick considered, and slowly resumed his meal.

"Mmm—yes," he said reflectively. "They'd be hunting for you. But you were supposed to be dead, so if you had told me who you were I'd have thought you were crazy, and at least insisted on getting a doctor. You could have been kidnaped. Anyhow, I see why you were willing to stay in my lab. Even to work for me. It was the safest place—you thought."

"Wasn't it?" she demanded challengingly. "The instant you talked to me I knew"—she stopped, went on—"that I'd be all right with you."

He made a gesture around him.

"I've brought you out between the stars," he said drily. "But if I'm right nobody's particularly safe unless we can do something about those cosmoquakes. I guess it's all right. I shan't turn around and take you home anyhow."

She watched his face a moment, then spoke pleadingly.

"It won't make any difference, will it? I mean, that I'm rich?"

He grinned at her. "My dear! You're not rich if your employees' secret police get hold of you. They're a tough gang! And besides, just how much will Atomic Power be worth if the whole Solar System is smashed?"

She suddenly matched his grin.

"I went through the first cosmoquake

like everybody else," she told him, "but where I was kept, there wasn't much information on scientific matters. I've come along blind. I know what you've done, but not why. What are we aiming for? What are we to make contact with? And what causes cosmoquakes, anyhow? You never bothered to explain!"

HE BLINKED at her and then spoke gruffly.

"Thanks! I'll tell you. After the first cosmoquake, I got what data was to be had and figured that an object with a mass of twelve sols and a speed near that of light had passed about six hundred million miles from Earth. I figured its course. I thought there might be another one, but the first one could have been alone. There was a second one, and I was pretty sure there'd be a third. There is a third.

"The gravitometer in the lab said so. And the first was two weeks ahead of the second, but the third is only four days behind that. It looks like scouts and an advance guard. Considering their speed, they're close together. They're practically tripping over each other. Yet a small party wouldn't send one of its number even as far ahead as the first. They'd stay as close as they could, to help each other."

"But you talk as if they were—people!"

Braddick shrugged.

"I don't know what they are. But think! The Things have almost the speed of light. They come from the direction of Polaris, forty light years away. Empty space isn't altogether empty. There's at least one atom per cubic centimeter even between the stars. That means resistance to speeds close to light. Nothing can attain such speeds naturally. Whatever the Things are, they had to be driven to get going that fast, and the drive has to stay on to keep them going that fast.

"Their speed gives them the mass that raises hob, but they're spaceships.

They're artificial. They're going somewhere, and our Solar System is in the way. And we're going out to try to try to persuade them to change course."

"If there are more of them," Jane said slowly, "there'll be more cosmoquakes, and worse ones."

"So much worse," Braddick said measuredly, "that if we don't persuade them to change course, there's hardly any use in our going back to Earth. If there are dozens or hundreds of them to come, cosmoquakes will crack open geologic faults and let loose chains of giant volcanoes. The Thing that pass will raise tidal waves five miles high. Maybe the Sun itself will be stirred into explosion as a nova. It isn't impossible! In any case, the human race will be exterminated. So—well, if we don't persuade them to change course we might as well open the airlock door and step out."

Jane sat still an instant, imagining the tiny spaceship hanging in mid-space, alone surviving a Solar System gone mad, on which no planet would provide a foothold, and the nearest other star light years away.

Then there was a noise in the well which ran along the vertical axis of the ship. Hamlin and Thorn appeared. Somehow Hamlin had pulled himself together. But he looked like a man on the verge of the horrors. Thorn looked grave, with now a trace of reassured complacency.

"Look here, Braddick," said Hamlin, his voice pitched high, "this has gone far enough!"

"Yes?" said Braddick.

"You made an agreement with Atomic Power," said Hamlin. He gave an impression of breathlessness. "It was verbal, but it was recorded as it was made. You're an employee of the company for as long as Thorn is with you. I have written authority to take over any experiment you may be conducting while you are an employee of the company. I take over now! I insist that you stop this experiment at once! If we're really in space, I order you to return to

Earth!" He swallowed. "You're violating a contract. You've kidnaped Thorn and me. You—"

"Oh, damn!" said Braddick savagely. He pulled Hamlin's own flash pistol from his pocket. "Get in that room across the corridor! You're a fool, and I'll take no chances! *Move!* Both of you!"

"It's piracy!" protested Hamlin, his teeth chattering.

Thorn said condescendingly, "Mr. Braddick, you do not realize that Atomic Power is an important corporation! To be on the wrong side of the law, and opposed to Atomic Power—"

"*Move!*" repeated Braddick furiously.

THEY moved. Braddick jammed the door so it could not be opened from within. He nodded to Jane and climbed back to the control room. She followed.

"I could have said you're Atomic Power by rights," he grumbled, "but it's no use. I'm going to hook up a relay. I don't want to get too far out. I wish the ship had been finished."

The ship was actually incomplete, but the parts for its completion had been loaded in while the hull was building. Now he brought out an odd little inertia switch and adjusted it with minute care.

Then he cross-connected it to half a dozen of the switches on the control board. When that was finished, he set the drive control to a new point and threw off the main time field. The cosmos went back to a scene of twinkling lights and a new far distant Sun. But this time the sensation of weight was normal.

He leaned back in the control chair and seemed to relax. With the vision screens all about, the control room looked like a cage, with windows showing the sky all around. The Sun was now merely a bright star, and Earth was probably visible, but not easy to distinguish from vastly more distant stars which shone of their own light.

At sixty gravities, one attains a speed of twenty-three miles per second the first minute, and the speed increases by

twenty-three miles per second more for every added minutes. The spaceship was a long way from home.

"This switch won't be anywhere near as easy to trip as the gravitometer back in the lab," said Braddick. "But twelve sols is a lot of mass. If we trip it, our time field goes on to maximum, reducing our mass to as near zero as possible. Everything else goes off. I think—and I hope—we'll contact the Thing that's going on to make another cosmoquake. Meanwhile we can only wait. Maybe we'd better pray."

Jane asked quietly, "Do you really expect to do anything to an object weighing twelve times as much as the Sun?"

"It only weighs that because of its speed," said Braddick. He added with a shrug, "Things work out queerly. The odds against the time field being known when the first of those Things came by, against my having the hunch that made me do my calculations, against my having a machine that could make a spaceship, against your coming and being able to do what I wanted to do with the fields, against our escaping those bombs Atomic Power dropped on us—add those up, and they're pretty big odds. It's practically a miracle that we're here. And it would be pretty stupid of fate or chance or whatever to waste a good miracle like this by having us helpless at the end of it."

Jane looked at him, hard. Then she took a quick breath.

"I like that," she said softly. "I like this whole business. I like—everything!" She smiled at him gravely. "I say no more, or I might be unmaidenly."

The little spaceship went on through sheer emptiness with an attained speed of four-thousand-odd miles per second and no feeling of motion at all. It was accelerating slowly now, at one gravity, for comfort.

It was alone as no man-made object was ever alone before. It was far beyond escape velocity. If the drive failed, it would drift on forever through space. It was orphaned, abandoned by Sun and

Earth and planets. It went on and on and on.

Then the switch clicked over. There was an instant's sensation of bitter cold. Then the stars were gone, and there was a dark gray background to all of space. The ship's drive was off, and there was no feeling of weight at all. The sensation was of a giddy, terrible, endless fall.

"This," said Braddick, "is definitely it."

Jane was pale. "You mean—"

"We ran into a gravitational field," said Braddick. "There's only one thing with a gravitational field out here, and that's the Thing we came out to meet."

HE WATCHED the screens, holding himself in the control seat. The time field was on to its limit. Absolutely all the mass which could be taken out of any object had been removed. The time rate, correspondingly, had gone up. The spaceship might have weighed eighty tons or so on Earth.

In this time rate, its mass would have been measurable only in milligrams—and there are three hundred-odd milligrams in an aspirin tablet. In this field, too, time was telescoped to an incredible degree. Not only was visible light too low in frequency to affect the scanners, but X-rays and even cosmics were too far in the red to register.

Gravity itself had the effect of light, and the tenuous gravitational fields which interlace all space made a faint grayish glow. The stars were lost against this background. The Sun, to be sure, was a visible speck of lighter gray.

But far away yet growing nearer with a perceptible speed even at this time rate, there was another and vastly brighter object. Beyond it were others. Small pinpoints of brightness, remote, in ordered and patently artificial arrangement. They looked like a new constellation, precisely geometric in design. But they were, of course, the space fleet of Things, moving toward some unguessable destination, with Earth and Sol and the Solar System merely a

course marker, like an ant heap in the desert between the stars.

The little spaceship was practically without inertia, practically without resistance to gravitational pull. It fell headlong toward the Thing from beyond Polaris, the fellow to the Things which had shaken the Earth and roused the Sun to fury. It glowed more and more brightly as the spaceship approached. The scanners adjusted to cut down its glare.

The little spaceship swung past and fell into an orbit about it. The Thing was perhaps a thousand feet long, no more. It glowed with the fierce energy of its mass. There were rows of openings along its hull. They might have been ports, or they might have been weapons. And it had the mass of twelve suns.

VII

FOR five hours, as time passed in the master field, the little spaceship from Earth swung about the giant, glowing Thing. On Earth, in the same interval, only the infinitesimal fraction of a second passed.

Those in the spaceship lived at such a rate that had they stayed in their orbit until they died of old age, a child's punctured bubble on Earth would not have vanished. But they spent five seeming hours in telescoped time, and despite the lack of weight they were able to work and to know futility.

The two in the control room looked at each other, at last, with defeat in their eyes. They had tied themselves in their seats. In its established orbit, everything in the spaceship seemed weightless.

Despite the Thing's mass, their revolution about its neutralized all attraction. But their speed in that orbit was actually so enormous that the Thing itself seemed to revolve slowly even in their time rate.

"The situation seems to call for another miracle, Jane," said Braddick, try-

ing to smile. "We can't attract attention, even unfavorably. And the Thing itself is invulnerable. At a speed so close to that of light, its every molecule has a mass of tons. No explosive we know could dent it. If it rammed a planet the size of Earth, it wouldn't be stopped. It would go right on through. But the planet would explode after it had passed."

Jane watched his face, her hands folded together demurely.

"There are creatures of some sort inside it," said Braddick. "They may be fiends, or they may be quite decent. We're like ants to them, but maybe they wouldn't deliberately kill us. Yet they'll never know we were here, because—now that I realize it—they're in a time field too.

"Einstein figured it out more than seventy years ago. When an object approaches the speed of light and its mass increases, its time rate slows in proportion. With every molecule weighing tons, the creatures who built this thing—whatever they are—must move with infinite slowness and feel quite normal regardless. It's a penalty they pay for their invulnerability. But we'll never be able to make them know we're here."

Jane's eyes remained fixed on his face. Braddick looked suddenly old and worn. The tiny spaceship now circled the Thing from outer space as a moth circles a flame. It could do nothing—literally nothing.

Its weight was infinitesimal, but the power of its drive was proportional to its mass. It simply could not pull away from a gravitational field equal to twelve suns. And it looked now as if the tiny ship would simply remain as a satellite of the Thing until—

"One more item," said Braddick. "Revolving around the Thing as we are, we have a terrific velocity ourselves. We'd go into the Thing's own time rate if we cut off our main field. But I pointed out before, that there's matter even in supposedly empty space. An atom to the cubic centimeter. At our speed, we're

batting into trillions of them every second. Even the Things need to keep their drives on to keep from being slowed by that normally immeasurable resistance. But our mass is so slight that we're slowing down fast. The more slowly we move, the closer we come to the Thing. We're closer now than we were. Before many hours we're going to touch it—and die."

Jane glanced at the vision screens and back at him.

"But the—creatures must know about the slowing of time at their velocity," she said hesitantly.

"I'd think so," said Braddick.

"And this is one of the scouts," said Jane. "We saw"—she pointed to the geometric pattern of glowing points on the vision screen—"we can see the rest of the fleet. This one is on ahead, like the ones that made cosmoquakes."

Braddick nodded. "Yes."

"Why would they have scouts," asked Jane, "if their scouts live so slowly that they couldn't signal a danger until it was long past? The odds against any solar system having a weapon that will destroy them must be enormous, but they thought it possible or they wouldn't have sent scouts on ahead."

BRADDICK'S forehead creased. "Yes, I see." Then his expression of defeat lightened. "Of course! They'd have to have automatic signals! Signals that would be sent back from a scout that was attacked, whether the creatures in it realized the attack or not. Of course!"

He straightened within the cord that held him in his seat.

"The kick-back, though," he said drily, "is that if they have a device that will signal the fleet that this ship is attacked, it will almost certainly turn on some defenses for this ship. "And they ought to be deadly. They should blow us out of space in a hurry. If we can start them, we'll be spending our lives simply to send a signal that may not have any effect at all."

Jane smiled at him. "But aren't we dead already, Dirk?"

He nodded. "We are. All right! We try to attack the Thing. But we've no projectiles that would stir the top layer of molecules. Hmm . . . What would be long radio waves to us would be visible light to them. Now, if we could start some sort of trigger wave, to start radio-activity—" He added, "I'm stabbing in the dark, but there might be something there."

He began to scribble on a pad beside him. He seemed to forget the girl at his elbow. But Jane watched him with a curiously maternal expression. She regarded him like someone watching a little boy of whom she is vastly proud, but whom she knows needs someone to look after him. . . .

Far off in space, the mighty armada of the Things bored on. There were thousands of them. It was, perhaps, the mass migration of an entire race, leaving the planets of a burned-out sun for younger worlds discovered by its explorers in the course of a search-requiring millenia.

In the Things would be stored all the equipment for defense and attack that hundreds of thousands of years of their civilization had developed. There would be mighty machines and equipment for the reconstruction of a world. The space armada may have been a gallant defiance of fate by an ancient people whose sun had burned low and who had to start anew or die.

But in its path lay Earth. And on Earth was a young civilization. Atomic Power had been known for less than half a century. Broadcast power was not yet in universal use. Clumsy, laboring rockets had barely circled its Moon. Only twice had explorers returned from a satellite hardly a quarter-million miles away.

Its science was childish by comparison with that which had built the Things. And Earth was doomed. The human race was destined for annihilation when the navy of Things merely

drove past.

The second cosmoquake had killed millions. But also it had shaken terrestrial scientists out of their complacency. The second cosmoquake had rescued Dirk Braddick's explanation from the daily paper feature pages and caused it to be given really serious consideration.

Physics laboratories—those that survived—hastily prepared devices to test its accuracy. Gravimeters even more delicate than Braddick's had been made, and they verified his explanation to the full.

A full hour before the bombing of his laboratory, other scientists knew of the third nearing Thing. More, they had detected the more distant main fleet. But then they could not reach Dirk Braddick. For three days his laboratory had been isolated.

But on the fourth day Air-Navy helicopters descended and found it in still-smoking ruins. But some of them followed and shot down private fliers who tried to flee, and learned that Atomic Power had bombed and killed—apparently—the man who alone had understood the cosmoquakes from the beginning and was surely the only man who might have devised a defense. . . .

IN THE spaceship Braddick looked up in renewed, dull defeat.

"No use," he said heavily. "I figured out a frequency that would do the work. A radio wave, a disintegration-frequency that would start radioactivity at work like a lightning fast cancer. It would eat up that Thing in seconds. It could only be generated in a ship in our time field, and only work on matter in the time rate yonder. But there's one flaw in it. It's useless."

"You'll make it work!" Jane said confidently.

"No," said Braddick. "I could make a generator. But it has to shift electrons in the Thing to start its destruction. I began to figure on the power I'd need. And it worked out beautifully until I remembered that at the speed that thing

has attained, its electrons weigh pounds.

"Pounds, my dear Jane! And it would take more energy than Atomic Power makes in all its generating stations to pack power enough into a beam to move those outside electrons. And we simply haven't got it."

There was silence. Then Jane put out her hand and touched his shoulder comfortingly.

"Well, then," she said in a sort of blind confidence, "you'll think of something else!"

He automatically covered her hand with his own. But he spoke querulously.

"Darn it, Jane, I don't like it! I know there's some way to beat the thing! I know it, but—"

All of the lights in the control room went out. The vision screens went dead. The control room became inky black. The air purifier had been running. Its noise was a faint murmur. It cut off as the lights did. The stillness was enough to crack the eardrums. The blackness was absolute.

Jane spoke in a shaking voice.

"Dirk! What—"

"I don't know," Braddick said evenly. "Maybe the Thing has defenses that turn on, after all. Or perhaps—" He said vexedly, "It might be merely a line failure, and I haven't a flashlight on the ship. I simply didn't think to bring one!"

Of the two possibilities, the one seemed as likely as the other.

"I'll check the wiring in the dark," said Braddick. He got up fumblingly because of his lack of weight. "Better take my place at the control board. Not that it'll do any good if—"

He touched her in the inky blackness. And they were weightless, in a tiny bomb of blackness on the vast vacuum of interstellar space. Knowledge of the monstrous vacancy outside made for a feeling of aching loneliness.

The crytic, monstrous Thing which held them captive was frightening in its impassive deadliness. And the nagging certainty of death ahead caused a sharp

urgency in all their emotions.

They touched in the blackness. And Braddick, as if moved by an irresistible force, reached out and drew her to him. Her hands reached about his neck.

Soft lips pressed his.

An instant later, he said unsteadily, "I didn't mean to do that! Not yet! But I'm glad I did! Now I'm going to work out something."

Jane spoke softly, in the absolute obscurity.

"Even if you don't, it doesn't matter so much now! But I'd have hated to die without your kissing me."

"I'll be back in a minute," said Braddick. "I'll check the switches first, then try to trace the circuits." He made a sudden, inarticulate sound. "I've got it!" he said fiercely. "By all that's holy, I know what to do!"

Then there was a scrambling noise. He was pulling himself down the ladder in what had been the corridor.

He went down, floating without weight and holding to the ladder as a guide. He tried to remember to count the rungs, even while his mind raced in estimate of the possibilities in his new idea.

But they would be possibilities only if this was a failure in the spaceship, not a defensive field which prevented all power from functioning so near the Thing.

He grimaced in the blackness. And then, suddenly, clutching fingers grabbed him, and two bodies assailed him. He fought savagely, weightless and almost helpless because of lack of weight. He struck out hard, hit soft flesh, and the violence of his own blow threw him backward. His head hit something.

VIII

BRADDICK came back to consciousness floating eerily in mid-air. The lights were on again. Hamlin floated close beside him, holding lightly to a ladder rung with one hand, gripping his

recovered flash pistol in the other. He looked righteously triumphant.

"You try to start something, Mr. Braddick," he said severely, "and I'm going to shoot! Thorn will testify in court for me, and he's going to fix the machinery so it will take us back. I've got a legal right to defend myself. Atomic Power—"

Thorn's head and shoulders came out of the drive room opening. He looked confused, like someone trying to feel complacent and worried at the same time. He decided upon worry.

"Mr. Hamlin," he said plaintively, "he's changed the leads of the power units! There's two new leads I don't understand. I don't know what'll happen if I do anything. It's the drive I'm talking about, and he's got 'em fixed some new way, so I don't know what'll happen if I fix them like they ought to be!"

Hamlin looked uneasily at Braddick, and back at Thorn. Then he spoke irritably.

"Go on and figure it out! Figure what he did and what it does! If you want a bigger job with the company—"

Thorn shook his head stubbornly. "I know how those units ought to be connected. They aren't connected that way. They work some way I don't understand. I've been trained to do things the right way, not understand how wrong ways work. I'm not going to touch it. Mr. Hamlin. It's against company rules."

Hamlin protested furiously but he was uneasy himself. Braddick remained silent. Floating as he was, he saw Jane's face peering down from the control room. She made a quick gesture. He gave no sign, except that his eyes followed her as he drifted.

"Come on down here, Thorn," said Hamlin at last, angrily. "We'll tie Braddick up. We'll tie that girl up. Then we'll talk it over."

Thorn obediently climbed out into the well which had been a corridor. He came clumsily down the shaft. Braddick floated aimlessly in midair. Now his feet

were toward the bow of the ship, and now his head. He knew that Jane was watching.

There was a sudden, terrific jerk. The three of them, floating free, fell toward the stern of the ship. But Braddick fell feet first. The others hit, Thorn head first, Hamlin a n y h o w. Thorn was knocked cold, and Hamlin dissolved into quivering panic which made him helpless. Braddick staggered as he landed, then sprang upon Hamlin, snatching the flash-pistol and struck savagely with its barrel.

"All right Jane!" he said shortly. "Turn off the drive now."

He bundled the two limp forms into another compartment and jammed the door as before. Then he went up.

"They worked their door loose and cut off the power" he said drily. "Luckily, not the time field. I'm glad they did. You cut in the drive, and it all leads to—this."

He kissed her soundly.

"Now listen!" he commanded. "I told you I'd thought of a trick we can try. You're not going to like it, but you've got to help. Here's the idea."

He told her. She went white, but she nodded soberly. Ten minutes later—ship time—he was clad in a pressure suit designed for use in planes at high altitudes. It was made of a plastic fabric, with a helmet and a tank of oxygen. It was not designed for use in space, but the pressure difference would hardly matter.

He went into the airlock with a huge coil of fine wire, pushing it before him in midair. He closed the inner door. He did not wait to pump the lock empty, but opened the outer door after a first heave at it had cracked it enough to let most of the air in the lock escape to space.

Then he looked out into the strange, improbable gray emptiness which was the cosmos at maximum time rate. The glowing Thing seemed only a little below him. Actually, it was probably no more than two hundred feet away—it had

been much farther at the beginning of their circling. He fed the thin bare wire steadily out into space.

IT WENT beyond the time field, but it did not lose its flexibility. Its mass had been removed. It would remain in its acquired time rate forever unless another time field restored it to normal for its surroundings. It flowed out and out and out, astern. It had the orbital speed of the spaceship itself, and now Jane put on an infinitesimal trace of drive.

The wire trailed behind as a thin and shining thread. As the spaceship circled the Thing the wire formed a ring. Presently, so closely had Jane guided the ship, the circle was complete.

The trailing end came back into view beyond the airlock door. Braddick reached out with a hooked length of wire and hauled it in again. He closed the airlock door and let air into the narrow space. He reentered the ship and stripped off the pressure suit.

The little spaceship had ringed the monster Thing with a thin thread of wire forming a perfect circle in empty space. It revolved about the giant object like one of the rings of Saturn. Braddick took the controls.

"Now it's up to you, Jane."

As she left the seat, Jane's face worked a little. She kissed him and fled to the drive room. She came out with two flexible wires which she connected to the two ends of the bare wire which now circled the Thing. She came back.

"I put it on the switch you told me to," she said shakily. "I want to be with you if—anything happens."

"Right." said Braddick.

He put his arm about her firmly. They watched the vision screens. Braddick waited a breathtaking length of time. Then his hand quite steady, he threw the switch. There was an odd, harsh sensation as if someone had plucked the very heartstrings of the universe. As if something under tension had given way, and there was ease after it. And then—

The small spaceship floated alone in space with a suddenly collapsed ring of bare copper wire behind it. The Thing had vanished. It simply wasn't there any more.

They went into normal time to orient themselves. Braddick had chosen the moment for closing the switch when the spaceship's position in its orbit was right. The little plastic vessel had been in the part of its orbit when it moved away from the Sun.

When the Thing vanished, the little ship was thrown backward. Much of its sunward velocity, then, was canceled. But Sol was a very bright star and it was necessary to decelerate violently to keep from being carried on past by the speed the Thing had imparted with its monstrous mass.

For hours on end in time field the drive worked valorously to neutralize the little ship's imposed speed. Braddick took time out to descend and seal the door of Thorn and Hamlin's cubbyhole prison. He cut a hole in the door for ventilation.

Hamlin grew frantic to the point of incoherence, threatening all the penalties of the law and of Atomic Power's secret police. Thorn became haughty, shaking his head deprecatingly at Braddick for the predicament he was in, having defied Atomic Power.

But when Braddick landed in Washington, it did not quite work out that way. To begin with, he had an obvious spaceship. What he had to say was partly proved by that fact alone. And he was mildly astonished to learn that his explanation of the two cosmoquakes was now accepted scientific doctrine, and that the danger, as well as the existence of the Things had been proved.

In fact, a third cosmoquake had begun its first phase and was being watched with sickened apprehension by every physicist on Earth, when it had abruptly ceased.

Instruments had showed that a body with a mass of twelve sols was moving toward the Solar System.

LONGER AND more accurate observation had proved that it would pass within twenty million miles of Earth. The human race would be exterminated. But then, when the first physical symptoms were evident, the cause vanished.

Braddick could explain the disappearance of the Thing. He did.

"It was a spaceship from somewhere beyond Polaris," he said briefly. "It had to keep its drive on because at such speeds there's resistance even in space. So I managed to get a wire around it for the field coil of a mass time field. When I turned on the field, apparently I didn't make all of it massless, but I evidently neutralized a good deal of mass and speeded up the time rate in its engine room—and consequently its drive, which began to operate at probably millions of times its normal rate. The Thing had lost part of its weight, but its drive went up astronomically. So my guess is that it went up beyond the speed of light and turned up in some other set of dimensions."

Somebody spoke instinctively.

"But that's impossible!"

"So are cosmoquakes," said Braddick, "and spaceships, and . . . Oh, fudge!"

"I mean," objected his listener, "energy itself has mass. There were thousands, millions of tons of energy stored in the spaceship in the form of the mass it had added by its speed. What did you do with all that energy?"

"My guess," said Braddick, "is that —" Then he shrugged. "I'll write a paper about it some time. Right now I've got to pass on the plans for more ships like the one I've got. Maybe some more can be made before the main fleet gets here. Anyhow I'm going to pass out what information I have, load up this ship again, and start to slash at the main fleet of the Things. And I want to get married."

Jane flushed. But she spoke composedly.

"Yes. And I am Jane Brent, and I want to do something about the officials of Atomic Power, because I think I own

control of that company now."

Then there was confusion. But Atomic Power was not in good odor any more, as Hamlin and Thorn found out when they were released. Even its influence could not stand against the authority of government and the decisive insistence of its principal stockholder that something be done at once to stop its private police force and its private prisons and the murders that had been committed in its name.

But it was something over a day later that the really big news came. The delicate, sensitive gravitometric instruments which had already detected the existence of the space fleet of Things and their approach, now gave good news.

The Thing fleet had split into two, and was widely separated. The breach was widening hour by hour. The Things had used Sol as a course marker. Anticipating no combat, nevertheless scouts and advance guards had been sent on ahead.

The first scouts had gone on through. But one of the advance guards had vanished in the fraction of a second, evidently as the result of an attack by inhabitants of the Solar System.

The Things were not seeking conquest. They separated into two fleets, which now would straddle Sol's family, passing billions and trillions of miles out from the Sun where even their incredible combined mass could do no damage and would not further irritate the population of so belligerent a planetary group.

DIRK BRADDICK was definitely a hero, and Jane was hardly less admired for the way in which she cleaned up the corporation she had inherited. She turned Braddick's two bartered inventions back to him, though, and canceled the agreement which would have made the space drive Atomic Power property.

"It doesn't make any difference," he said impatiently "People want me to develop it! They want to make a corporation for interplanetary exploration and trade. You handle it, Jane. I've got some research I want to do."

"What sort of research?" Jane asked, interestedly.

"That gravity business," said Braddick restlessly. "The fleet must have been a light week away from Earth, at least. But in two days it had found out its scout had vanished, and changed course, and we knew it. How the devil could that happen? Does gravity travel faster than light?"

"Darling," said Jane, "we're still on our honeymoon. Don't you think you'd better do a little more research on how nice it is to be married to me, before you get back to that sort of thing?"

Braddick looked at her suspiciously. Then he grinned.

"Oh, all right! We'll go out right now and look at the Moon and see what discoveries we make."

Their discoveries were neither new nor unprecedented, but they seemed to be satisfactory.