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## THE BLACK PILLAR

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You have probably seen Alexander Kravtsov's picture; it is in every textbook of geophysics, in the section dealing with Kravtsov's Ring. And there was a time when it was printed in issue after issue of all the newspapers of the world.

The picture shows a young fellow in an open-necked white garment, that used to be called "tennis shirt". In his eyes, which are squinting, no doubt, against the glare of the sun, there is a boyish but at the same time resolute expression. The picture is not, on the whole, very brilliant; you feel it was taken by means of the action of focused light on silver bromide, as was done in the second half of the twentieth century. Such cameras can be seen in the Central Museum of the History of Technique.

The picture was taken on board the "Fukuoka Maru" by Olovyannikov, the correspondent of "Izvestia", and he, of course, could not have had the least idea that he was recording the face of a man whose name was destined to live for ever.

But, as so often happens, the name has overshadowed the man.

Ask any schoolboy if he knows who Alexander Kravtsov was.

"Kravtsov? Well, of course!" the boy will answer. "Kravtsov's

Ring!"

"I'm not asking you about the Ring, but about Kravtsov himself."

He will frown and say, "Well, it was a long time ago. He did something heroic during the Great Short Circuit."

"He did something heroic..." That's it. The all-knowing schoolboy of our times has to be told about Kravtsov—not about the name, but about the man.

Because he was not a hero at all. He was a perfectly ordinary young fellow. It was just that he could always be relied on.

The newspapers of those days were printed on paper—a flimsy perishable plastic material made of wood pulp. But there are microphotographs of them, and fortunately an excellent article about Kravtsov (micro No. KMMA2rk-2681438974), written by Olovyannikov, has been preserved. Indeed, Lev Grigorievich Olovyannikov himself, notwithstanding his advanced age, is still quite hale and has a good memory, and he has told us many details of those distant events. He even has a copy of Kravtsov's last letter, which was never posted.

It is not easy to tell this story. For the fact is that, against the background of a gigantic event of significance to the whole planet—and the Great Short Circuit was just such an event—any attempt to tell the story of an individual human's fate must seem a bit pretentious. Willy-nilly one has to speak, not of a man, but of mankind, because only mankind is strong enough to overcome world catastrophes.

Nevertheless, we have done our best to trace the remarkable personal story of Alexander Kravtsov, who was an active participant in the events we are going to describe.

So, in short, judge for yourselves.

## I

Waking up is a strange condition: the ancients considered that a sleeping man should never be wakened suddenly; for during sleep the soul left the body and until it returned of its own accord, the sleeper was dead. But the ancients knew nothing about the electrophysiochemical activity of the cells of the brain or about the properties of nucleic acids.

In a few seconds, the sleeper who is waking up recalls everything: who he is, where he is, what has happened, and what is in store....

Before opening his eyes, Kravtsov fancied that there, above his head, was the whitewashed ceiling he had known since childhood, with the moulded rosette in the centre. But then, still not opening his eyes, he remembered that the rosette was twelve thousand kilometres away, and that here, above his head, were narrow boards, painted with white enamel, with reflections of the ocean swell flitting and playing across them. He recalled everything and disconsolately opened his eyes.

It was going to be a hot day without a breath of a breeze. There would be arguments with Will; but today was Russian day: they would only speak Russian, and he, Kravtsov, would cook the meals the way he liked. How should he repay Will for yesterday's omelette with sour gooseberry jam poured over it?

He put on his sunglasses, went up on deck, and glanced through the half-open door of Will's cabin. From it came the drone of an electric shaver: the old pedant would sooner throw himself to the sharks for breakfast than appear in the morning with unshaven cheeks. As for Kravtsov, he had not shaved for over a month. After all, there wasn't a soul for three hundred miles around. But there was more than that to it. Kravtsov knew that his thin little brown tuft irritated Will and that—well, perhaps it would be wrong to say it pleased him, but at any rate, it amused him.

"Good morning, Will," said Kravtsov. "What would you like for breakfast?"

"Good morning," a voice growled from behind the door. "You're very kind. Thank you."

Kravtsov chuckled and went to the galley. He stood pondering for a while in front of the refrigerator and then turned resolutely to the shelves and took down a tin of buckwheat. Buckwheat porridge for breakfast was something Will couldn't stand.

While the porridge was cooking, Kravtsov made a round of the rig. That took about half an hour, for the circular rig had a diameter of five hundred metres. It stood motionless, though it was not at anchor; here, just above the deepest trench in the ocean, anchorage was impossible.

Six powerful screw-propellers held the rig on the spot: three had a right-hand and three a left-hand motion. Transmitters suspended

over the side fed an electronic computer continuously with all the necessary data on wind, waves, and current; and the computer continuously processed this information and sent commands to the propeller-drives.

A second set of screws, again six, hung vertically under the rig, and counteracted any list or rocking. However much the ocean raged—and Kravtsov and Will had twice had proof of this—the rig remained almost motionless: its drift did not exceed a hundred metres and the string of pipes which passed through it to the bottom of the deep, deviated less than one degree from the perpendicular.

The highest waves did not reach the edge of the deck which was thirty metres high. But from time to time the wind tore flecks of foam from the breakers and flung them on deck.

Today, as always, everything was in order. The atomic pile duly heated the water, which had been desalinated by ion-exchange aggregates, and the steam duly turned the rotors of the turbines. The generators of the power station were working at minimal pressure, because the ocean was calm, justifying its ancient name of Pacific. The surplus energy was being put to a side use—electrolytic extraction of silver from sea-water, which in some measure recouped the International Geophysical Centre for its fairly heavy expenses.

The automatic mechanisms were working smoothly. Kravtsov looked out over the blue expanse of ocean softly lit by the morning sun. At first this majestic picture had taken his breath away, but now the ocean only bored him, nothing more.

"Twenty-seven days to the end of my spell," he thought, and scratched his beard under the left ear—a newly acquired habit.

Kravtsov went to the centre of the rig, where the hundred-and-fifty-metre derrick towered, and looked at the tape of the recorder. His glance became fixed stare: since the day before, the slack of the tackle cables had increased by fifteen millimetres. He and Will had already noticed the day before that the cable was a bit slacker than usual, but had attached no importance to it. But fifteen millimetres in twenty-four hours?

Will was bathing in the "swimming pool"—a small drop of the ocean enclosed in an anti-shark net. At a quarter past seven on the dot he would get out of the lift, puffing and blowing, and say: "The water's very warm today." In Will's lean body there was a

clockwork spring that had been wound up once and for all.

Kravtsov put some butter in the porridge, salted it, made tea, and emerged from the galley just as Will came on deck. Kravtsov greeted him with a languid salute. Will nodded, pulled a white rubber swimming-cap off his head, wiped the water off his bronzed body with the palms of his hands, and said:

"The water's very warm today."

"Who'd have thought it," growled Kravtsov.

They breakfasted under an awning. Will seemed not to notice the buckwheat porridge. He cut himself a slice of bread, covered it with a thick piece of ham, and poured out a cup of tea and rum.

"You ought to have some porridge," said Kravtsov.

"Thank you. Another time," answered Will imperturbably. "What sort of a night did you have?"

"Bad. I had nightmares."

"Don't read Esperanto before going to bed."

"It's better to study Esperanto than make horrible gnomes from plasticine."

"Aye," said Will, sipping his tea and rum. "I haven't managed to model you yet. Perhaps because I can't quite picture your spiritual being clearly."

"My spiritual being?" Kravtsov grinned and glanced at Will's grizzled slop-cropped head. "Shall I tell you a story? The hare asked the deer. 'Why do you wear such a heavy thing on your head?' 'What do you mean—why?' replied the deer. 'To look handsome, of course. I can't stand those who go about empty-headed.' The hare was offended and said 'Ah! But my inner life is very full.' "

Silently Will filled his pipe with light tobacco, but Kravtsov saw by the way his eyes puckered that he was reflecting on the story.

"Now I'll tell you one," said Will, enveloping himself in smoke. "An Irishman fell into the clutches of a bear. 'Do you want to eat me?' he asked. The bear answered 'Yes, I'm going to eat you up.' Then the Irishman said 'But how can you eat me without a fork?' The bear was very vain and didn't like to admit that he didn't know what a fork was. He thought and thought, and then said 'Yes, you're right' and let the Irishman go."

"Is that all?"

"Aye, that's all."

Kravtsov sniggered.

"The cable's slackened fifteen millimetres," he said after a silence.

Will knocked the ashes out of his pipe and spat into a box of sand.

"Let's go below, laddie." And with that he stood up and unhurriedly made his way to the derrick.

Kravtsov followed him, eyes fixed on his strong hairy legs and the neat crease in his pale green shorts.

They raised a heavy hatch in the deck and lowered themselves under the floor of the derrick. It was dark and stuffy there. Kravtsov switched on the light.

Before them was the upper end of the casing, topped with a set of preventers through which the drill passed. (*Preventers-powerful valves hermetically sealing either the whole borehole or the annular space between the drill pipe and the casing, against a blowout of subterranean gases.*)

Will stood lost in thought for a moment then climbed on to the upper flange, took out a rule, and measured the distance to the rotor beams.

"Well, what have you found?" asked Kravtsov.

Will jumped down, examined the preventers again, and began to hum an old Scottish ballad.

"Well, what?" said Kravtsov, beginning to lose patience.

"Well, I installed those preventers myself six years ago. And I'm damned if the casing hasn't risen a good six inches!"

"Are you quite sure what it was, Will?"

Will remained silent. He never answered such questions.

## II

Six years before, in accordance with decision of the IGY—the International Geophysical Year—an ultra-deep borehole was started here, in the ocean trench, in order to study the composition of the Earth. All the countries taking part had contributed towards the construction of a floating base. Four drilling crews, selected by an international commission, were installed on the rig. They were all experienced off-shore oilmen, but it was the first time they had had to drill to a depth of fifty kilometres. True, the ocean deep saved them over ten kilometres, but even so forty kilometres was no joke.

For the first time a drill was to penetrate the envelope of the Earth under the crust—the mysterious mantle here, below the bed of the ocean, where the Mohorovicic discontinuity—the zone of property changes—most nearly approached the surface of the planet.

The very latest in world technique was used to drill the hole. The metal casing, made of a specially durable alloy, was not sunk as far as the face: it passed through the water and penetrated the sea bottom to a depth of only a few kilometres. Beyond that the wall of the well was not reinforced with metal: the thermoplastic method of drilling, which reduced the rock to a gas, at the same time fused the wall and made it solid and leak-proof, protecting it against caving in and sealing it tightly against any water-bearing strata encountered.

The drill string went down this well to unexplored depths. The pipes were not coupled together in the usual way by threaded clamps. A high-frequency automatic welder welded them together almost instantaneously as they were being lowered. And when they were raised they were separated at the joints by an automatic plasma cutter.

If the whole borehole had been drilled by the thermoplastic method, the operation would have been accomplished in a comparatively short time, "at one go", as it were. But the object was not the drilling itself, but the regular taking of samples of rock from every stratum encountered. For that reason it was necessary from time to time to use the old-fashioned rotary method, flushing the face with a weighted mud fluid; and only a slow core bit with diamond teeth could cut samples of rock in its pure natural state with the angle of bedding of the stratum clearly discernable, and with their natural porosity, saturation, and numerous other indices of importance to geologists, intact.

When rotary drilling was resorted to instead of electric and turbodrills, the whole enormous drill string was rotated. It was only possible to use a rotary table at such depths because the drill pipes were made of a special new type of light and durable alloy.

The holy of holies of the rig was the "core store", where the long cylinders of rock drilled out by the bit lay in rounded trays on numbered shelves. This repository occupied fully half of the middle deck. Here too was a laboratory for examining the samples. Some of the information had to be obtained immediately the cores were

brought to the surface; then they were preserved for further analysis by washing them with a solution that rapidly polymerised into a transparent plastic.

Many times the drill string was raised and the geologists slowly spelled out—letter by letter—the marvellous story of the depths and racked their brains over its riddles.

But at forty-two kilometres drilling came to an abrupt halt. Down below, the hundred-thousand-degree plasma—electron-nuclear gas—roared and beat against the face. The needles on the instruments had gone as far as they could to the right, but it was of no use: the plasma drill head, which had so far known no barriers, had come up against some insurmountable obstacle.

It was decided to raise the drill string and examine the head, but it was immovable: something—but what, no one understood—was holding it in the well.

That was when one of the drillers, Ali-Ovsad Ragimov, from Baku, made a remark that subsequently became famous: "Just like a Karabakh ass—it won't go forward or back."

The drillers struggled for several weeks trying to overcome the resistance of the rock or to raise the gigantic drill string. The world's best geologists argued in the messroom of the floating island about this incomprehensible phenomenon. All in vain. The borehole, which went down to an inconceivable depth, refused to yield its secret to man.

Then the Presidium of the IGY decided to discontinue the work. The round rig was deserted. The Babel of many languages was no longer heard; transports no longer came alongside with haematite, clay, and surface-active substances for the drilling fluid. The scientists flew out, and the core depository was emptied, as the samples were taken away for final analysis.

The IGY Geological Commission maintained three-month watches on the rig. At first the watch consisted of two drilling crews; but as time passed, it was gradually reduced to two men—drilling engineers.

So it had continued for nearly six years. Every morning the engineers on watch started the winch in an attempt to hoist the pipes. Every morning they checked the tension of the cables. And invariably the same entry appeared in the log—it meant the same in every language—"The string does not move".

The "Karabakh ass" remained stubborn.



Sasha Kravtsov was still a student when the drilling of the ultra-deep borehole began. His cropped head was stuffed with a mass of facts about this fantastic operation, gleaned from specialist journals and eye-witness accounts. Kravtsov dreamed of being sent to the circular rig in the ocean, but instead, when he left the Institute, he was appointed to a post at Neftyanije Kamni—the off-shore oilfield in the Caspian. There he worked for a number of years, until one fine day, when everybody had almost forgotten the abandoned borehole, he was appointed to a three-months' watch on the ocean.

Kravtsov was very pleased when he heard his partner would be Will McPherson, a veteran of the borehole, and at first it was very interesting indeed, the Scotsman, puffing away at his pipe, and mixing English and Russian words, told stories of the "ultra-boiling" water of the twelfth kilometre and of the black sands of the eighteenth—sands that resisted the core drill and "ate up" the diamond bit within two hours. Laughing, Will recalled how the excitable Chilean geologist Bramulla raved and stormed as he demanded that not less than eight tons of black sand be extracted at all costs from the borehole, and how he even prayed, asking God for immediate help.

Will also talked of the terrible vibration and the enormous pressures, of strange bacteria living in methane-rich strata around the thirty-seventh kilometre, of terrifying blowouts of gas, and of a fire that was only put out after desperate efforts.

The Scotsman did not like repeating himself, and when he had exhausted his stock of stories, Kravtsov began to feel bored. Their attitudes, it soon appeared, were diametrically opposed in everything except marine drilling. That made life much more difficult. They argued politely about everything on earth—from methods of determining the viscosity of mud fluids to the comparative psychoanalysis of the Russian and English souls.

"You don't understand a thing about the English," said Will imperturbably. "For you an Englishman is a mixture of Pickwick, Col. Lawrence, and Soames Forsyte."

"That's not true!" cried Kravtsov. "It's you who don't understand the Russians. You look on us as a cross between the brothers Karamazov and Ali-Ovsad the driller!"

Kravtsov would get furious when Will held forth on the qualities of the enigmatic Russian soul where good and evil

alternate in parallel strata, like clay and sand in oil-bearing suites—all of which he had got from reading Dostoyevsky. But when Will recalled Ali-Ovsad and his marvellous feel for the depths of the earth, Kravtsov would grin. Once the Scotsman told how there had been a break in the string at the twenty-second kilometre, which had still not been explained. A camera had been lowered into the borehole in order to ascertain the nature of the break, but the film proved to be spoiled in spite of strong protection against radioactivity. Then Ali-Ovsad had remembered old times. He lowered a "seal"—a lump of lead into the well on the end of the drill string, gingerly let it down onto the broken end of the drill rod and pressed it against the fracture. When the seal had been raised and hung over the mouth of the borehole, Ali-Ovsad, his head thrown back, examined the impression in the lead at great length. Then, using this cast, he forged a "lucky fishhook" of intricate shape with his own hands, fished the drill rod out from the wall of the well to the centre with this hook, and finally grabbed it with a powerful claw—a deep-sea overshot.

"Your Ali-Ovsad is a real oil-driller," said Will. "He can see right under the ground. I've never met a better master at dealing with accidents."

The Scotsman's Russian was quite good, but he spoke with an Azerbaijan accent, the result of his close acquaintance with Ali-Ovsad and he would intersperse his conversation with Russian doggerel, like "Take it easy, have a rest—are words that I do not know; to your drill, to your work, that the way to go." He would recall the Russian—as he thought—national dish, that Ali-Ovsad used to cook himself on rest days out of lamb's fry, and called "jiz-biz".

Kravtsov knew Ali-Ovsad from his Neftyanije Kamni days, and was well acquainted with his stock phrases like "Take it easy, have a rest."

Love of off-shore drilling and esteem for Ali-Ovsad were possibly the only points of contact between Kravtsov and Will.

Another day passed. The instruments showed that both strings of pipes—drill rods and casing— had risen another twenty millimetres, but it was still impossible to budge the drill string with the winch. It looked as though the earth were stealthily pushing the pipes out of its bowels, but would not let man do so.

Will was noticeably more cheerful. Humming Scottish tunes, he

spent hours by the preventers under the floor of the derrick, busying himself with a magnetograph and making notes.

"Look, Will," said Kravtsov while they were having supper, "I think we ought to radio the Centre."

"I understand, laddie," replied Will, putting rum into his tea. "You want to order some new Esperanto magazines."

"Chuck the joking."

"Chuck the joking," repeated the Scotsman slowly. "That's a strange expression—you don't say it like that in English."

"All right, I'll repeat it in English—stop joking," said Kravtsov, suppressing a mounting irritation. "We've got to radio the Centre. Something's happening in the well."

In the morning they put out an urgent call and informed the Geological Commission of the strange ascent of the drill pipes.

"Continue observations," replied the distant voice of the vice-chairman of the Commission. "You're not in need of immediate help, are you, Will?"

"Not just yet."

"That's good. You see, we're having real trouble with the drilling off the Peruvian coast. Give my regards to Kravtsov. All the best, Will."

The engineers left the radio cabin. A clammy, oppressive heat of midday gripped them as they came out. Kravtsov scratched his beard and said, "Another military junta, I suppose, damn it all."

"What's it matter?" Will wiped his neck with his handkerchief. "So long as they don't prevent scientists and engineers doing their work."

"The world isn't just made up of scientists and engineers."

"That's not my concern—I'm not interested in politics. It makes me laugh to see you dashing to the radio to listen to the latest news."

"You needn't watch," Kravtsov advised him. "I don't watch you when you model nude females and smile lasciviously to yourself as you do it."

"H'm.... My smiles are none of your business."

"Quite so. And my dashing to the radio is none of yours."

"Have you checked the cable?"

"Yes, I winched in the slack. Tell me, Will, what the devil made you agree to keep watch here? With your experience you could have been drilling now...."

"The pay's good here." the Scotsman replied curtly, and climbed down the hatchway.

#### IV

The drill string continued to creep upwards. On the morning of the sixth day Kravtsov glanced at the window of the recorder and could not believe his eyes: one and a half metres in twenty-four hours.

"If this goes on," he said, "the casing will soon jam on the rotary table."

"Very likely." Will, freshly shaven, came out of his cabin in blue swimming trunks.

"Are you going swimming?" asked Kravtsov moodily.

"Indeed aye!" And Will pulled on his swimming cap and went over to the outboard lift.

Kravtsov went below. The preventers were rising before his very eyes. "The plugs will have to be taken out of the table to let the preventers through," he thought to himself and began to disconnect the hydraulic control tubes.

Will appeared just then, bringing a fresh sea smell with him.

"The water's very warm today," he said. "Well, and what are you doing here, laddie?"

They disconnected the preventers from their feed pipes and removed all parts that stuck out from them, and then went up on deck.

"I don't understand a thing," said Kravtsov. "All right—the pipes are rising of their own accord. It sounds impossible, but it's a fact. But the bottom of the casing is locked tight in the ground. And it's coming up as well. Some devilry's going on here, and before we know where we are the top of the casing and the preventers will pop through here."

"We'll have to cut off the upper pipes," said Will. '

Kravtsov peered through his sunglasses at the crown block, beard thrust up. During the last few days they had winched in the slack" on the cable many times, and now the travelling block had been hoisted almost up to the crows nest of the derrick. Kravtsov went over to the control panel and glanced at the pointer.

"Only nine metres in reserve," he said. "Yes, they'll have to be

cut."

Will took his stand at the controls. The main engine whined as it started and the reducing gears of the powerful winch began to hum gently. Will put strain on drill string, then pressed two keys with his fingers one after the other. The long bracket of a plasma cutter rose from its bed and pressed against the pipe. A stream of electron-nuclear gas hissed behind the protective blue glass of the tungsten nozzle. The machine rapidly ran the cutter round the pipe, the flame went out with a slight puff, and the bracket withdrew.

A "candle"—the severed eighty-metre length of drill pipe—swayed gently on the hook, another machine, seized it from above, swung it to one side, and lowered it into its "candlestick"—it might have been putting a testtube into a rack.

Relieved of its load, the hook with its automatic claws—the "spider"—descended rapidly. High up in the air it had not seemed much larger than a fishhook; but now it took up nearly the whole space between the metal legs of the derrick.

The spider closed its steel jaws on the end of the drill string. Will switched on the hoist and "tugged"—just in case. But no—the well refused to release the string, as before, and it did not budge.

There was nothing more to be done. Kravtsov stretched himself out in a deckchair under the awning and buried himself in an Esperanto magazine. A gentle breeze fanned his body pleasantly. Will removed the tape from the magnetograph and, whistling to himself, examined the recording.

Kravtsov raised his head.

"What can it be, Will? The borehole seems to have gone mad."

"Well, what do we know, anyway, about the interior of the earth?" The tone of Will's voice was unusually sharp. "All we know, and little enough about that, in all conscience, is a thin sheet of paper stuck over the globe."

"That's well put," thought Kravtsov. "If mankind didn't spend so much money and effort on armaments..."

"What did you say?"

"Nothing. I was only talking to myself," answered Kravtsov in a tired voice. "We could achieve a lot if we all got 'together, if the whole world..."

"That'll never be," interrupted Will. "Oh, yes it will. It certainly will." "The mankind, you like to talk so much about, is more prone to fighting than to scientific research."

"Not mankind, Will, but individuals...." "I know, I know. You've explained it all to me before—the monopolists. It's none of my business, damn it."

It was the first time Kravtsov had seen the Scotsman so excited.

"Alright, let's change the subject," he said, stretching out his long sunburnt legs. "But why are the pipes coming up? Is the sea-bottom rising, perhaps? Submarine tremors of some sort...."

Will threw his tape aside and jotted something in his notebook.

"I'd rather you told me why the pipes are becoming magnetized," he growled.

"Magnetized?" Kravtsov raised his eyebrows in a puzzled look. "Are you sure?"

Will did not reply.

"But this alloy can't be magnetized...."

"I know. But facts are facts. Here's the graph of daily measurements over two months." He handed Kravtsov his open notebook.

Kravtsov had considered the Scotsman's preoccupation with the magnetograph nothing but a whim. But now, looking at the neat graph, he was astounded. Magnetization of the pipes, which had not previously manifested itself, had begun suddenly a fortnight before and was increasing noticeably every day. It was still very weak, but then it had no business to exist at all....

"Do you mean, Will...."

"I mean it's time to go and eat."

## V

Kravtsov was awakened by a howling of the wind. It was still very early, and dawn was only just beginning to break through the murky darkness of the night. The wind burst through the open portholes into the cabin, flapping the curtains and rustling the pages of the magazines on the table. It was cool and moist and smelt of faraway autumn in Moscow, and Kravtsov thrilled with trepidation and delight.

"Our watch'll soon be over," he thought to himself, and then suddenly remembered what had been happening these last few days on the rig. His mellow, drowsy mood was gone in a flash. He dressed and left his cabin. The derrick was lit up. What was Will

doing there so early? Kravtsov hastened towards it. He heard the wind whistling in the metal girders, and the rumbling of the ocean, stirred by the approaching storm. Neither moon nor stars were to be seen in the dark sky.

Kravtsov ran to the gangway of the derrick. The Scotsman stood near the well mouth. "What's going on, Will?"

But he had already seen what was happening. The preventers were slowly rising through the octagonal opening of the rotary table, which had been freed of its plugs. They were coming up before their very eyes, carried up by the casing — a wild, incomprehensible, fantastic sight.

"We'll have to remove the preventers," said Will.

"Won't that be dangerous, Will? What if there's a sudden blow-out of gas?"

"They've got to be taken off while they're still here. It'll be harder to do it when they've been carried right up."

They set to work with power screwdrivers, removed the massive flange, and took off a preventer, hitching it on to the hook of the auxiliary winch. The second and third were removed in the same way, but the last preventer was already breast-high when they started on it; the casing continued to rise, ejected by some mysterious force. True, it was not rising as fast as the drill string, which had already attained a considerable height—about forty metres above the well mouth—but what was going to happen next? What would happen when the casing came up higher still and covered up the drill pipes? Should they cut it? But the automatic plasma cutter was only meant for an eight-inch pipe: it would be unable to grip the twenty-inch casing. In any case, who ever would have thought the casing would take it into its head to come out of the well?

Kravtsov scratched his beard and said: "What would AH-Ovsad do in our place?"

"Exactly what we're doing," replied Will.

They looked each other in the eye.

"Shall we lower the cutter down the string?" asked Kravtsov.

"We shan't have time. The speed's accelerating all the time. Anyway, we couldn't manage it alone. We'll have to break the pipes."

Decisions like that are only taken in emergencies. But this was an emergency indeed. They would be unable to cope with both

strings of pipes, whose speed continued to accelerate. This was certainly the only course open to them: to pull at the string until it broke somewhere deep down, and then pull up the broken section as quickly as possible and cut it up with the automatic cutter. Then they would have the casing to cope with.

Once again Will's fingers touched the keys of the controls. The main engine whined, the gears droned, and the cables screeched eerily as they tightened under the terrific load. The wind blowing in gusts through the taut ropes, whistled a pirate song. The pointer on the load indicator crept trembling toward the red danger line, as the engineers silently watched it. Suddenly they heard a faint click, coming up the long string of pipes from far down. The pointer jerked to the left: now only nine thousand three hundred metres of pipe hung on the hook.

"We've broken it!" yelled Kravtsov happily. "Switch on the cutter!"

The hook continued to pull the broken section of the string up from the well. Will adjusted the speed of the cutter to their ascent: the cross bar of the bracket rose with the string, and the blue plasma flame surrounded the pipe. While the upper machine removed the severed "candle", the cutter descended and again pressed against the pipe, and so they cut it candle by candle, and the cutter glided up and down, up and down.

It was already broad daylight; it had been pouring but now the rain had stopped, and the wind was driving a pile of storm clouds low above the ocean.

The casing had risen so high that it became impossible to cut the drill pipes, and they now had to turn their attention to this. Kravtsov removed the plasma cutter from the automatic bracket and, holding it by hand, set to work ripping at the rough barnacle-covered casing until he succeeded in cutting it at the root. Then once more the automatic bracket glided up and down.

The hours passed imperceptibly and evening fell.

At long last they finished this devilish job and the whole severed string of pipes had been pulled up, separated, and stacked in the racks.

Kravtsov dragged himself off to make coffee.

When he came out of the galley with the tray Will was writhing in a deckchair pressing his heart.

"Nitro-glycerine," he gasped. "In the wall-cupboard, top shelf. ..



on the left...."

Kravtsov dashed to Will's cabin and snatched up the glass tube. Will put two white tablets under his tongue.

"Do you feel any better?" Kravtsov asked anxiously. Will nodded.

Kravtsov gave him a cup of coffee and hurried to the radio cabin. It was past ten before he was able to contact the Centre.

"Yes, yes! Urgently!" he yelled. "Two crews at least! And a doctor! What? Yes, a doctor— McPherson's had a heart attack...."

Will snatched the microphone from his hand.

"There's no need for a doctor," he said in a calm voice. "Four emergency crews—the whole lot—as quick as you can."

## VI

It was drizzling and a heavy sea was running.

Kravtsov noticed nothing. All night he had been cutting the casing and did not observe the grey morning dawn. He had stopped work twice just to see how Will was getting on. The Scotsman lay sleepless in his cabin.

"What's the speed?" he asked in a barely audible voice.

"Four metres a minute," answered Kravtsov, looking uneasily at him. "Well, how are you? Any better?"

"The cutter," whispered Will. "Is the cutter all right?"

"Yes, it's all right." Kravtsov shrugged his shoulders. "Well, try to get some sleep, Will. I'm off."

There was nothing wrong with the plasma cutter, but his arms were aching from its weight. The pipes were rising faster and faster from the hole, and Kravtsov barely had time to hitch the ends of the sections to the hook of the auxiliary hoist. Now the argon had run out and he had to dash to the storehouse and load a truck with new cylinders. That took him a good half hour and when he got back to the borehole, though he had raced the trolley along the rails, the casing had nearly reached the crown-block.

Kravtsov switched the controls from the main panel to the lift panel and went up aloft. With difficulty he managed to replace the eight-inch spider with a twenty-inch one. Then, while it glided down to the pipe and, clanking grabbed its upper end tightly, Kravtsov adjusted its speed of elevation, came back down, and

switched on the cutter.

He cut through the pipe—with an oblique incision—and, pulling it to one side with the auxiliary hoist, pushed the trolley under it. A few cautious manipulations and the one hundred and twenty metre section fell on the gangway on the other side of the derrick.

Now, a three-metre length of pipe like the stump of a felled tree, rose from the mouth of the well. It would be a little time before it reached the top.

He must give Will his tea.

Bent double, and scarcely able to drag his legs, Kravtsov crawled to the Scotsman's cabin. He pulled off his gloves and wiped his face, which was dripping with perspiration and rain. He was slightly giddy with fatigue, and also perhaps, because he had eaten practically nothing for a whole day.

Will was not in his cabin.

The galley-door was wide open. Kravtsov dashed there and found Will, of course, standing by the stove and stirring something in a saucepan.

"What the devil are you doing here?" he yelled, beside himself with rage. "Get back to bed at once!"

"Buckwheat porridge," said Will in a low voice. "I never imagined it took so long to get soft."

Kravtsov said nothing as he looked at the blue rings under the Scotsman's eyes.

I get back to bed," he repeated. "I'll finish it."

"You ought to have been a prison warder and not a mining engineer," grumbled Will and went out on the verandah.

Kravtsov took the kettle off the stove and made Will and himself a cup of tea. He took a few sips and put the cup on the table. From the verandah he could see the casing rising inside the derrick at a noticeably greater speed.

Kravtsov ran to the derrick. But when he switched on the cutter, instead of the sharp blue tongue of the high-temperature plasma, a broad, sluggish, smoky flame came out.

Swearing to himself he took the cutter back under the lights to see what had happened. He had hardly taken five steps when it ejected a perfectly normal plasma flame.

What was all this?

He rushed back to the pipe, switched on the cutter, and the plasma once again became an ordinary flame. Kravtsov nervously

turned the valves, jerked the feed hoses—without result.

"I've been expecting this," said a voice behind him.

"Look here, Will, if you don't go to bed at once.. ."

"Switch off the cutter—it won't work." "Why not?"

"The rate of ascent is accelerating, and the magnetic field of the string has increased. The ionizer of the cutter won't act close to the well. Neutralization, understand?"

"What are we to do?" Kravtsov switched off the cutter and flung it on the deck.

"There are gas burners in the storeroom."

"Old stuff," muttered Kravtsov.

"There's no other way. We've got to go on cutting."

They got on the trolley and drove to the storeroom. The gas cylinders had to be dug out of a far corner cluttered up with all sorts of junk. Will suddenly gave a low moan, and sank down on a box. Kravtsov dropped a cylinder and ran over to the Scotsman.

"It's all right.... Just a minute...." With trembling hand Will took a glass tube out of his pocket and put two tablets under his tongue. "It'll pass soon. You go on...."

Kravtsov drove the loaded truck to the borehole. Feverishly, grazing his knuckles as he did so, he shoved the cylinders into the valves of the cutter and tightened the clamps.

The gas cutting went much slower. Time dragged interminably and metre after metre of pipe came interminably from the mouth of the yell.

Seven metres a minute!

He ripped wildly at the pipe and no longer dragged the severed lengths away, merely jumping aside as they crashed down on the gangway. The blue flame roared without interruption, the burner trembled in his hands, and the cuts were crooked and askew.

Had an hour passed? Or a day? Time stood still. The flame roared and the cut length of pipe crashed. Nothing else and only one thought went through in his dazed mind "I'll finish cooking it myself.... I'll do it...."

He did not see how Will had dragged himself up and was now watching the pressure, changing the empty cylinders for full ones.

He did not hear the roar of aircraft engines. He did not see the landing of a white seaplane on the rough water near the rig, or approach of red inflatable dinghies, full of men in sou'westers bobbing over the waves to the landing stage.

A heavy hand fell on his shoulder.

"Clear off!" he yelled with his last vestige of strength, and shook it off.

The hand was off his shoulder, but it did not disappear. It snatched the cutter from Kravtsov's hand, while another hand gently pushed him away.

Kravtsov raised his head and stared stupidly at the rugged wrinkled face with a small black moustache.

"Ali-Ovsad?" he murmured, articulating with difficulty, then fell flat on the deck.

## VII

Many newspapers around the world were then publishing reports from their special correspondents in Manila, Jakarta, and Tokyo, which were then copied by the provincial papers.

"News from the Pacific: revival of 120,000-foot borehole abandoned during last IGY" (New York Herald Tribune)

"Mysterious Natural Phenomenon. Earth ejects drill pipes from ultra-deep borehole." (The Times)

"Heroism of Soviet Engineer. Twenty four hours' intense struggle on floating island in Pacific." (Izvestia)

"Driller Ali-Ovsad to the Rescue." (Baku Worker)

"Tussle of Russian and Scotsman with Sea Devil." (Stockholm Tidningen)

"Whatever happens, the United Arab Republic remains neutral." (Al Gomhouria)

"Divine judgement on impudent penetration of terrestrial interior." (Observatore Romano)

"We are alarmed: it is near us again." (Nippon Times)

## VIII

Kravtsov glanced at the indicator, frowned, and scratched his neck under the left ear. He had shaved his beard off that morning, but the habit remained.

Ten metres a minute. Soon the whole casing would have come up.

Four crews, working in shifts, were cutting the pipes non-stop and barely managing to keep pace with the terrific speed of ascent. The rig was blocked with lengths of pipe; an automatic crane

loaded them continuously on to dump trucks that discharged them into the holds of a Dutch transport at the landing stage.

Ali-Ovsad, the driller, swaying slightly from side to side, came over to Kravtsov. The skin of his face, tanned and leathery from wind and sun, was shining with perspiration.

"A pity," he said in his Azerbaijan accent.

"Yes, it's hot...," said Kravtsov absently, misunderstanding.

"I say—it's a pity. Such good pipe—a great pity." Ali-Ovsad clacked his tongue. "Jim!" he called to a fair-haired lanky lad in leather shorts. "Come here!"

Jim Parkinson jumped from the gangway and walked along the pipes, swinging his long arms. In spite of his youth, he was one of the best riggers in the Texas oilfields. He stood on a pipe balancing himself and smiling at Ali-Ovsad. The shadow from his green celluloid peak fell across his thin face, and his jaws moved rhythmically as he chewed gum.

Ali-Ovsad pointed to the hook of the auxiliary hoist.

"Rig up cradle, bilirsen ? (*Bilirsen-do you understand? (Azerbaijani).*-Tr) Put your autogenous boys in cradle, hoist them alongside pipe. Same speed as pipe, see?" Ali-Ovsad showed with his hands how the string of pipes would rise, with the cradle alongside. "Lift! Up! Bilirsen?"

Kravtsov was going to translate all this into English, but it appeared Jim had understood perfectly. He spat out the chewing-gum, lodging it exactly between his boots and Ali-Ovsad's and said: "O.K."

Then he bent over, slapped Ali-Ovsad in friendly fashion on the shoulder, and added: "Ali-Offside—fine!" Then with a laugh, off he went to give his lads their instructions.

Fifteen minutes later a cradle, slung from the hook of the hoist, was rising alongside the casing. A swarthy strapping Romanian member of the crew gave a piercing whistle and yelled "Go to it! Go to it!"

A Texan gas-cutter stuck his head out of the cradle and gave a thumbs-up sign, grinning. Then - he pointed the burner like a gun at the grey body of the pipe and drove the flame into it.

About seven o'clock that evening the Chilean Bramulla, who represented the Geological Commission, called a conference in the messroom.

"Senores, please give us your views." He drained a glass of cold lemonade and settled his stout body against the back of a wicker armchair. "Would you like to begin, Will?"

Will, who had recovered a little from his attack, was sitting next to Kravtsov and leafing through his notebook.

"First let my colleague Kravtsov tell us the latest measurements," he said quietly.

"Yes, please, Senor Kravtsov."

"The speed of ascent is now eleven metres a minute," said Kravtsov. "I calculate that, given this acceleration, the casing will be completely ejected from the ground in approximately four hours, and its lower end suspended above the sea bottom...."

"Excuse me, young man," interjected a dry little Austrian Stamm, the only man on the rig wearing a tie, jacket, and trousers. "You used the expression 'ejected'. If that is so, the bottom of the casing cannot possibly be 'suspended', as you termed it. Obviously, it will be supported by what has ejected it, isn't that so?"

"Well, perhaps..." Kravtsov was slightly taken aback. "I simply didn't choose my words. Now, as to the string of pipes. You know that we broke it deep down, but I'm certain that it is coming up as well. According to my calculations, its upper end is now at a depth of about seven thousand metres, that is to say, it is rising inside that part of the casing which is still in deep water." Kravtsov spoke slowly, choosing his words carefully. "By six o'clock tomorrow morning we can expect to see the drill string at the well mouth. I propose..."

"Just a minute," broke in Stamm's dry rattle. "Before we pass to proposals, we ought to clarify certain points. Do you consider, Mr. Kravtsov, that the artificial casing—that is to say, the fused rock of the walls of the borehole, which is a sort of continuation of the casing—is being pushed up with it?"

"I don't know," said Kravtsov hesitatingly. He was rather nervous of Stamm: the Austrian reminded somehow him of his school geography teacher. "I'm not a geologist, really: I'm only a driller."

"You don't know," declared Stamm. "Go on, please."

"Our gas cutters...." Kravtsov coughed. "The cutters are already

having a hard time to cope. What will happen when the pipes are shoved—sorry, pushed up faster still? I suggest that we radio the Centre immediately to send us photoquantum knife. We have a fine apparatus in Moscow—the POK-6A. It cuts through the toughest material in a flash."

"POK-6A," repeated Bramulla, and nodded. "Yes, that's a good idea!" He poured another glass of lemonade down his throat. "Why have you stopped?"

"I've nothing more to say," said Kravtsov. "Senior McPherson!"

"Yes," said Will. "My opinion is that the well has penetrated some fissure in the mantle. Some unknown substance, converted by the enormous pressure to a plastic state, has found this outlet and is pushing the casing out."

"Just a minute," interrupted Stamm. "Gentlemen, we mustn't wander from the subject. I want to revert to the question of the artificial casing. Do you think...."

"I don't think, Mr. Stamm, that the walls of the borehole can have been so very greatly damaged," said Will with restraint.

"You don't think so," the Austrian summed up again. "But I think that a telecamera should be lowered immediately so we can see what is happening to the ground at the bottom. There is a telecamera on the rig, isn't there? While it is being lowered, the casing will come out of the ground, and we shall see how the artificial casing is behaving. I am surprised, Mr. McPherson, that you didn't think of lowering the camera at the very start. Continue, please."

"Aye, I agree I was remiss as regards the camera," said Will. "The substance which is ejecting the pipes has magnetic properties. I have been making measurements from the beginning of my watch and have satisfied myself that the pipes are magnetized. Just a second," he said raising his voice, seeing that the Austrian had opened his mouth, "I anticipate your question. Aye, the pipes are made of a non-magnetic alloy: nevertheless, it is a fact that they are magnetized. Their magnetic field neutralizes the ionizer of the plasma cutter. Will you please take a look at the graph of my observations?"

Stamm hastily put on his spectacles and bent over the graph. Bramulla, breathing noisily and puckering his thick lips, looked over his shoulder. Ali-Ovsad put his hairy ear close to Kravtsov's mouth and the latter whispered a translation of Will's words to him.

At the end Ali-Ovsad thoughtfully scratched his ear. The old driller, who had bored many a well in his day, was puzzled.

"Do you want to say anything, Senor Ali-Ovsad?" asked Bramulla; Kravtsov translated his question to the driller.

"What can I say? Drilling-milling—I understand a little about that," answered Ali-Ovsad in a sing-song voice. "But, honestly, I've never come across rock like this. Let's wait until the stuff comes to the surface, and then we'll see."

Stamm raised his head from the graph.

"We cannot wait on any account. We do not know what has happened inside the Earth. The ejection of the casing may cause violent tremors. Gentlemen, I propose that after the television camera has been lowered everyone should be evacuated on the Dutch transport."

"Oh no, indeed!" cried Kravtsov. "Excuse me, Mr. Stamm, but I agree with Ali-Ovsad: we must wait and see what happens after the pipes are ejected. We've got to get the information!"

"I agree," said Will, nodding. "The instruments are here; we can't go away."

Everyone now looked at Bramulla—he had the last word. The fat Chilean pondered, stroking his bald head.

"Senores," he said at last. "The question, as far as I can see it, stands thus—is there any real danger? But it is difficult to answer, Senores, seeing that we have met an incomprehensible phenomenon of nature. I am accustomed, however, to approach such questions as a seismologist. It seems to me, Colleague Stamm, that from the seismic point of view, there is no immediate danger... Carramba!" he exclaimed suddenly, as he glanced out of the window. "What's that?"

Above the well mouth rose the grey casing, and on it, clinging to it with his arms and legs, hung a man in a blue cap and overalls. The fitters standing below were whistling and shouting at him. The gas cutter in the cradle, which was rising alongside the casing, was hanging out of it and yelling something in sheer delight.

"Is that one of your boys, Jim?" asked Bramulla anxiously.

Parkinson, chewing his gum, with complete sang-froid, shook his head.

"It's my driller Chulkov-Mulkov playing the fool a bit," said Ali-Ovsad, and leaving the cabin, he made his way across the sections of pipe toward the derrick, swaying from side to side.



They all followed him.

"Chulkov-Mulkov?" repeated Bramulla.

"No, simply Chulkov," said Kravtsov with a grin.

Ali-Ovsad called up to the cutter in the cradle who, following the driller's orders, cut the casing about two metres below Chulkov. The section of pipe, with Chulkov clinging to it, was slowly lowered on the hook.

"Jump!" shouted Ali-Ovsad.

Chulkov jerked himself free of the pipe, fell on all fours, and got up, rubbing his knees. His round boyish face was pale and there was a wild look in his eyes.

"What are you playing the fool for?" thundered Ali-Ovsad.

"The boys and I had a bet," muttered Chulkov, looking round for his cap, which had come off as he jumped down.

A thickset American with a bandana handkerchief on his head stepped out of the crowd of drillers. Grinning, he handed Chulkov a cigarette lighter with an intricate coloured monogram on it and slapped him on the back.

Bramulla made a short speech to the drillers, and the crews, laughing, returned to work. The incident was closed.

Only Kravtsov noticed that Chulkov's hands were trembling as he took the cigarette lighter he had won.

"What's the matter with your hands?" he asked the young fellow quietly.

"Nothing," answered Chulkov. Then, glancing up at the engineer with a puzzled expression, he said, "The pipe drew me."

"What do you mean?"

"It drew me," repeated Chulkov. "Not very strongly, it's true. But as if it was a magnet, and I was iron."

Kravtsov hurried to the messroom, where Bramulla was winding up the conference.

"We shan't abandon the rig just yet," the Chilean was saying. He suddenly burst out laughing, and added, "With such daredevils we've nothing to fear."

Stamm smoothed his flaxen hair with a stiff brush and made off in the direction of the television camera, muttering something about Russian and Chilean frivolity.

Kravtsov drew Will aside under the awning and told him what he had learnt from Chulkov.

"Really?" said Will.

## X

Over three hours had passed since they began lowering the television camera. The cable was being unwound from the huge drum of a deep-sea winch and, passing over the pulley at the end of the latticed boom, went down into the black water. A half-naked rigger from Ali-Ovsad's crew was puffing cigarette by the side and glancing from time to time at the depth indicator.

Ali-Ovsad went over to him.

"People smoke when they're out for a stroll," he said severely. "Keep your hand on the brake."

"Nothing can happen, you know," said the rigger good-naturedly and flicked his cigarette overboard. "It's all automatic."

"Automatics are one thing and you're another."

A stickler for the rules, the old driller walked round the winch and felt it with his hand to make sure the bearings were not heating.

"I wonder what time it is now in Baku?" he said, and, without waiting for an answer, went to the television cabin.

Stamm, Bramulla, and Kravtsov were sitting in front of the flickering screen.

"Well?" said Kravtsov, peering up sleepily at him.

"The sea's very deep," said Ali-Ovsad sadly. "We've got to wait half an hour longer or an hour," he added, after a moment's thought.

The radio operator on watch stuck his head through the door.

"Is Kravtsov here? Moscow calling. Quick!"

Kravtsov dashed out on to the verandah.

The rig was flood-lit; there was a clanging of pipes near the automatic crane; and a Babel of languages could be heard. Kravtsov rushed to the radio set.

"Hullo!"

Through the static and crackling he heard a distant, beloved, agitated voice:

"Sasha, hullo! Can you hear me, Sasha?"

"Marina! Hullo! Yes, yes, I hear you! How did you..."

"Sasha, what's happening? The papers are full of you, I am very very worried...."

"Everything's all right here, don't worry, darling! Damn, some music's interfering. Marina, how are you, how's Vovka, how's

Mam? Marina, can you hear me?"

"Yes, the music's interfering. Everything's all right at home. Sasha, are you well? Tell me the truth."

"Absolutely. How's Vovka getting on?"

"Vovka can walk now—even run. Oh, he's so like you, it's a laugh."

"Can he run already?" Kravtsov gave a happy laugh. "Good old Vovka. Kiss him for me, won't you?"

"All right. Your Esperanto magazines have come—shall I send them on to you?"

"Not just yet. There's such a lot of work—don't send them yet."

"Sasha, what really happened? Why are the pipes coming up?"

"The devil knows!"

"What? Who knows?"

"No one knows yet. How are things at school?"

"Oh, you know, the top classes are very difficult. Still, it's fine. Sasha, they're cutting me off."

A monotonous voice broke in in English:

"IGY rig! IGY rig! London calling."

"Marina! Marina!" shouted Kravtsov. "Marina!"

The radio operator touched him on the shoulder. Kravtsov put the receiver down on the table and went out.

The floodlights blazed and the flames of the cutters roared in showers of sparks. The deck was blocked with sections of pipe, and all around the black ocean waters and sky. It was an oppressive humid night.

Jumping from pipe to pipe, Kravtsov went to the derrick. Jim Parkinson's crew was at work.

"How's it going, Jim?"

"Not so good." Jim jumped to one side as a severed pipe fell with a clash. He rolled it away and looked up at Kravtsov. "I'm afraid the derrick'll be smashed. Just listen, sir."

Kravtsov had already been listening to the confused din and felt the vibration underfoot.

"The water's got hot," continued Parkinson. "The boys went for a swim and had to jump right out. It's 104°F at the surface—at least."

Marina's soprano was still ringing in Kravtsov's ears. "The papers are talking about you." I wonder what they've been saying? "I'm very worried." I'm worried too. Something inconceivable and

terrible is going to happen.

There was a light in Will's cabin. Kravtsov knocked on the half-open door and heard a grumpy "Come in".

Will was sitting at the table in an open shirt and shorts studying his graphs. He pointed to an armchair and pushed over a packet of cigarettes.

"What about the camera?" he asked.

"It won't be long now. Will, I had a call from Moscow."

"Your wife?"

"Yes. She says the papers are talking about us."

The Scotsman snorted contemptuously.

"Have you got a family, Will? You've never mentioned one."

"I've a son," answered Will, after a long pause.

Kravtsov took up a green plasticine figure that was lying on the table. It was a deer with great branchy antlers.

"I was rather rude to you," said Kravtsov, turning the deer about in his fingers. "Remember how I shouted at you?"

Will made an abrupt gesture with his hand.

"Shall I tell you a short story?" He turned his tired face to Kravtsov and passed his hand over his grizzled crewcut. "In the highlands, in Scotland, there's a gorge called Paddy Black. There's the most polite echo in the world in that gorge. If you shout 'How are you, Paddy Black?' it immediately replies 'Very well, thank you, sir.' "

"Why've you told me that?"

"No special reason. I just thought of it." Will turned his head to the open door. "What's the matter? Why's it so quiet at the derrick?"

Parkinson's crew was clustered on the edge of the well gangway.

"Why aren't you cutting, Jim?" asked Will. "See for yourself." The casing was motionless. "That's funny!" exclaimed Kravtsov in surprise. "Has it finished rising?"

Just then the casing gave a jerk, and leapt suddenly upward; then it fell straight to its previous position, or even lower. The rig was shaken to its base; the automatic drive of the screws had no time to react.

Again the casing jerked up and down, and again, and yet again, but with no definite rhythm. The deck was rocking underfoot and lengths of cut pipe went rolling and crashing around it.

"Mind your feet!" shouted Kravtsov. "Make fast everything you

can!"

The riggers who were off duty came rushing out of their cabins. Will and Kravtsov dashed to the television cabin, where Bramulla was sitting glued to the screen. Stamm and Ali-Ovsad were standing near.

"The casing's jerking up and down," burst out Kravtsov, breathlessly.

"I warned you," answered Stamm. "Look what's happening to the seabed."

A grey mass was rising and falling on the screen. The picture vanished, then a dark picture of the barren uneven bed of the ocean appeared—and once again everything was in motion. The camera was evidently revolving slowly down there in the depths.

Kravtsov was now able to make out what was happening: a great heap of debris was rising above the seabed, moving, growing, and sinking, with rocks rolling down its sides—not rapidly, as on land, but slowly and smoothly, as though unwillingly.

Stamm turned a knob slightly. The screen darkened, then a pipe suddenly came into view in the top left corner.

"Tubo de entubacion!" exclaimed Bramulla.

On the screen the casing-pipe looked like a straw. It swung there while the pile of debris swelled under it. Again everything became dark, and at that moment the rig gave such a jerk that Bramulla fell off his chair.

Kravtsov helped him to get up.

"Madonna. .. Santiago," murmured the Chilean, panting.

"I warned you," Stamm's voice rattled. "The artificial casing is being ejected from the borehole together with the rock, and the lower, end of the casing is dancing on the debris. We don't know what's going to happen next. The rig must be abandoned at once."

"No," said Will. "We must raise the casing with the tackle and as quickly as possible."

"That's right," agreed Kravtsov. "Then it will stop dancing."

"It's dangerous," protested Stamm. "I can't consent to this."

"It's dangerous if people are careless," said Ali-Ovsad. "I'll keep watch myself." Everybody looked at Bramulla. "Raise the casing," said the Chilean. "Raise it and cut it. But in the name of all that's holy, be quick about it."

The rig was shaking as though in a fever. Ali-Ovsad took his stand by the control panel of the main engine and the hook began to

rise, pulling up the casing. The cables shrieked and the blue flame roared.

"Come on! Come on!" shouted Ali-Ovsad from time to time, his eye fixed on the casing as it came up. "There isn't much left!"

The cut pipes crashed down on the gangway. But soon, as the casing was raised sufficiently above the seabed, the vibration on the rig stopped. Then as the blue dawn was shining over the ocean, the drill pipes, ejected by that mysterious force, began to rise from the well. The plasma cutter, as before, would not function, and the gas one worked slowly. But now it was possible to fix the nozzles to the automatic circular cutter which rose at the same speed as the pipe, while the cutting head circled round it. When it had completed the operation, the automatic cutter slid down and once more rose along with the pipe.

But the speed of ascent grew and grew and the automatic cutter could no longer keep pace, so that the cuts were oblique and moved in a spiral. The men were forced to stop the automatic cutter and work by hand sitting in the cradle suspended from the auxiliary hoist.

They worked in snort shifts but were exhausted by the terrific pace of the work; and in addition, it has become very hot. The transport, crammed with pipes, had sailed, and the deck around the borehole was once more blocked up with lengths of pipe.

All their lives the men remembered those days of scorching sun and frenzied toil, the humid air of the sea, and the nights lit by floodlights and blue jets of gas.

And all their lives they remembered the hoarse voice of Ali-Ovsad and his rallying cry: "Come on! Come on! There isn't much left!"

## XI

The seaplane arrived at dawn. It was quite a job to load the crates containing the PQK-6A photoquantum apparatus off on to the rig.

Kravtsov glanced through the instructions. Good—he was acquainted with the apparatus and it was simple to operate; but he was afraid it had arrived too late.

Two hundred metres of drill pipe remained in the borehole. One

hundred and fifty....

Ali-Ovsad ordered the cradle removed: it was dangerous suspended up there when the remaining feet of pipe were coming up.

One hundred and twenty.... Eighty....

In the east the sky was ablaze with the crimson fire of dawn, but nobody noticed it, and the rig was lit as before with harsh white light of floodlights. The workers of all four crews had nearly finished clearing a passage among the pipes, in accordance with Bramulla's orders, and an open jeep stood by, ready, in case of danger, to carry the cutters on duty at the well to the edge of the rig without delay.

Only four men now remained at the borehole: two cutters, Kravtsov, and Ali-Ovsad.

Sixty metres....

The rig rocked. It was as though a shoulder had jostled it from underneath and shaken it.

"Douse the cutters! Into the car!" ordered Kravtsov.

He drove along the cleared way to the edge of the rig and stopped near the awning. The rig rocked again. Kravtsov and the others jumped out of the car, their faces ashen. There was a crash in the middle of the rig, followed by a grinding noise. The last lengths of pipe, which had risen nearly as high as the crown-pulley, crashed down, but in the general din they seemed to fall noiselessly.

Bramulla, who had seized Will by the hand, was shouting something; while Stamm, still in his lounge suit, stood nearby, motionless as a statue.

The noise subsided a little. A few seconds of strained suspense—and everyone saw the rotary table, torn from its bedding, rise and slump sideways. Crash! The thick steel frame split and the jagged ends of girders bent upward. The deck beneath the derrick seemed to swell. Clouds of steam poured out and there was a blast of hot air.

A black rounded object appeared at the torn mouth of the borehole. The black cupola rose, breaking through the flooring as it did so. It grew into a hemisphere.... After a few minutes it became apparent that a great cylindrical pillar was rising within the derrick.

Kravtsov stared at it with a fixed gaze. Time passed imperceptibly. The top of the pillar struck the crown-block of the derrick, and its long legs snapped at their base with a loud clang.

All at once Ali-Ovsad sprang forward and dashed toward the derrick. Kravtsov rushed after him, caught him by the shoulders, and dragged him back.

"The derrick's been smashed!" shouted Ali-Ovsad. Then as suddenly he realized the futility of his impulse and sadly dropped his arms.

The black pillar rose higher and higher, carrying with it the hundred and fifty-metre derrick.

## XII

The rig was now pierced right through by the gigantic pillar. Having pushed the pipes out of the borehole and penetrated the mass of water, the pillar rose like a black candle unchecked towards the sky.

The men on the rig had recovered from the first shock. Fat Bramulla hurried to the radio cabin.

Kravtsov went over to Will and said abruptly, "Shall we try and cut it?"

Will was leaning against the rail and staring at the pillar through powerful binoculars.

"I'm damned if it can be cut," he said, and handed the binoculars to Kravtsov.

The pillar was about fifteen metres in diameter. Its black surface gleamed dully in the floodlights. From what depths had it emerged, with its glassy crust of fused minerals? What was it made of? "Something's got to be done," said Kravtsov. "If it goes on growing as quickly as this, it won't be able to sustain its own weight and will break, and our rig...."

"Our rig!" muttered Will. "Don't be a fool, laddie. Bramulla's been in touch with the Presidium and the international bookkeepers have already written our rig off and consigned it to the devil."

"Why am I a fool?" said Kravtsov frowning.

"I don't know why. Don't you really understand? The rig's nothing. There's a much greater danger."

"What do you mean?"

Will did not reply, but turned away and went off toward the radio cabin.

"I can get along without talking to you!" Kravtsov called angrily



after him.

It was scorchingly hot. Kravtsov unbuttoned his wet shirt and watched in amazement the dull black surface rushing upward. "Well, let them," he thought to himself. "They can do what they like. After all, it's not my business. My trade's drilling wells. The devil! It's reached the sky already! It won't sustain its own weight and will collapse, of course. Well, let them. What do I care? I'm not a scientist, I'm an engineer, my business is to drill, and not...."

Ali-Ovsad, who had been standing beside him, took the binoculars and looked at the pillar.

"It must be made of iron," he said. "It must be cut. It's probably good steel—why should it be wasted? It's got to be cut. Go and ask the Armenian."

"What Armenian?"

"The chief—Bramulian."

Stamm and Bramulla came out of the radio cabin. The Austrian geologist was wiping his face and neck with a handkerchief, and he had permitted himself to undo one button of his jacket. Will was saying something to him, but the Austrian obstinately shook his head in disagreement.

Kravtsov went over to them and, interrupting their conversation, said in as official a tone as he could manage:

"Mr. Bramulla, I consider it necessary to begin cutting the pillar immediately."

The Chilean turned his perspiring flabby face to him, his eyes like two black plums.

"What with?" he cried. "I ask you—what are you going to cut it with, when the plasma cutter can't even cut the pipes?"

"The POK will cut it like a razor-blade," said Kravtsov. "I'm ready to begin at once."

"He's ready to begin! Did you hear that, Stamm? He's ready to get into that devil's hell! I forbid you to go near the pillar!"

"Mr. Kravtsov," said Stamm in an even tone of voice. "Until we succeed in establishing the nature of the phenomenon, we have no right to risk."

"But in order to ascertain the nature of this phenomenon, we must at least have a sample of the substance, mustn't we?"

The heat was getting unbearable, the deck was vibrating underfoot, and Bramulla's triple chin was shaking. The riggers of all four crews were huddled by the rail; the usual jokes and laughter

were not to be heard and many were listening to the talk between the geologists and engineers.

"My head's splitting! I can't keep men here on the rig. I don't know what's going to happen." Bramulla talked without pausing for breath—it relieved him slightly. "Madonna! Where is the 'Fukuoka Maru'? Why are these Japanese always late? Why did everything have to fall on Miguel Bramulla's head?"

"It will fall," said Kravtsov, shortly. "It will certainly fall on your head, Senor Bramulla, if you go on wailing instead of acting."

"What do you want of me?" cried Bramulla.

"We've got protective clothing. Let me..."

"I won't let you!"

They glared at each other for a few seconds in silence.

Then lanky Jim Parkinson, stripped to the waist, came up to them, touching the celluloid peak of his cap with the tip of his finger.

"Sir," he said to Kravtsov, "I'd like you to know, if they let you cut this damned candle, I'm at your service."

A tall Romanian came up behind Jim, gave a hollow cough, and announced in broken Russian that he too was ready, and so were his mates.

"They've all lost their senses!" exclaimed Bramulla. "What are you going to say to them, Stamm?"

"I shall say that the elementary rules of safety require extreme caution." Stamm undid another button.

"And you, McPherson? Why are you silent, for heavens' sake?"

"It can be tried," said Will, turning his eyes away. "Maybe we can get hold of a little bit for analysis."

"And who will answer for it, if...?"

"As far as I can make out, you're not sending them, Bramulla. They've volunteered themselves."

And Bramulla yielded.

"Try, Senor Kravtsov," he said, raising his eyebrows in agony. "Try. But, please I beg you, be careful."

"I'll be extremely careful." Kravtsov, quite cheerful again, made off to the storeroom.

Behind him went Ali-Ovsad.

"Ai balam! Where are you off to?"

"I'm going to cut the pillar!"

"I'll go with you."

The driller watched Kravtsov throwing protective clothing and instruments all over the shelves of the store, and started droning in a sing-song voice, "You're still you-ou-oung. You've no mum or dad he-eee-re. No union he-e-e-re. Only Ali-Ovsad to look after you he-ee-ere."

### XIII

Five men in heat-resistant suits walked slowly towards the centre of the rig. The stiff glasscloth puckered and crackled like tin. As they went, they pushed a truck with the photo quantum apparatus before them: and the truck rolled meekly along the rails. Kravtsov stared fixedly at the approaching pillar through the glass of his air-tight helmet.

"I don't care if its temperature is three hundred degrees, or even five hundred," he reflected. "I don't suppose it's higher—the mass of water it's pushing its way through must be cooling it a lot. Of course the photoquantum ray must work. It absolutely must. It could be cut through, perhaps. No, we mustn't—we don't know where it would fall. But we shall be able to cut a bit off."

Near the pillar the ripped plates of the deck were bent and heaved under their feet. Kravtsov signed to his companions to stop. Spellbound they watched the dull rushing black surface. Now the pillar narrowed, and a gap formed round it into which a man could easily fall; now it swelled out and, gripping the jagged edges of the deck, forced them upward with a grinding noise.

"Set it up," said Kravtsov, and the laryngo-phone pressed against his throat carried his voice to the helmetophones of his companions.

Chulkov, Jim Parkinson, and the tall Romanian, whose name was Gheorghii, removed a coil of wire from the truck, uncoiled the hoses of the water-coolers, and pulled them to a stanchion. Then they cautiously went another ten metres or so closer to the pillar, set up the firing stand on a tripod, and attached wires.

Kravtsov took up a position at the control panel of the ruby concentrator.

"Watch it! I'm switching on," he cried.

The instruments indicated that the ray gun had emitted a thin invisible ray of light of enormously concentrated power.

But the pillar continued to rush upward; its black fused surface was invulnerable—only the clouds of steam became denser.

Kravtsov ran to the riggers, seized the manual controls of the ray gun and directed it obliquely at the pillar. The black substance did not yield. It was as though the ray sank into it or. . . was bent.

"Let's try to get a bit nearer, sir," said Jim.

Kravtsov switched the apparatus off. "Move it forward," he cried. "A metre."

"Not too near," said Ali-Ovsad.

The riggers dragged the tripod nearer the pillar. The deck was heaving under them. Suddenly Chulkov, who was standing in front of the others, shouted and staggered with arms outspread, toward the ragged edge of the borehole, making straight for the pillar. Jim rushed after him and grabbed him from behind with both arms. For a few moments they swayed in an odd way as though on a tight-rope; but Gheorghii came up and got hold of Jim, and Kravtsov of Gheorghii, while Ali-Ovsad held on to Kravtsov, like in a children's game. They pulled Chulkov back, and he dropped down on the deck and sat with his legs doubled up under him, unable to stand.

They all stared at him in silence. Then Ali-Ovsad's voice rang out: "Did you have to? Have you forgotten the safety rules? Is that what I taught you? Why did you go near the pillar?"

"I didn't go," said Chulkov hoarsely. "It pulled me."

"Go and have a rest," said the old driller; and, turning to Kravtsov, he said, "you can't joke with this pillar."

He tried to persuade Kravtsov to stop the work and return to the side of the rig, but Kravtsov refused. The riggers pulled the apparatus back a little way, and once again the invisible sword slashed at the pillar and sank in it.

How unwilling Kravtsov was to retreat! But there was nothing to be done. They loaded the apparatus back on the truck again and returned. Chulkov's legs were still trembling and Kravtsov made him get on the truck.

"Nothing doing?" asked Will, when Kravtsov had rid himself of his crackling safety suit.

Kravtsov shook his head.

The top of the black pillar was lost in the clouds, and quite indiscernable. Its base was wreathed in steam and a cloud of humid vapour hung over the rig; the air was suffocating. The men on board were exhausted by the heat and closeness.

Ali-Ovsad stood this hellish microclimate better than the others, but he admitted that even in the Persian Gulf it was not so hot.

"Do I speak true, Englishman?" he asked Will, with whom he had drilled off-shore wells there many years before.

"True," confirmed Will.

"Don't you want to drink tea? It's good to drink tea for heat."

"No, I don't."

"It's moving very fast." Ali-Ovsad clucked his tongue as he watched the racing pillar. "The stratal pressure is very high. It's squeezing the iron out like toothpaste from a tube."

"Toothpaste?" repeated Will. "Aye, that's right. A very good comparison."

Half-naked, and puffing and blowing noisily, Bramulla came out of the radio cabin. He had a wet towel round his head and his great belly was quivering. He was followed by Stamm, who was now without his jacket and was obviously ill at ease in this extraordinary costume.

"Well?" said Will. "Where's the Tukuoka'?"

"It's coming! It'll be here by evening! We'll all evaporate before evening! Bear in mind, Stamm, you'll evaporate before me. Your mass is less than mine. I'll only have begun to evaporate when you've already turned into cloud."

"A cloud in trousers," muttered Kravtsov, who was lying in a deckchair by the cabin door.

"The President of IGY, Academician Tokunaga, is on the 'Fukuoka'," Bramulla announced. "And Academician Morozov as well. And Academician Bernstein from the States is flying here. But by the time they all arrive, we'll have evaporated! Never met with such a case in all my experience. I've observed more erupting volcanoes, Stamm, than you've ever dreamed of, but I tell you, this is the first time I've ever found myself in such a hell of a mess."

"We have all in it for the first time," said Stamm, correcting him.

"Bramulian," said Ali-Ovsad. "Let's go drink tea. Tea is very good for the heat."

"What? What did he say?"

Will translated the driller's suggestion. "Senores, I've never

drunk tea!" cried Bramulla. "How can you take hot tea in your mouth— it's ghastly! But really, does it help?"

"Come, see for yourself." Ali-Ovsad took the Chilean to his cabin. Stamm watched them go disapprovingly.

Will dropped heavily into a deckchair beside Kravtsov and, for the thousandth time, trained his binoculars on the black pillar.

"I think it's bending," said Will. "It's bending towards the west. Look, laddie."

Kravtsov took the binoculars and stared at the pillar for a long time. "Monstrous, inexplicable solidity," he thought. "What is that substance? Oh! If we could only get a bit of it."

"A cumulative shell," he said. "Do you think a cumulative shell would have any effect on it, Will?"

Will shook his head. "Only an atom bomb, I think." "Look here...."

They did not even have the strength to talk. They lay panting in their deckchairs, sweat pouring from them; and evening was still a long way off.

On the verandah of the messroom sat the riggers—half-naked. The multilingual conversation waxed and waned. For the tenth time Chulkov was telling how the pillar had pulled him and what would have happened if Jim hadn't grabbed him in time. And Jim was sitting on the verandah step, plucked a banjo in melancholy fashion and crooned in a hoarse voice:

"Oh Susanna, oh don't you cry for me,  
For I've come from Alabama  
With a banjo on my knee."

"What's happening?" Chulkov was saying in his quick way of speaking.

"I'm not magnetized, yet, that bastard's pulling me. It's pulling and I can't help myself. In a minute I think I'll fall on it—and curtains."

"Curtains," the Americans and the Romanian nodded in agreement. "A magneto."

"That's it!" Chulkov spread his arms out to show how he was approaching the pillar. "It was pulling me, the bitch. A good thing Jim got hold of me and held me. Otherwise—it was all U.P."

"U.P." nodded the riggers.

"Oh Susanna," sighed the banjo.

"Jim held on to Chulkov," explained Gheorghii. "I held on to Jim, so..." and Gheorghii demonstrated how he had held Jim. "Engineer Kravtsov held on to me...."

"In other words, granddad pulled the turnip, granny pulled granddad...."

"Then Ali-Ovsad held on to him!"

"Ali-Offside," repeated the riggers deferentially.

"It'll soon reach the moon," said Chulkov. "What the devil are the engineers waiting for? It'll reach the moon and then they won't know what to do."

The stocky Texan with the bandana started telling them how eight years previously, when he was a kid on a whaler, he had seen a sea-serpent half-a-mile long with his own eyes.

Hair-raising yarns followed. The riggers— strange as it seems— understood one another perfectly.

Evening fell over the ocean, but it got no cooler. In fact it got hotter still. The flood-lit steam-enveloped pillar looked like a fantastic waterspout that had leaped out of the sea and was rushing up and up for ever.

The men were powerless to stop this upward rush. They huddled close to the sides of the floating island, gulping down the close scorching air. Waves splashed down below, but they were hot as well—no refreshing oneself there.

Bramulla lay in a deckchair and gazed at the blue-black expanse of the ocean. His lips moved slightly; "Madonna! Madonna!" he breathed. By his side, motionless as a statue, stood Stamm, now wearing only trunks. He was wheezing, and was ashamed of his thin white legs.

## XV

The diesel-electric vessel "Fukuoka Maru"—the duty ship of the IGY—arrived about midnight, and hove to about a mile to the north-west of the rig. Her lights promised speedy deliverance from the terrible heat.

The freight and passenger lifts carried the men down from the upper deck of the rig to the landing stage. The crowd of half-naked men with rucksacks, suitcases, and travelling-bags made a strange

sight in the brightly light. The steel decking vibrated under them. Their wet backs and shoulders and sweating, unshaven faces gleamed. Someone went down the ladder, touched the water with his bare foot, and clambered back again, swearing.

At last a white launch arrived from the "Fukuoka Maru". Smart sailors threw a gangway across, and immediately a slender fair-haired woman in light slacks and a blue sweater ran across it to the landing stage. Those standing at the edge jumped aside; they'd expected anything

but that.

"Oh, don't worry!" said the woman in English, taking a cinecamera from her shoulder. "Heavens! How hot it is! Which of you is Doctor Bramulla?"

Bramulla, in his immense blue shorts, gave an embarrassed cough.

"Senora, a thousand pardons...."

"Oh, nonsense!" The woman levelled her camera and it began to whirl.

The Chilean waved his arms in protest and stepped back. Stamm slipped in among the crowd and started feverishly unpacking his suitcase, pulling out trousers and a shirt.

"Who's that?" Kravtsov asked Will in surprise. "Is she a reporter?"

Will gave no answer, but watched the blonde with an expression close to hostility in his half-closed blue eyes. And indeed—what the devil was this woman doing there? Kravtsov turned his back on the lens of her camera.

The woman held out her hand to Bramulla.

"Norma Hampton of the 'Daily Telegraph'," she said. "How terribly hot it is! Doctor Bramulla, could you tell me... ,"

"No, Senora, no! Whenever you like, but not now, please! Excuse me, Senora!" Bramulla turned to a young Japanese in white uniform who had followed Norma Hampton on to the landing-stage and was patiently awaiting his turn. "Are you the captain of the 'Fukuoka Maru'?"

"The mate, sir." The Japanese touched his cap. "'How many men can your launch carry?'" "Twenty, sir."

"There are fifty-three of us. Will you be able to carry everybody over in two journeys?"

"Yes, sir, but without luggage, of course. We'll make a third



time for the luggage."

Kravtsov left on the second trip. He stood in the stern of the launch and watched the huge floating island receding in the distance. The lights aloft had been extinguished and only the deserted landing stage was illuminated.

So that was how his watch on the ocean had ended! To all intents and purposes, there was nothing left for him to do here. He could return home at the first opportunity. The devil! What happiness—to see Marina, Vovka, and Mother! Vovka was running about already; who'd have believed it—he's only a year old, the little monkey! To stroll about Moscow and plunge into the thick of life there! It was autumn in Moscow now, and raining—oh! Lovely cool rain!

Let the scientists stop here and puzzle things out; he'd had enough.

Kravtsov saw the whitish steam swirling round the pillar; then the rig was swallowed up in the darkness and there was nothing, except the landing stage, showing up like a bright patch, to be seen.

He heard the cracked voice of the blonde reporter:

"The world press is awaiting you on board, Doctor Bramulla, so you'd better get ready for the attack. My colleagues wanted to go on the launch as well, but the captain didn't let them—he only made an exception for me. The Japanese are as gallant as the French. But why doesn't that pillar break?"

"I've told you already, Senora—we don't know anything about the substance of the mantle of the earth. Don't you see, the enormous pressure and high temperatures transform..."

"Yes, I know, you told me. But our readers are interested to know whether it can go on rising for ever."

"Senora," said Bramulla, still patiently trying to beat off the attack. "Believe me, I wish I knew myself."

The white hull of the motor vessel shone with lights. The launch raced in to the ladder and the "islanders" climbed up one after the other. As they stepped on to the upper deck of the "Fukuoka" they were dazzled by the press photographers' flashlights. The world press had rushed to the attack.

"Gentlemen of the press," a high-pitched voice was heard. "I appeal to you to wait. These men need rest. Tomorrow at six p. m. there will be a press conference. Goodnight, gentlemen."

Kravtsov, who was surrounded by a number of reporters,

glanced up gratefully at the speaker— an elderly wrinkled Japanese in a grey suit.

A courteous steward took Kravtsov to his cabin and explained in broken English that the bathroom was at the end of the corridor.

"O.K." said Kravtsov and flung himself on the narrow bunk, stretching himself luxuriously. "Here!" he called to the steward. "Do you know where engineer McPherson has been accommodated?"

"Yes, sir." The steward took a sheet of paper from his pocket and looked at it. "Cabin 27. On this side, sir. Two cabins away from you."

Kravtsov lay still for a while and then began to dose off.

A gentle knock at the door woke him. The same steward stole into the cabin, put Kravtsov's trunk in a corner, switched off the ceiling light, and noiselessly closed the door behind him.

No, that wouldn't do. That was the way to get demoralized. Kravtsov forced himself to get up. He reeled and was obliged to clutch the writing-desk. Had it got rough? Or was he reeling from fatigue may be? "Dammit!" he thought to himself. "That's enough! Tomorrow I'll make a... damn! I'm beginning to forget words now. Well, what is it... a report."

He took some clean linen and went out into the long grey-carpeted passage. Coming towards him were Bramulla and Stamm, accompanied by a tall man in a light green suit, with a magnificent grey mane and twinkling keen eyes. Kravtsov stood aside and mumbled a greeting. The tall man nodded. Bramulla said to him, "This is engineer Kravtsov."

"Oh!" exclaimed the stranger and gave Kravtsov his hand. "I'm glad to make your acquaintance. Morozov's my name."

Kravtsov, holding the bundle of clothes under his arm, shook the Academician's hand.

"We thought very highly of your work on the rig in Moscow, Comrade Kravtsov," said Morozov. "You put up a splendid performance."

"Thank you."

The bundle dropped on the carpet. Kravtsov bent down to pick it up, but staggered and fell on all fours.

"You'd better get to bed," he heard Morozov saying. "We'll have plenty of time to talk."

Kravtsov straightened himself up and watched the Academician

leave.

"You wretch!" he said to himself through clenched teeth. "You can't keep steady on your legs, you clot!"

In the bathroom he surveyed his reflection in the mirror with disgust. He was a nice sight— hair dishevelled, face unshaven and all patchy, for some reason, and eyes sunk in.

He took a bath and stood for a long time under a cool shower. This refreshed him and interest in life came back to him.

It was quiet in the passage and nobody was about; the ceiling lamps shed a gentle light. Outside cabin 27, Kravtsov paused for a moment. Would Will be asleep? The door was very slightly ajar, and he was just about to tap on it, when he suddenly heard a cracked female voice say: "That doesn't matter. But don't imagine I've come for your sake."

"Fine," answered Will. "And now the best thing you can do is go away again."

"Oh no!" the woman laughed. "I'm not going in such a hurry, my dear."

Kravtsov hurried away from the door. "Norma Hampton and Will!" he thought to himself in amazement. "What can there be in common between them? Still, it's not my business."

He went into his cabin. It wasn't a bad little cabin—small, but cosy. He scratched his sparse growth of beard. Should he shave now, or in the morning?

He switched on the light and on the table saw a pile of letters.

## XVI

Kravtsov awoke with a feeling of happiness. What could it be? Oh, yes, of course, the letters from Marina! He had read and re-read them till three in the morning. What was the time now? Oh-ho! Twenty to ten!

He jumped out of bed, drew the curtain, and opened the porthole. The blue morning rushed into the cabin. He saw the deep blue expanse of the sea, the sky dappled with light tufts of cloud, and, far off on the horizon, the rig, looking like a tiny box topped with a cap of white steam. The sun was dazzling and at first he could not make out the slender black thread stretching up from the eddies of steam and losing itself in the clouds. The mysterious

pillar looked less like a thread, indeed, than an insignificant hair on the mighty bosom of the Earth. A mere nothing, not worthy of the sensation it had caused in the world.

Kravtsov's eyes fell on a sheet of paper that was lying on top of the pile of letters. Smiling, he took it up and once again read the words written in crooked printed letters: "Daddy, come home quick, I miss you." Marina had guided Vovka's hand. Underneath he had drawn a house, that was just as crooked, with smoke switling from its chimney. Good old Vovka! He could already hold a pencil in his little fist!

So now it was time to go and have breakfast and then find Morozov. If they didn't need him, than at the first chance...

He started at the ring of a telephone. "Alexander! Have you had breakfast?" he heard Will's muffled voice. "No."

"Oh! then you won't be in time." "What's up, Will?"

"The launch is leaving at ten. You won't be in time. Go and have breakfast."

"I'll be in time all right," said Kravtsov, but Will had already rung off.

Dressing hastily Kravtsov ran out into the corridor. In the spacious lounge he was pounced on by some journalist, but ran on, muttering "Sorry". He found himself in a narrow passage in which a ventilator was roaring and realized he had lost his way. Back again! He asked his way now and, flying out on to the spardeck, immediately saw, far below, the launch dancing on the waves along side of the "Fukuoka". He rushed down a ladder two steps at a time to the upper deck, and came to a halt by a group of men. Standing there, panting, he heard Ali-Ovsad's voice:

"Why have you come? I said not to wake you but let you sleep. Did the Englishman tell you?" "Yes. Where is he?"

Ali-Ovsad pointed to the launch.

"There. Don't go. Rest."

"Rest, rest." Kravtsov waved him aside with annoyance and edged his way through the compact crowd of journalists to Bramulla and Stamm. They were talking by the ladder leading down to the launch to the elderly Japanese he had seen the day before.

Kravtsov was ashamed of having overslept. He greeted them shyly, and Bramulla, taking his hand, pulled him over to the Japanese.

"This is engineer Kravtsov."

The wrinkles on the face of the Japanese smoothed out in a smile. He took a deep breath and said in a high-pitched voice, "Masao Tokunaga," and added in quite good Russian, "Did you have a good rest?"

"Yes, quite good."

So this was the famous Academician! Twenty-five years ago, he had examined the ruins of Hiroshima with the first group of Japanese Scientists and had made a passionate protest against atomic weapons. It was rumoured that he was suffering from radiation sickness and, indeed, he did not look well.

"Mr. Tokunaga," said Kravtsov. "Let me go on the launch."

"Do you know why it's going?"

"No."

Tokunaga laughed softly to himself.

"But I know the rig very well," said Kravtsov, feeling his face flush, "and... I can be of use."

Just then Morozov joined them.

"The latest news, Tokunaga-san," he announced cheerily. "Radar puts the height of the pillar now at around thirty kilometres. It's moving at a speed of eight hundred metres an hour, but that still has to be checked."

"Thirty kilometres!" exclaimed one of the journalists.

"Well, is everything ready?" Morozov stepped on to the ladder. "Are you coming with us, Kravtsov?"

"Oh yes. "

"Come on, then."

They got into the launch and a sailor immediately pushed off from the bottom step. The launch raced along the white hull of the "Fukuoka". Morozov waved, and Tokunaga nodded sadly in response.

Kravtsov greeted Will, Jim Parkinson, and Chulkov.

"So you're here," he said to Chulkov.

"Of course," he answered, grinning. "Wherever you go, I go."

"No breakfast?" asked Will.

"It doesn't matter," said Kravtsov.

Puffing at his pipe, Will looked at him thoughtfully.

Besides the men, there was a fair-haired young man on the launch Kravtsov didn't know, wearing a brightly coloured shirt with a picture of Mount Fujiyama on it. He was busy with some

instruments and was talking in a low voice to Morozov. There were five or six instruments, the largest of which resembled a gas cylinder; the smallest was in a wooden case which the young chap held in his arms.

Conversation ceased as the launch approached the rig. All eyes were on the black pillar rising from the cloud of steam. It no longer looked to Kravtsov like a harmless little hair: there was something sinister and terrifying about it.

"Yes," said Morozov after a long silence. "Mother Earth has acquired quite a nice little tail."

The sea was choppy in the vicinity of the rig. The launch came up to the landing stage, Morozov first of all ordered a container with a self-recording thermometer for long-term temperature measurements to be lowered into the water. Then the instruments were carried over to the freight lift, and finally they all went up to the upper deck of the rig.

It was like a red-hot frying-pan there. Kravtsov glanced uneasily at Morozov: he was an elderly man—how would he stand that devilish heat? Morozov, wet with sweat, was putting on a glasscloth suit. Everybody hastened to do the same.

"Can you all hear me?" Kravtsov heard Morozov's voice through his helmet-phones. "Fine. We are now starting our first measurements. We shall take them every twenty-five metres. Yura, is everything ready?"

"Yes, Victor Konstantinovich," replied the fair-haired lad who was, it appeared, an instrument technician.

"Right! Let's begin!"

Jim Parkinson walked along the rails toward the centre of the rig, unwinding a surveyor's tape. Having measured twenty-five metres from the rig's side, he dipped a brush in a tin of red lead and made a red mark. Morozov pressed a button and fixed his eye to the telescope that was attached to the container resembling a gas cylinder. He looked through it for a long time, his eye lit with flashes of light from it. Then he took out a notebook, removed the glove from his right hand, and began to write.

Meanwhile Yura was reading two other recording instruments, and Will was busy with his magnetograph. Morozov had given Kravtsov the task of recording radioactivity.

Yura and Chulkov moved the instruments to the mark made by Jim—two hundred and twenty-five metres from the black pillar,

and the measurements were repeated. Jim walked on ahead with his tape, measuring off the next twenty-five metres, and Kravtsov watched him anxiously. True, it was still a long way off to the pillar, but how was one to know at what distance it would start pulling today?

"Comrade Kravtsov," he heard Morozov say. "At what distance was your Chulkov drawn to the pillar yesterday?"

"About ten metres."

"Less than ten," said Chulkov. "About eight."

"Oh no," objected Kravtsov and, calling to Jim, repeated the question in English.

"Exactly twelve yards," declared Jim. "Not an inch more."

Morozov chuckled.

"Researchers!" he said. "Here now: put the instruments on the truck. Parkinson, come back. We'll move forward together."

The deck suddenly began to rock and heave under their feet. Lanky Jim fell over the tin of paint. Yura fell flat on his back, pressing the box containing the quartz gravity meter to his breast. Will was thrown against Morozov. Steam swirled furiously and rapidly about the base of the pillar and the rig was covered in a white shroud.

The tremors gradually died down and ceased altogether. The wind unfurled the coils of steam and blew them upwards. The five men in blue-grey protective suits stood huddled together, powerless before the awesome might of nature.

"The speed of the pillar seems to have increased," said Will, raising his head and peering through his eye-shield.

"The radar can measure that," said Morozov. "Let's push on."

And these inflexible men approached the pillar step by step, pushing the truck with the instruments in front of them and unwinding the tape.

At the two hundred mark it took them an hour and a half to carry out their measurements: they had to wait until the pendulum gravity meter, which had been disturbed by the tremors, returned to normal.

At the 150 mark Morozov made them rope themselves together.

At the 100 mark Jim discovered that the paint in the tin was boiling and evaporating. Yura handed him a piece of chalk.

At the 75 mark Will sat down, doubled up, on the truck, and uttered a short groan.

"What's the matter, McPherson?" asked Morozov in alarm.

Will made no answer.

"I'll take him back to the launch," said Kravtsov. "It's a heart attack."

"No," came Will's weak voice. "It'll soon pass."

"Take him to the launch immediately," ordered Morozov.

Kravtsov took Will under the armpits, raised him, and helped him to get to the side. He listened to Will's heavy breathing and kept repeating, "All right, old chap, all right."

In the lift it seemed to him that Will had lost consciousness. He became terribly frightened and started shaking Will, then removed Will's helmet and his own. The lift stopped. Kravtsov opened the door and shouted:

"Launch!"

Two nimble Japanese sailors ran on to the landing stage and helped Kravtsov take off Will's protective suit. With a weak movement of his hand the Scotsman pointed to a pocket under the belt of his shorts. Kravtsov understood. He took a glass tube from the pocket and put a white tablet in Will's mouth.

"Another," gasped Will.

They carried Will to the launch and laid him on the narrow seat at the stern. One of the sailors put a cork life-jacket under his head.

"Take him to the ship immediately," Kravtsov said to the petty officer in English. "Do you understand me?"

"Yes, sir."

"Hand Mr. McPherson over to the doctor and return here."

"Yes, sir."

The launch put off and Kravtsov stood watching it for a little. "Will, old friend," he said anxiously under his breath. "I've got very fond of you. Will, you mustn't.... You're a strong chap...."

Only now did he notice that the sun was setting. How many hours had they spent on the rig? Heavy dense clouds were moving across the sky and as they approached the sun were suffused with a fiery orange light.

The stifling air gripped him by the throat like a vise. Kravtsov put on his helmet and entered the lift. Then he made his way slowly across the steam-shrouded upper deck in his crackling protective suit, with an odd sensation that all this was not happening on Earth, but on some strange planet; he swore at himself for such stupid thoughts.



He approached the blue-grey figures, who were still taking measurements at the 75 mark, heard Morozov address a question to him, and replied that he had sent McPherson across to the ship.

Morozov was worried about something. He himself checked the readings of all the instruments.

"A sharp break," he muttered. "Let's go on. All keep close together."

They moved forward, shoulder to shoulder, pushing the truck on which stood the container with the pendulum gravity meter. The other instruments they carried in their hands. Jim unwound the tape.

They had hardly advanced fifteen metres when suddenly the truck started rolling along the rails of its own accord towards the pillar.

"Back!" Morozov's voice resounded in their ears.

The men drew back hastily. The truck and container ran faster and faster, drawn by that mysterious force. A cloud of steam engulfed it, then it appeared again in a gap in the steam. At the point where the rails ended, it flew up, as though from a springboard, was seen for an instant as a grey patch, and disappeared in the eddies of steam.

"There it is!" cried Chulkov, pointing with his glove.

At a height of twenty metres or so, amidst the swirl of steam, the pillar could be seen rushing upwards, carrying with it the container, with the truck stuck to it just below. And then they disappeared in the clouds.

The four men watched, dumbstruck, heads bent back.

"Bye-bye!" said Chulkov. "Now we can look for our stuff on the moon."

Jim was muttering curses.

Kravtsov was overcome by a terrible feeling of tiredness. His legs felt like stones. The protective suit weighed ten tons. Hammers were pounding slowly in his ears.

"That's enough for today," he heard Morozov say. "Let's go back to the launch."

## XVII

"Do you want some tea?" asked the woman.

"No," answered Will.

He lay in his cabin, his dry hands with their swollen veins clenched on top the blue blanket. His face, at once pale and sunburnt, was as immobile as a sphinx. His lower jaw, covered with a grey stubble, jutted out strangely.

Norma Hampton sat by his bunk and looked at his immobile face.

"I'd like to do something for you."

"Fill my pipe."

"No, Will, anything but that. You mustn't smoke."

He was silent.

"Does it hurt less now?"

"Yes."

"You never complained of your heart three years ago. You're wearing yourself out with work. You go to the most god-forsaken places. You haven't spent three months in England these last three years."

Will was silent.

"Why don't you ask how I came to be in Japan?"

"How did you come to be in Japan?" he asked indifferently.

"Oh Will!" she sighed, catching her breath, and leaned forward. "Please don't think that I've been having a good time these three years. He turned out to be ... Well, anyway, in June, when there was a job going as Tokyo correspondent, I put in for it. I left him."

"You're always the one to leave," said Will in even tones.

"Yes." She laughed bitterly. "I'm like that. But here's what I want to say to you, Will: I want to come back, very much."

He said nothing for a long time. Then he glanced up at her and said:

"Don't your ears hurt?" he asked.

"My ears?"

"Aye. The pendants are too heavy." Involuntarily Norma touched her earrings; big green triangles with a pattern.

"I read in the papers that you were here on the rig, and I knew this was my last chance. I wired to the office and left on the 'Fukuoka'."

"Go away," he said. "I want to sleep."

"You're not sleepy. We're no longer young, Will." The woman's voice sounded cracked. "I'd fill your pipe and plant roses and petunias in the flower-bed in front of the house. We've done

enough wandering around the world. We could spend all our time together. Every evening. Will... All the rest of our evenings."

"Listen, Norma."

"Yes, dear."

"Does Howard write to you?"

"Very seldom. When he wants money. He hasn't much use for us nowadays."

"For me, anyway."

"He's our son, just the same. And, Will, you could...."

"No," he said. "That's enough! Enough, damn it all!"

"Very well." She passed her hand over the blanket and stroked his leg. "Only don't excite yourself. Perhaps you'd like some tea?"

There was a knock at the door.

"Come in," said Will.

Kravtsov came in, dishevelled, in a white shirt wide open at the neck, and crumpled trousers.

"Well, how are you feeling now?" he began in the doorway, and stopped short. "Excuse me—am I in the way?"

"No. Norma, this is engineer Kravtsov from Russia. Kravtsov, this is Norma Hampton, a reporter."

Norma tossed her golden mane and, smiling, gave her hand to Kravtsov.

"Pleased to meet you. The whole world's been writing about you, Mr. Kravtsov. The readers of the 'Daily Telegraph' will be glad to read anything you care to say...."

"Wait, Norma, later," said Will. "How long since you returned from the rig, laddie?" "Just this minute. How do you feel?" "The doctor's going to keep me in bed a long time, I think. Well, let's hear it."

Hurriedly and excitedly, Kravtsov related how the pillar had attracted the truck and container, and carried them up.

"It did, did it? I wonder what it is—a magnetic phenomenon, or gravitational, may be?" "I don't know, Will. It's a strange anomaly."

"What does Morozov say?" "He doesn't say anything. He just said that (he horizontal power of attraction increases as the object approaches the pillar, not directly in proportion to the distance but to an increasing degree."

"What's going to happen now?" "Now? More measurements. Today they were merely rough and elementary. Now they're putting permanent remote control instruments on the rig, they'll transmit all

the data from there to the 'Fukuoka Maru'. Well, Will, I'm glad you're better. I'll be off."

"Mr. Kravtsov," said Norma Hampton. "You must give me more details about the pillar."

Kravtsov glanced at her. "How old is she?" he thought. "Her face is young and so is her figure. But her hands are old. Thirty? Fifty?"

"Have you eaten anything today?" asked Will.

"No."

"You're crazy. Go and have something at once. Norma, give Mr. Kravtsov some peace."

"There'll be a press conference at eight, Mrs. Hampton."

"Why at eight? It was to be at six."

"It's been put off till eight."

Kravtsov nodded and went to the door. He opened it and collided with Ali-Ovsad.

"Hi! Careful!" exclaimed the old driller, who was carrying a teapot with pink flowers. "I knew it, that you'd be here. Go eat," he added sternly. "Hurry-scurry hungry: you've forgotten all about eating."

"I'm going, I'm going," and Kravtsov, smiling, went off down the passage, feeling slightly sick from hunger.

Ali-Ovsad went into Will's cabin, cast a sidelong glance at Norma, and put the teapot on the table.

"Drink tea, Englishman," he said. "I made it myself. Good tea. Azerbaijanian tea. Nothing like it nowhere."

## XVIII

A shaggy cap of clouds covered the ocean. The wind had freshened; the blue of the evening had deepened. The riding-lights on the "Fukuoka Maru" were lit. She was rolling.

At the door of the saloon where the press conference was to be held, a young man with high colouring took Kravtsov by the elbow.

"Comrade Kravtsov," said he with a friendly look in his smiling grey eyes. "Elusive Comrade Kravtsov, let me introduce myself: Olovyannikov, special correspondent of 'Izvestia'."

"Very pleased to meet you." Kravtsov gave him his hand.

"I didn't want to bother you yesterday, but this morning, when I

tried to catch you by the coat-tails you flew off at terrific speed. But being a polite gentleman, you flung me an apology in English."

"Was that you?" said Kravtsov, smiling. "Forgive me, Comrade Olovyannikov. And this time, in Russian."

"Gladly, Alexander Vitalyevich. It may interest you to know that I phoned your wife before leaving Moscow... ."

"You phoned Marina?"

"I phoned Marina and concluded from her words that she thinks a lot of you."

"What else did she say?" cried Kravtsov, who had taken a great liking for this smiling reporter.

"She said she was longing for you. That everything at home was all right, and that your Vovka was a young rascal who's getting more and more like his daddy."

Kravtsov laughed and shook Olovyannikov's hand.

"What do they call you?" he asked.

"Lev Grigoryevich. Your mother's well and she also asked me to give you her love and say that she was longing for you. I wasn't able to talk to Vovka—he was fast asleep. Marina asked me to get you some Esperanto magazines, but unfortunately I was rushing to the airport."

"Thank you very, very much, Lev Grigoryevich."

"Not at all."

They went into the saloon and sat down on a settee by the wall.

The world press was chattering noisily, smoking and laughing while it waited. Norma Hampton had driven Stamm into a corner and, shaking her lion's mane and notebook, was worming what information she could out of the Austrian. Ali-Ovsad, who had dressed up for the occasion, with all his decorations on his navy-blue jacket, came up to Kravtsov and sat down by his side, forcing his neighbours to make room for him. Kravtsov introduced him to Olovyannikov, and Ali-Ovsad immediately began to tell the correspondent about his quondam complicated relations with the press.

"They used to write a lot about me," said he in his usual dignified manner. "They always used to write: 'Driller Ali-Ovsad standing on the derrick'. I'd read and think 'Does Ali-Ovsad always stand on the derrick? Ali-Ovsad has a family, a brother who's an agronomist and knows all about grapes; and sons. Why must they always write that Ali-Ovsad stands on the derrick?'"

"You're right, Ali-Ovsad," said Olovyannikov, laughing. "I recognize our newspaper style. We're experts at turning people into monuments."

"Good chap, that was well said!" Ali-Ovsad raised a gnarled finger. "Turning a man into a monument. Why write words like that? Are there no other words?"

"There are, Ali-Ovsad. But that's what's difficult: to find other words, the right words. We don't always succeed when we're in a rush."

"Well, don't be in a rush. If everybody rushes when they work, the work will suffer."

Tokunaga, Morozov, Bramulla, and two men that Kravtsov did not know, came into the saloon, and sat down at the chairman's table. Conversation dropped.

Tokunaga rose. A flashbulb blazed. The high-pitched voice of the Japanese resounded through the hushed saloon.

"Ladies and gentlemen of the press. In the name of the Presidium of the IGY it is my privilege to open this press conference. But I must say at once that so far we are only able to give you preliminary information and certain hypotheses which—and I emphasize this—do not in any way claim to represent the absolute truth and need to be checked many times over."

Two interpreters translated the smooth, rather formal speech of the Japanese into Russian and English.

"So, what has happened?" continued Tokunaga. "Six years ago drilling operations on the ultra-deep borehole stopped at a depth of forty-two kilometres under the sea. The bit ceased to cut into the rock and it became impossible, for some inexplicable reason, to raise the drill pipes. You may recollect, ladies and gentlemen, the controversies and hypotheses of those days. We drew up an international rota to keep watch at the borehole, and were fully justified in doing so; for now, after six years, a new and more serious event has taken place. But first I must remind you that the borehole was being drilled at the bottom of a deep trench where, according to our calculations, the crust of the Earth was much less thick. Did the borehole penetrate a deep fissure, has plasma drilling disturbed the lower strata? We do not know.

"It may be surmised that the black pillar is a substance from the deepest strata which is in a state of plasticity under the action of enormous pressure; somewhere it found a weak spot and began to

rise, towards the boundary of the crust. Meeting the borehole on its way, it began slowly, and then faster and faster, to rise to the surface. Someone has aptly compared this with the squeezing of toothpaste from a tube. The substance, as you know, squeezed the string of pipes from the borehole and now, having considerably widened it, continues to rise in the form of a pillar leaning slightly towards the west. The chemical composition and physical structure of the pillar are as yet unknown. You see, ladies and gentlemen, many scientists consider that the Mendeleev table is true only for ordinary temperatures and pressures. But at great depths, where there are enormous pressures and very high temperatures, the structure of the electronic shell of the atom changes: the orbits of the electrons are pressed in on them, so to speak. And at still greater depths the electronic shells of the atoms are mixed. There all the elements acquire entirely new properties. There is no iron there, no phosphorus, uranium, iodine, there are no elements, but only some sort of universal substance of a metallic character. That is our supposition. You probably know that our attempt to obtain a sample of the matter of the pillar failed, unfortunately. Of one thing, however, there is no doubt: this substance possesses extraordinary properties."

## XIX

It was past midnight when Kravtsov left the smoke-filled saloon. His head ached and his back. Perhaps he ought to see the doctor and get some pills. But where could anyone hope to find the sick-bay in this floating city?

Ali-Ovsad and Olovyannikov had got lost in the crowd of reporters who had rushed to the radio cabin at the end of the conference.

Kravtsov did not quite know in which passage his cabin was. He went down the first staircase he saw and found himself in another empty passage fitted with a jute carpet. Doors, doors and more doors. But their numbers were even; he must go over to the other side. He certainly must learn to find his way about the "Fukuoka Maru" and know where everything was. He was quite obviously going to spend more than a couple of days on her.

He shuffled along the passage, feeling ready to drop, and

tiresome tune kept running in his head: "The grass has grown on the paths and tracks where my dear love's feet once trod."

Somewhere ahead he heard a snatch of conversation in English, followed by a burst of laughter. Then he heard the melancholy twang of a banjo. The door of one of the cabins was flung open and the stocky Texan (his head still in a bandana), and two riggers from Parkinson's crew came out into the passage—very much the worse for liquor.

"Hi, engineer!" exclaimed the stocky one. "What have you and the learned gentlemen thought up?"

"We haven't thought up anything yet," replied Kravtsov, wearily.

"Got away, that means you're being paid for nothing!"

Kravtsov glanced at the flushed, excited face of the Texan and moved on in silence. But one of the riggers stopped him.

"Just a second, .sir. Fletcher here," he indicated the Texan with a jerk of his head, "would like to know whether this damned pillar will fall on America. He's got a lot of relations in America, sir, and he's afraid...."

"Let him write and tell them to put props over their houses," replied Kravtsov.

The men went into gales of laughter. Jim Parkinson, with his banjo, stuck his head out of the next cabin, nodded to Kravtsov and said, "Go to bed, Fletcher."

"I would," answered the Texan, grinning. "Only I'm afraid I'll turn yellow in my sleep."

More yells of laughter.

With a racking headache and his face twisted with pain, Kravtsov lagged himself along the passage. "The grass has grown on the paths and tracks, where the wild cats once trod."

He turned into a side passage and nearly collided with Ali-Ovsad.

"Ai, balam! Where are you off to? I've been there, that's not our street. Such a big ship—they need a policeman at the corner."

"You're right. Where does this staircase lead?"

They went up the stairs and found themselves on the upper deck. They were on more familiar ground there. Then they went up on the spardeck and sat down, or rather, lay down in deckchairs.

The ship rocked and creaked. In the rays of the toplights they could see how low the dark clouds were as they drifted overhead.



"It'll rain," said Ali-Ovsad.

Inhaling the cool night air, Kravtsov gazed at the clouds as they scudded past above the ship.

"What rubbish was that Fletcher talking?" he thought. " 'I'm afraid of turning yellow in my sleep.' What does it mean?"

"Sasha," said Ali-Ovsad. "Remember what that fat journalist asked? Whether God was angry with the drillers and sent the black pillar."

Kravtsov smiled as he remembered the question put by the correspondent of the "Christian Century"—was not the pillar a divine omen—and Tokunaga's reply that in view of the absence of adequate proof of the existence of gods and the lack of time, he would ask that correspondents' questions be relevant to the subject under discussion.

"So well dressed, looked like a cabinet minister, but doesn't know there's no God," Ali-Ovsad clicked his tongue. "And I thought he was a cultured man."

"There are all sorts in the world, Ali-Ovsad. Your friend Bramulla, for instance, also has the habit of addressing the Lord God."

"Humph! That's just habit. I didn't quite understand, Sasha,—why did the Japanese mention Hiroshima?"

"Hiroshima? Well, that chap in the gaudy shirt—from the 'New York Post', I think,—asked where energy comes from. Something like that. So Tokunaga replied that according to Einstein energy is equal to the product of mass into the square of velocity of light in space, and that consequently a gramme of any substance possesses a latent energy—over twenty million million calories I think,—which can be manifested in endless ways. And then he added that they—the Japanese, that is—had made acquaintance with a particular manifestation of this energy in Hiroshima."

Kravtsov fell silent. Fletcher's curious words—"I'm afraid of turning yellow"—came back to him again, and suddenly he understood their meaning. He comprehended—and his face darkened.

A door-handle clicked and a bright oval appeared on their left. A number of men, talking and laughing loudly and flicking their cigarette-lighters, came out on deck from inside. One of them came up to Kravtsov and Ali-Ovsad, lying in their deckchairs.

"So that's where you are," he said. It was Olovyannikov. "You

look cosy enough." He threw himself into a deckchair and stretched out. "The devil knows what to tell the paper," he sighed. "It's all so vague, so damned vague. I managed to push through to Morozov and asked him to write just a few words for 'Izvestia'; but he refused. It was too early. Alexander Vitalyevich, do you know anything about the theory of a single field?"

"I only know there's no such a theory yet. Why do you ask?"

"Morozov mentioned it casually—he seems to have his own views on it. I can picture magnetism to myself. With some mental effort I can imagine the gravitational field. But what is the field that has appeared around the black pillar? What is horizontally acting attraction?"

"It's all connected," said Kravtsov. "A theory is needed which combines all the theories of fields. After all, there used to be the theory of the ether, and all, and it seemed unalterable, didn't it? I believe a theory of the single field will be put forward soon."

"So am I," agreed Olovyannikov. "Otherwise there is terrible confusion. Do you know what's worrying Morozov so much?"

"What?"

"The ionosphere. Soon, he says, the pillar will reach the ionosphere. He was just about to add something more, when he exchanged glances with Tokunaga and said no more. What do you think might happen?" Kravtsov shrugged his shoulders.

"It's quite fantastic," he said. "We understand some problems about space much better than those about the interior of our own planet. Our borehole is less than one per cent of the distance to the centre of the Earth, yet we're already up against this phenomenon. We don't know a damned thing about what is going on underneath our feet." He was silent for a while and then, getting up, added, "But we'll find out just the same. Our borehole is only the beginning."

## XX

Kravtsov was awakened by a sound like gunfire, and rushed to the porthole. The dark sky was overcast with storm clouds. Lightning flashed and there was another long peal of thunder. A glass on the washstand and the brass curtain-rings echoed with a faint tinkle.

Dressing hurriedly, Kravtsov ran up to the spardeck, where a number of men were crowded on the side facing the rig. They were talking uneasily and from time to time peals of thunder drowned their words.

Normally, it was dawn at that hour and the sky shone blue, but now it was like midnight. It seemed as if all the clouds of the world had been drawn to the black pillar. Lightning flashed from the clouds in sheaves and struck the pillar, only the pillar, and the sky cracked with swelling-thunder.

It was fantastic! Flashes of lightning lit up the restless sea, which looked paler than the lowering sky. On the horizon white daggers fought an infernal duel at the steam-shrouded pillar.

Rain began to fall in torrents.

Kravtsov caught sight of Bramulla and made his way to him. The fat man was clinging to a bulwark and his lips were moving.

"O Santiago di Barrameda!" he muttered. "Black Madonna of Montserrat!"

Stamm, who was standing silent and motionless by his side, turned a pale face to Kravtsov and nodded.

"What a storm!" cried Kravtsov. "I've never seen anything like it."

"No one has ever seen such a storm," Stamm began but a clap of thunder drowned his words.

The "Fukuoka" was rolling violently from side to side. Hanging on to the handrail, Kravtsov made his way to the stairway, went below, and knocked at Will's cabin. An unfamiliar voice replied. Kravtsov opened the door slightly, just as the ship heeled, and he flew into the cabin, nearly knocking over a Japanese in a white coat.

"Excuse me," he whispered and looked at Will.

Will lay on his back with his bony chip thrust out and his eyes closed. The doctor touched Kravtsov's arm and said something incomprehensible—but Kravtsov understood—he was in the way and must leave. He nodded and went out, closing the door behind him. He heard a metallic sound on the other side.

Norma Hampton was hurrying along the passage. Her hair was pinned up carelessly and there was not a trace of lipstick on her lips.

"Don't go in," said Kravtsov. "The doctor's there."

She neither answered nor stopped, and went into Will's cabin

without knocking.

Kravtsov stood listening for a moment. The storm roared deafeningly, but no sound came from the cabin. "We must do something," the thought harassed him. "We must do something."

He dashed off. Several members of the Japanese crew were having lunch in the brightly-lit saloon, but neither Morozov nor Tokunaga was there.

"Where is Academician Morozov?" Kravtsov asked. One of the sailors replied that Morozov might be in the radar cabin.

Kravtsov went up the steep ladder to the bridge. The rain beat on his back, protected only by his jacket, and on his bare head. He stood still for an instant. From that height the picture of the storm was even more fantastic. The sea below seethed, flashes of lightning ripped across the livid sky, and he was dazzled by the play of light and dark. There was a smell of ozone in the air. The bridge rocked under his feet.

Torrents of water streamed down the glass of the radar cabin. Kravtsov pulled open the door and went in.

Hemmed in on all sides by grey instrument panels, two Japanese in naval uniform, the gravitation technician Yura, and Morozov, were working there. The radar screen flickered with an unsteady silver light while a luminous spot crept over it. Morozov cast a keen glance at Kravtsov.

"Ah! Comrade Kravtsov! What can I do for you?"

"Victor Konstantinovich," said Kravtsov, wiping the rain from his forehead with his hand. "McPherson is very ill. This storm and the rough sea...."

"If I'm not mistaken, the doctor is there with him."

"Yes, I know, but.. . Couldn't the ship be moved away from the storm zone?"

Morozov threw his pencil on the table and rose to his feet. He watched the radar scanning for a minute.

"The air's absolutely saturated with electricity," said Kravtsov.

"Look here, are you a doctor?" asked Morozov sharply.

"No, of course not, but surely you can see...."

Morozov scratched his cheek. Then he lifted a telephone receiver and dialled a number.

"Is that... Mrs. Hampton? Morozov speaking.

Is the doctor there? Will you call him.... Oh, all right, then ask him how McPherson is," Morozov listened for a few minutes,

frowning and his cheek twitching. "Thank you."

There was a click as he put the receiver back.

"Very well, Kravtsov," said Morozov, taking up his pencil again. "I think you're right. We'll do something—you mustn't worry."

## XXI

The "Fukuoka Maru" moved further away, and again hove to. The storm continued to roar above the ocean. Lightning encircled the black pillar like a ring and struck it without cease from all sides. Someone saw a fire-ball—a blazing concentration of energy, scattering sparks—sail above the waves, tracing their contours.

A little after nine in the morning a launch left the "Fukuoka" for the rig with a group of volunteers including Chulkov on board. At their head was Yura, who had received detailed instructions from Morozov about what instruments to take and where to place them.

"It's dangerous," said Ali-Ovsad. "Can't you wait until the storm is over?"

But the all-knowing Olovyannikov explained that there was no point in waiting: the storm would not be over for a long time, for many days, perhaps.

The volunteers boarded the rig in protective suits and rigged up instruments equipped with automatic radio-transmitters. Now the triangular pens of the recorders in the radar cabin of the "Fukuoka Maru" traced quivering coloured lines on ruled tapes and computers processed this information. The scientists were in continuous conference.

The journalists were not admitted to the instrument cabin. They felt something of vast importance was taking place and that a sensation without parallel was imminent. A number had already tried to send descriptions of the storm to their papers, served up with their own conjectures; but the radio cabin accepted no communications without Stamm's endorsement, and the Austrian was inexorable. He mercilessly cut out everything in the way of scientific hypotheses, and only pitiful scraps remained, as a result, of these dispatches.

Tokunaga and Morozov had several radio conversations with the International Geophysical Centre. Lagrange, the lively

correspondent of "Paris Soir", caught them once as they were returning from the radio cabin. He followed them stealthily down the passage with his portable tape-recorder switched on and managed to record part of their conversation.

There was no hope of communicating this priceless record to his paper: Stamm would simply confiscate the tape. Lagrange, not wishing to part with his exclusive sensation, restrained himself for a long time, but eventually gave up the struggle. He called all his fellow-journalists together in the press saloon, asked for silence, and switched on the tape-recorder.

There was the usual noises, followed by a muffled conversation in English:

"Its speed is accelerating."

"Yes, it's overtaking us and leaves us no time.

Did you hear the navigation officer's report? The magnetic compass has deviated from the meridian."

"A very complicated picture. As for your conjecture regarding the magnets...."

"I wish I were mistaken, believe me. But with this reconstruction of the structure.... Excuse me, Masao-san. What do you want, sir?"

"Me?" Lagrange was heard to say in his rapid manner. "Oh, cher maitre, nothing at all, absolutely nothing. I simply...."

"Well, the rest is uninteresting," and to general laughter Lagrange switched off his recorder.

"Sell me that text, Lagrange," said a big American in a Hawaiian shirt.

"What do you want it for, Jacobs? Do you by any chance think that your charm will soften the heart of our Austrian Cerberus?"

"My paper won't grudge the expense."

"You're mistaken there, Jacobs!" cried Lagrange, slapping himself on the thigh. "Stamm is more incorruptible than Robespierre. I don't understand a thing about science, but I do about people, I assure you! You can cut this Stamm up with a blunt saw, and still...."

Somebody pulled him by the sleeve.

At the doors of the saloon stood Stamm, upright and impassive.

"I am highly flattered, gentlemen," he said in a quavering voice, "that you do not doubt my professional integrity."

Then he walked ceremoniously up to the table, put a folder

down before him, and cast a severe glance at the journalists.

"Gentlemen," he said, waiting till there was complete silence and adjusting his spectacles, "I have been charged with the task of imparting an important communication to you. In view of the extraordinary circumstances it has been decided you should inform your offices immediately. You will be given the printed text of the communiqué of the Presidium of the IGY. We ask you to transmit it to your editorial offices without distortion or addition. Analogous texts have already been sent by radio to the United Nations and certain other international organizations."

"What's happened?" a chorus of voices exclaimed.

"Will you comment on the communiqué?"

"That is why I have come here," said Stamm. And he began a commentary, weighing every word. "Radar measurements show that the speed of the black pillar is accelerating rapidly. Its summit is now over eighty kilometres above sea level and deviates to the west as a result of the rotation of the Earth. The air at the surface of the Earth, I dare say you are aware, conducts electricity scarcely at all, but at a height of eighty kilometres the conductivity of air increases enormously and equals that of sea water. That is why, having attained this height, the black pillar which apparently possesses a very high conductivity, close to superconductivity, has caused this extraordinary and unparalleled thunderstorm, that is to say, these powerful discharges of atmospheric electricity."

Stamm paused for breath after delivering this long sentence. The deafening rumble of the storm could be heard.

"Now I come to the most important point," he continued. "By evening the pillar will have reached the ionized layer of the atmosphere. The ionosphere, as you should also know, is electrically charged: its potential in relation to the surface of the Earth is in the region of two hundred thousand volts. Observations have shown that currents of conductivity have appeared in the pillar, and its own field, a highly specific one, has already come into being around it. It will intensify sharply when the pillar enters the ionosphere and a peculiar form of interaction commences. The Earth will be short-circuited with its own ionosphere."

The journalists, who had been tensely expecting a sensation, sighed with disappointment and exchanged glances: more incomprehensible talk about fields.

"The Earth, however, will not lose its electric charge," continued

Stamm, "for the continuous flow of high-energy particles from space will not cease, of course. The magnetic field of the Earth is a huge trap for these particles according to many scientists. But as a result of short circuiting, the properties of the magnetic trap will be considerably altered. We very much fear, gentlemen, that this whole complex of phenomena— and, above all, the still unexplained specific nature of the pillar's field—may cause fundamental changes in the structure of the magnetic field of the planet. There are signs that it may.... We are afraid that it will cause the demagnetization of all permanent magnets."

Stamm fell silent.

"Why should they be demagnetized?" asked Jacobs in his tranquil voice.

"Magnets are demagnetized by heat or by a blow," exclaimed Olovyannikov. "But there's neither the one nor the other."

"Yes, gentlemen," said Stamm, who seemed rather agitated. "By a blow or heating above the Curie point. The alteration to the structure of the Earth's magnetic field will, according to certain indications, have the same effect on a magnet as a strong blow or intense heat. To be more precise, as what specifically from this complex of phenomena affects the magnetic conditions of a solid.... I beg your pardon, I have wandered rather from the subject of my statement." Stamm coughed and adjusted his spectacles. "So, if our fears are justified, all magnets on the planet will be demagnetized. I hope you realize what that means, gentlemen: it means that there will be no electric current. Not a single generator will produce it."

There was dead silence for some time. Then cries of stupefaction broke out.

"How can we live without electricity?"

"When will you scientists stop your devilish experiments?"

"Can't you stop this damned pillar?"

Stamm waited patiently for the storm to pass. When they had calmed down a little, he said, "Gentlemen, the scientists of the whole world are trying to find a means of stopping the pillar, but it has overtaken us. This phenomenon has to be closely studied, and that is what we are doing. There is no doubt that science will find a way out of the situation. But how soon, we cannot say. A month, perhaps, or even longer, we shall have to live without electromagnetic technology. Naturally, wide use will have to be made of the steam engine. I repeat—temporarily. I assure you that



the scientists will overcome the short circuit and restore the status quo. We ask you to keep calm and to appeal to your readers to do the same."

The journalists rushed to the table and each received a paper with the official communiqué.

## XXII

By evening the storm had intensified, and it was pouring. A number of times fireballs sailed above the "Fukuoka Maru", as if taking observations of the ship, then went on toward the black pillar.

The unending play of lightning, the feeling of helplessness, the imminence of incomprehensible and terrible events—all made Kravtsov sick at heart. Ali-Ovsad persuaded him to come to his cabin, made tea, and questioned him about the ionosphere. Olovyannikov was there, too, watching them both.

"Listen," said Ali-Ovsad, balancing a saucer on the tips of his fingers, "The petrol engine will work, won't it? It doesn't need current."

"What about ignition?" answered Kravtsov. "How will it work without an electric spark?"

Ali-Ovsad sipped his tea thoughtfully and bit up lumps of sugar.

"I must get to Baku," he declared suddenly. "If there's no current, we've got to make a lot of kerosene." He got up, turned the switch for the lights, and the ceiling lamp lit up obediently. "It lights," said he. "The Japanese probably thought there'd be no electricity. Why does Morozov listen to him?"

"Morozov wouldn't frighten people for nothing."

"Ai balam, any man can make mistakes." Ali-Ovsad, sipping tea again from his saucer, started telling them about Novruzov, a geologist who never made mistakes. But one fine day a well that had been drilled at a spot chosen by Novruzov himself and had already reached a depth of two thousand metres, suddenly disappeared into the ground.

"When was this?" asked Olovyannikov, taking his notebook from his pocket.

"Long ago, in forty-nine. Don't write, our paper The Derrick' wrote at the time: 'Driller Ali-Ovsad standing on the derrick, saving

the rotary table, winch, and pump.' I saved the table and the winch, that's true, but not the pump. It was a good pump, 'Red Hammer' works. Then we all had to run for it—the derrick itself sank into the ground. Now there's water there—a lake."

"What did the geologists say?"

"Each one spoke his piece—strata, structure.... The Earth, but what's under the Earth, we don't know."

Kravtsov had listened absent-mindedly; he knew all about the stir that episode at the Shirvanneft field had caused. And he was full of tea.

"I'm going to write some letters," he said, and made off for his own cabin.

Outside Will's door, he paused for a moment thinking, then tapped softly. The door was opened immediately, and Norma Hampton stood there.

She put her finger on her lips and shook her head.

"Who's there?" asked Will's weak voice.

"Aren't you asleep?" said Norma. "Well, come in then, Mr. Kravtsov."

"Well, how are you, Will?" Kravtsov sat down, with an anxious look at the Scotsman's face. The cabin was in semi-darkness; only the bed lamp, covered with a newspaper, was burning.

"Not too bad. Switch on the light." The ceiling lamp lit up, and by its yellow light Will's dry-face looked unfamiliar to Kravtsov. Perhaps because his cheeks were covered with a grizzled bristle. There was a new expression in his eyes, too: this ironic smile had gone. Moved by a sudden tender impulse, Kravtsov gently pressed Will's arm with his hand.

"Tell us the news, laddie," said Will.

"The news? There is news, but not very good news." Kravtsov related everything they had been told.

"There won't be any electric current?" exclaimed Norma Hampton. "Did you understand Stamm correctly?"

Kravtsov smiled. "I'm telling you everything I heard, word for word. By the way, Mrs. Hampton, you did not receive your copy of the text, and I never thought of getting one for you. But there must be some left at the press centre."

"Oh, never mind about that," said Norma.

"She's not at all young, not at all," thought Kravtsov, looking at her tired face.

"Go on," Will said to her. "It's your duty."

"And it will give you a little rest," added Kravtsov. "I'll stay with Will."

"All right then." Norma rose hesitatingly. "If you'll stay here.... Here's his medicine. At nine o'clock sharp give him twenty drops."

She went out.

"A short circuit," said Will after a pause. "Well now."

"Yes. A colossal clamp between the ionosphere and the Earth. It's hard to imagine."

"I was sure it was only a magnetic anomaly," said Will. "That's why I undertook to go on watch— I wanted to verify my theory. Not mine, actually. Even then, six years ago, it had been suggested by Guillard, Noiret...."

"And Komarnitsky," put in Kravtsov.

There was a knock at the door. A Japanese steward glided into the cabin, made a courteous sibilant sound, and put a candle in a black saucer on the table.

"What's that for?" asked Kravtsov.

"Captain's orders, sir."

The steward noiselessly closed the door after him.

"Candles, kerosene lamps...." Kravtsov shook his head. "What we've come to!"

"Laddie, go and tell them—an atom bomb. Only an atom bomb can smash the pillar."

"Don't, Will."

"I'm not joking. There's no other way."

They were silent for a while. Kravtsov glanced at his watch, put twenty drops of medicine into a glass of water, and gave it to the Scotsman.

"Are your parents alive?" asked Will suddenly-

"My mother is. I don't remember my father— he was killed in 1948, when I was three. He was a test-pilot."

"He crashed?"

"Yes. A jet fighter."

Will said nothing and then asked another question, as unexpected as the first. "Why are you learning Esperanto?"

"Well, simply because it's interesting." Kravtsov smiled. "I don't think it would be a bad idea if everybody learnt an international language. It would be easier to communicate."

"And you absolutely want to communicate?"

"I don't know what to say, Will. Communication between people—what's bad about that?"

"I'm not saying it's bad. It's simply useless."

"I don't want to argue with you now. Get better, and then we'll argue."

"There's something about you that irritates me."

Kravtsov looked Will straight in the "eye, and decided to turn it all into a joke: "That's probably because I've been cooking buckwheat for breakfast too often."

The ceiling lamp grew dimmer and dimmer and went out, and the table lamp as well.

"It's begun," said Kravtsov, searching in his pocket for matches. "Good-bye, electricity!"

He struck a match and lit the candle.

### XXIII

It did not happen at the same time all over the planet. At first the zone of demagnetization embraced only the region round the black pillar, but slowly and unevenly it began to spread right round the Earth.

Electromagnetism held out longest on a tiny patch of land lost in the Atlantic wastes—Ascension Island, which was geographically almost at the antipodes of the black pillar. Electric lights were extinguished there eleven days later.

Life on the planet seemed to have taken a gigantic leap back to the previous century.

In vain the waters of the Volga, the Nile, and Colorado River, falling from enormous dams, turned the wheels of power stations: the rotors of the generators connected to them turned idly—their coils crossed no magnetic lines of force, and no electromotive force was imparted to them.

In vain did water continue to be heated by atomic piles: the steam turned the rotors just as pointlessly.

The close network of power transmission lines that covered the planet was useless; useless, too, were the electric wires that connected up factories, workshops, and homes; the life-giving flow of electrons no longer ran along them, bringing light, warmth, and power.

Electric current had not, of course, disappeared altogether. It was produced by chemical elements—the batteries of pocket torches, for example. It was produced by accumulator batteries—until they ran down; but there was no means of charging them. It was produced by electrostatic friction machines, by thermoelectric and solar batteries. Attempts were made to connect these to the windings of generator stators, but the current passed through them without effect and did not produce an artificial magnetic field.

The whole powerful industry of the world, whose power was based on electromagnetism, came to a standstill. At night the streets of cities were plunged in darkness. Trolley-buses, lathes, lifts in tall buildings, washing-machines, tape-recorders, and cranes—all stood still. Internal combustion engines had no ignition. The radio fell silent. Telephone exchanges were dumb.

Human beings became as isolated from each other as a century before.

Navigation became difficult: the magnetic compass discs revolved helplessly under the glass, and were unable to indicate the correct course to navigators.

But it was not only human beings who suffered from this sudden calamity. Fish lost their mysterious paths in the electric currents of the ocean streams and spawned at random.

Migratory birds were unable to find their customary routes.

The polar aurora moved toward the Equator and stopped above it, encircling the planet with a shimmering iridescent ring.

Fearful rumours began to be spread about an increasing stream of primary cosmic radiation in the lower layers of the atmosphere, whose protective properties were beginning to alter noticeably. The inhabitants of mountain regions abandoned their homes and came down to the valleys. Terrible stories of the death of the personnel of the Alpine Observatory in the Pamirs passed from mouth to mouth.

A Committee of the Black Pillar, composed of the world's leading scientists, was formed at the United Nations. But while this committee was racking its brains to discover a means of destroying the pillar, the world was being forced to adapt itself to life under the new conditions.

But this world was not one.

In the socialist countries the planned system made it possible to cope with the organized resettlement of the inhabitants of mountain regions, the temporary shutdown of the electrical industry, and the

substitution of steam for electric power in industry. Those who had been employed in the electrical industry hurriedly acquired new skills in other industries where, temporarily, at any rate, more manpower was now required.

But the capitalist world was in a ferment. A fierce struggle for government orders blazed up between the monopolies. Coal and oil shares soared; those of electricity companies slumped, and people who believed in the eventual ending of the short circuit bought them up. There was panic on the stock exchanges. The capitalist world was in the grip of gigantic speculations. Prices rose and taxes were increased.

Scare headlines were splashed across the newspapers proclaiming the "last days of mankind", but very often these were a cover for the mercenary interests of the great monopolies. The Transatlantic Transport Company made a deal with a newspaper concern and the rumour was spread across the United States that cosmic rays would reach Ascension Island much later than any other part of the world. Wealthy people made a rush for this tiny island—a hot, nearly waterless, cone sticking out of the depths of the Atlantic Ocean.

Every day to Georgetown, the only populated spot on the island, where some two hundred people, mainly port employees, lived, came rich immigrants in their own ships. With them they brought food, building materials, and water, and they paid an enormous price for every yard of stony soil at the foot of the mountain. Very soon not an inch of space was left available for human habitation. Prices soared to astronomical heights. Murderous fights took place on the island.

The British Government, to which Ascension Island belonged, sent a strong protest to the U.S. Government. Washington rejected the note, indicating in its reply that Ascension Island had been seized by private persons, for whose actions the U.S. Government did not hold itself responsible.

British warships were sent to Ascension and to the neighbouring island of Saint Helena, which had also been invaded by floods of immigrants.

In the squares and open spaces of the cities, unshaven men, who had lost the habit of using non-electric razors, screamed: "The end of the world has come!" "The horsemen of the Apocalypse are on their way!" echoed religious fanatics.

"Look what the scientists have done to us! Death to the scientists!" yelled shopkeepers, ready to start a pogrom.

A whole troop of armed young men arrived in Princeton, New Jersey, on horses, covered with the dust of the South. Deploying over the neat lawns, they launched an attack on the main University building. Students and lecturers met on the way were brutally beaten up and two who put up a fierce resistance were shot. The thugs forced their way into the laboratories and methodically smashed vessels, overturned tables, and destroyed instruments.

"Where did that bandit Einstein work?" they yelled. "Hang the professors!"

Whooping and yelling, they made for the professor's bungalow. A number of students and teachers barricaded themselves in one of the houses and drove the lynchers off with revolver fire. Shots continued to ring out till late at night and the bungalow repulsed attack after attack, until cartridges ran out. Even then these brave men did not give in, but fought the bandits hand to hand, and fell one by one, riddled with bullets. When the police arrived, the bungalow was a flaming torch, shooting out showers of sparks into the dark November sky. The bandits opened fire on the police; reinforcements for both sides arrived, and the Federal Government sent troops to Princeton. For six days veritable war raged there—six bloody days.

Curses were heaped on the heads of the scientists; yet they were the sole source of hope. Only they could cope with the catastrophe.

The first days of stunned surprise passed. The world began feverishly, one way and another, to adapt itself to the new conditions. Transport returned to the steam boiler: steam locomotives drew trains lit by kerosene and acetylene lamps; steamships sailed from the ports. Speaking-tubes and the pneumatic post made their appearance. The number of post offices had to be greatly increased. Postcards replaced the telephone.

The hooves of horses harnessed to lorries and cars clattered over the asphalt of the cities.

Strange hybrids appeared: diesel engines with steam starters.

A fortnight later the names Leonid Moslakov and Yuri Kramer were hailed round the world. Those two final year students at the Bauman Higher Technical Institute in Moscow had invented a device to replace electric ignition in internal combustion engines. Their invention was brilliant yet simplicity itself. Inside the

sparkling plug they fixed a toothed firing wheel and a long pyrophorous rod with a microfeed mechanism. A trigger on the feed-shaft pulled a spring, the wheel revolved against the rod and struck a spark. In other words, it was an ordinary cigarette lighter—Moslakov and Kramer's lighter—but thanks to it the great mass of motor cars came back to life, and the streets of the cities regained their normal look.

Coal and oil output was increased without delay, and the manufacture of paraffin lamps and candles was organized everywhere with all speed.

As for newspapers, they continued to appear regularly, without interruption; but now they were printed by the light of kerosene and acetylene lamps on rotary presses worked by steam engines. And it was rare that the front pages of the papers did not carry a picture of the black steam-shrouded pillar rising from the ocean.

## XXIV

"Academician Morozov: the short circuit will be overcome." ("Izvestia")

"Coal shares reach new peak." ("Wall Street Journal")

"Heavy building programme on Saint Helena. It is reported that the monument to Napoleon has been demolished and is being replaced by a villa for the family of the youngest Rockefeller. London prepares new Note to Washington. The British Third Fleet has been sent to protect Tristan da Cunha." ("Daily Telegraph")

"Oil-refiners have pledged to overfulfil the plan for illuminant kerosenes." ("The Baku Worker")

"The nationalized coal mines must be returned to their rightful owners—this alone can save Britain." ("The Times")

"Fascism shall not pass! No more Princetons!" ("The Worker")

"The greatest sensation in stockings since San-son Hoggery Mills patented black heels. Buy the new 'Black Pillar' stockings—made in Philadelphia!" ("Philadelphia News")

"This winter Parisians will be warmed by their inexhaustible optimism." ("Figaro")

"Endless discussions are being held on the 'Fukuoka Maru', meanwhile the Black Pillar has penetrated outer space." ("Borba")

"Housewives demand: give us electricity!" ("For You, Women")



"The increased cost of candles should not lower the religious fervour of believers." ("Osservatore Romano")

"This autumn there has not been a single expedition to the Himalayas in search of the Abominable Snowman. The Association of Sherpa Porters is uneasy. His Majesty the King of Nepal is making a personal study of the problem." ("Katmandu Weekly")

"In view of the high fuel costs this season, it is anticipated, we regret to say, that long dresses with a high neckline will be worn. Our fashion editor says it is hoped it will be possible to create models with warm glasswool linings capable of emphasizing the specific features of the feminine form. It is expected that ladies' lingerie...." ("La Vie Parisienne")

## XXV

"Fireball!" cried the lookout into a megaphone. "All below! Fireball!"

The upper deck of the "Fukuoka Maru" was emptied: only an emergency crew remained on deck.

Such were the strict orders of the Science Staff: whenever a fireball appeared, everyone was to take cover below deck, and all portholes, hatches, and other openings were to be battened down. These orders had had to be issued after a fireball had entered the ship's workshop one day through an open hatchway and caused a fire which had been extinguished with difficulty by the Japanese sailors.

Obeying orders, Kravtsov went below. He glanced in at the lounge adjoining the saloon, hoping to find Olovyannikov there, but he only saw a group of unfamiliar men standing at the bar.

Every day strangers arrived in jet seaplanes— scientists, United Nations officials, engineers, journalists. As new ones flew in, others took off. They conferred, argued, filled the "Fukuoka" with tobacco-smoke, and drank the ship's huge wine-cellar dry.

And meanwhile the black pillar climbed higher and higher beyond the Earth's atmosphere and, having gone a good third of the way to the moon, had curved round the Earth, as though it were going to encircle the planet with a fine girdle. As before, it was shrouded in a murk of endless cloud; sheaves of lightning struck the pillar, and it seemed as if the storm would never end.

The remote-control instruments on the rig had long ago ceased to function. The "Fukuoka" sailed round the rig, sometimes approaching it, sometimes moving away. A fuel transport had got lost somewhere, and she was running out of oil.

It was an anxious life on board the ship, but Kravtsov suffered most from the forced idleness. He understood things were none too easy for the scientists: they had to fathom the mystery of the field surrounding the black pillar! Yet he felt their conferences were dragging on too long. He longed to go to Morozov and ask him point-blank: "When will you finally make up your minds to fight the pillar? How long can we wait, damn it all?" But he restrained himself; he knew how hard Morozov was working.

And Bramulla, whom Kravtsov met sometimes in Ali-Ovsad's cabin over a cup of tea, would answer no questions, or would make a joke, or tell risqué Chilean stories.

Brooding over all this, Kravtsov stood in the dimly-lit lounge, watching the door of the saloon where the scientists were conferring.

"Hullo," he heard behind him, and turned round.

"Oh, Jim! Good evening! Why aren't you playing billiards?"

"I'm sick of it." Jim Parkinson smiled dolefully. "Forty games a day—it's enough to make you howl. They say a fuel transport's arriving tomorrow—you heard anything?"

"That's what they say."

"Would you like a drink, sir?"

Kravtsov agreed with a wave of his hand.

They perched on stools at the bar, and a Japanese barman quickly mixed cocktails and placed two glasses before them. In silence they began to sip the cold spiced drink.

"Is there going to be any work for us, or not?" asked Jim.

"I hope so."

"The pay's not bad here, and some of the boys like to get money for sleeping and playing billiards. But I'm fed up with it, sir. Over a month without movies or girls. You can't even listen to the radio."

"I quite understand, Jim."

"How long can they keep us in this Jap box? If the scientists can't think up something, let them say so straight out and send us home. I can live without electricity, blast it."

The cocktail sent a glow through Kravtsov's veins.

"We can't live without electricity, Jim."

"Oh yes we can!" Parkinson banged his glass down on the bar. "I don't give a damn for magnetic fields and all that garbage!"

"You don't give a damn, but other people...."

"What are other people to me? I tell you I can do without it! Drilling's always needed somewhere. There mayn't be electricity, but a steam engine can turn the bit in the well—what about that?"

"Oh dear," thought Kravtsov. "Even this phlegmatic fellow burned up doing nothing."

"Listen, Jim...." he said.

"That storm's bad enough, so now there's fireballs flying about, flocks of them. You can't go up on deck—there's Japs with carbines on all the hatches. To hell with it, sir! If the scientists are so interested, let them mess about here, but we're all fed up!"

"Stop shouting!" said Kravtsov, frowning. "Who's 'we all'? Come on, out with it!"

Parkinson's thin face darkened. Without looking at Kravtsov, he threw his crumpled paper napkin on the counter and went out.

Kravtsov finished his cocktail and got down from his stool in half a mind to return to his cabin and go to bed.

By his cabin door, leaning against the wall of the passage, stood Chulkov.

"I've been waiting for you, Alexander Vitalyevich." Chulkov pushed his cap to the back of his head; his round boyish face looked worried.

"Come in, Igor." Kravtsov followed Chulkov into the cabin. "What's happened?"

"Alexander Vitalyevich," said Chulkov, lowering his voice and speaking rapidly. "Things are no good. Those chaps in Parkinson's crew have been avoiding us for some time; they get together in their messroom and whisper together. And about half an hour ago I accidentally overheard some talk in... excuse me... in the toilets. They didn't see me—it was Fletcher and another chap, the one, you know, who's always giggling as if he was being tickled; they call him Laughing Bill."

"Yes, I know," said Kravtsov. "Well, I don't know much English, of course, but I've learnt a bit here. Anyway, as far as I could make out, they are planning to desert. Tomorrow a fuel transport's arriving and when pumping's finished, these chaps mean to overpower the guard, seize the transport, and then off to America."

"Are you sure you understood, Igor?"

" 'Attack the transport'—what's there to understand about that?"

"Right. Let's go." Kravtsov dashed out of the cabin and ran down the passage.

"Alexander Vitalyevich, you can't do that," said Chulkov hastily, as he ran after him. "There's a lot of them."

Kravtsov took no notice of him. Taking the steps two at a time, he ran down to "D" deck, and flung open the door of the messroom from which came the sound of voices and laughter.

There was an immediate hush. Through the blue haze of tobacco-smoke, Kravtsov could see a score of eyes fixed on him. Fletcher was sitting on the back of an armchair, with his high black boots on the seat. He thrust out his lower lip and noisily blew out a cloud of smoke.

"Hi, engineer," he said, screwing up his eyes. "How are you, Mr. Engineer?"

"I want to talk to you, boys," said Kravtsov, looking round at the riggers. "I know you're thinking of skipping from the 'Fukuoka Maru'."

Fletcher leaped off his chair.

"How d'you know, sir?" he asked with an evil grin.

"You're planning to jump the transport tomorrow," said Kravtsov, restraining himself. "You won't be able to do it, boys."

"We won't?"

"No, I give you fair warning."

"Well, and I warn you, sir: we don't mean to kick the bucket together with you."

"What put that into your head, Fletcher?" Kravtsov was still trying to keep calm.

"Why do they give us triple pay for doing nothing? That's right, ain't it, boys?"

"Right," shouted the riggers in chorus. "They wouldn't pay us like that for no reason at all— they know we're for it!"

"Atoms are pouring out of the black pillar!"

"Fireballs are flying about the cabins!"

"McPherson's already dying from cosmic rays, and soon we'll turn up our toes!"

Kravtsov was stunned. The yelling crowd was threatening him, and he was all alone: Chulkov had disappeared. He saw Jim Parkinson sitting on a couch in the corner and nonchalantly turning

the pages of a garish magazine with a blonde bathing-beauty on its glossy cover.

"That's not true!" shouted Kravtsov. "You've got it all wrong! McPherson's had a heart attack—cosmic rays have got nothing to do with it. The scientists are looking for a way to destroy the pillar and we've got to be ready."

"Damn the scientists!" yelled Fletcher.

"They're the cause of all our troubles!"

"The scientists would kill everybody, if they got the chance!"

"The transport's due tomorrow, and no one will hold us! We'll make short work of the Japs!"

The riggers had closed in on Kravtsov. He saw their excited faces, their howling mouths, their malevolent eyes.

"We won't let you desert!" he cried, trying to make himself heard above the din.

Fletcher, his face twisted with rage, came right up to him, and Kravtsov stiffened.

Parkinson threw his magazine aside and got up, and at that moment, the door burst open, and the riggers of Ali-Ovsad's crew, and Gheorghi, rushed into the mess. Chulkov, breathless, slipped adroitly between Kravtsov and Fletcher.

"Now then, now then, none of that!" he said to the Texan. "Get back!"

"So that's it," drawled Fletcher. "Defending your own people! Come on, boys! Down with the reds!" he shouted suddenly, and jumped back, reaching for his hip-pocket.

"Stop!" Jim Parkinson caught Fletcher by the arm.

The latter pulled, trying to free himself, but Jim held him tight. Fletcher's face was flushed. "All right, let go," he muttered huskily. "That's better," said Parkinson in his usual languid voice. "Beat it, boys. My crew's stopping here, Mr. Kravtsov. We'll wait till they give us work."

Ali-Ovsad came hurrying in. "Why didn't you call me?" he said to Kravtsov, panting noisily. "Who wants a punch-up here."

"All right, Ali-Offside," said Jim. "It's all right. Under control."

"This one?" Ali-Ovsad pointed at Fletcher, who was still rubbing his arm. "Eshek balassi, kiul bashina!" (*You son of an ass, ashes on your head! (Azerbaijani) .-Tr.*) he started swearing at him. "Are you a man or what?"

## XXVI

Kravtsov, Olovyannikov, and Ali-Ovsad were having supper together at the same table. The old driller was munching roast beef and telling a rambling story of how his brother, the agronomist, had beaten the red tape of "Azervintrest" and had greatly improved the quality of two varieties of grape. Kravtsov was sipping beer and looking about him, and scarcely listening.

"The other day," began Olovyannikov, when Ali-Ovsad had finished, "I accidentally saw a strange scene. Tokunaga was standing by the ship's rail—he'd obviously come out to have a breath of fresh air. I wanted to take a picture of him and had begun to adjust the lens, when I suddenly saw him take a bracelet of some sort off his wrist, look at it, and throw it overboard. Just then Morozov came up to him. 'What did you throw into the sea, Masao-san?' he asked. 'Was it the ring of Polycrates, by any chance?' Tokunaga smiled in his sad way and answered, 'I haven't a ring, unfortunately. I threw my magnetic bracelet into the sea.' You know those Japanese bracelets: many elderly people wear them, especially those with high blood pressure."

"I've heard about them," said Kravtsov.

"Well," continued Olovyannikov. "Morozov grew serious. 'I don't follow your train of thought, Masao-san. Do you think, then, that we'll not succeed...?' 'No, no,' answered Tokunaga. 'We'll give magnets back their properties, but I don't know whether I shall live to see it.' 'Why do you talk like that?' said Morozov laying his hand on his shoulder, and he replied, 'Don't take any notice, Morozov-san. We Japanese are fatalists in a way.'"

"What happened then?" asked Kravtsov.

"They went away. He really does seem to be suffering from an incurable disease."

"Yes," said Kravtsov. "Not a very cheerful business."

They ate in silence for a while.

"Who's that shrimp with the grey moustache?" asked Kravtsov, indicating a little man sitting at Morozov's table.

"That shrimp? That's Professor Bernstein," answered Olovyannikov.

"Really!" Kravtsov felt ashamed of his "shrimp". "I never thought that he...."

"That he was such a puny creature? And have you read in the

American papers what he did at Princeton? He barricaded himself in his laboratory and created a powerful electric field round it, with power from an electrostatic generator driven by a wind turbine. The bandits started hopping about as if they had St. Vitus' dance and hurried away as fast as they could go. He and two assistants stayed in the laboratory for all those six days with nothing but water. That's the kind of chap he is!"

"You know everything," said Kravtsov.

"That's my profession."

"By the way, Chulkov tells me you've been trying to get various bits of information about me out of him. Why?"

"Your Chulkov is a chatterbox. I simply wanted to know how you quelled that mutiny."

"Now then, 'mutiny'—that's a bit strong," said Kravtsov smiling.

"He wants to write about you," interjected Ali-Ovsad. "He wants to write 'Kravtsov stood by the black pillar....'"

Laughing, Olovyannikov gave his hand to the driller who amiably touched his palm with the tips of his fingers.

"We've been circling round that pillar for a whole month now," said Kravtsov. "Observations, measurements ... we're being too cautious.... I'm sick of it." He drank off his beer and wiped his mouth with a paper napkin. "It's true, we should smash the damned thing with an atom bomb...."

Morozov turned his head and glanced at Kravtsov. He had probably heard him. His grey hair had a coppery sheen in the dim light of the oil lamps.

A Japanese waiter came noiselessly over to them, courteously took a deep breath, and offered them ice-cream and fruit.

"No, thank you." Kravtsov got up from the table. "I'm going to see how McPherson's getting on."

Ali-Ovsad looked at his watch.

"In an hour the Armenian comes to drink tea with me," he said. "You've got just one hour."

"What Armenian?" asked Olovyannikov.

"He insists on calling Bramulla an Armenian," replied Kravtsov, laughing. "I must say, Ali-Ovsad, you've certainly taught him to like tea."

"On Sunday Bramulian and I are going to make jiz-biz. The cook has promised to let me have some lamb's fry."

"If you're going to see McPherson," said Olovyannikov, "I'd like

to go with you, if I may."

## XXVII

Some days previously the doctor had permitted Will to move his arms and turn from side to side. But from time to time a twinge of pain distorted his face and his lower jaw jutted out more than usual, and Norma Hampton, terrified, would rush for the doctor.

But all in all there was now no immediate danger.

Will made plasticine figures, and when he tired of modelling, he would ask Norma to read the papers or his favourite "Peregrine Pickle" to him. He would listen with closed eyes, breathing evenly, and when Norma looked at him, she could not always make out whether he was really listening, or engrossed in his own thoughts, or just fast asleep.

"As soon as you're better," she said one day, "I'm going to take you back with me to England."

Will was silent.

"What do you say to settling in Cheshire, somewhere near the moors?" she asked another time.

He had to answer something, so he said, "I prefer Cumberland."

"Very well," she agreed at once. Then suddenly her face lit up: "Cumberland. Why, of course, we spent our honeymoon there. Heavens, it's nearly twenty-five years ago. I'm so glad, dear, that you remembered."

"You're quite mistaken to think I remembered our honeymoon. It's simply that there are cliffs and sea there," he said, calmly. "Better read me that idiotic story about the tortoises."

So Norma began to read the "Lords of the Underworld", which was being serialized in the "Daily Telegraph"—an interminable sensational novel about hordes of fiery tortoises that had emerged from the depths of the Earth and were roaming over the planet, burning and destroying every living creature until their leader fell in love with Maud, the beautiful wife of an oil-dealer.

The passion of the fire-breathing leader had just reached its peak when there was a knock at the door, and Ali-Ovsad, Kravtsov, and Olovyannikov came into the cabin.

"I think you're right, Will," said Kravtsov, seating himself by the Scotsman's bedside. "The pillar's got to be cut off with an atom



bomb."

"Yes," answered Will. "A guided atom bomb. That's what I thought before."

"And now?"

"Now I think we'll cut the pillar with an atomic explosion and the magnetic field will become normal again. But the pillar will still go on rising and will reach the ionosphere once more. So there'll be another short circuit."

"That's true," said Kravtsov. "So how are we to stop it, damn it all?"

"It will probably stop by itself," said Ali-Ovsad. "Plastic pressure will squeeze all the rock out and stop."

"I don't think we should reckon on that, Ali-Ovsad."

"The day before yesterday," said Olovyannikov, "the journalists got Stamm into a corner and demanded news. Of course, we couldn't get anything out of him—he's made of reinforced concrete—but he did start telling us all about his pet theory. Have you ever heard of the theory of the expanding Earth, Sasha?"

"I've heard something about it: we used to argue about it when I was a student."

"Stamm was telling us some very curious things. He said that during the Palaeozoic period the diameter of the Earth was round about a third of what it is now. Was he talking seriously, do you think, or was Uncle Stamm joking?"

Kravtsov smiled. "Don't talk nonsense, Lev. Stamm would rather ... well, I don't know ... he'd rather bite you than joke. Such a hypothesis does exist—it is one of many. They say that the centre of the Earth is the remains of a very solid stellar substance out of which the Earth was formed sometime. The centre, they say, is constantly undergoing a process of de-solidification; its particles are gradually penetrating into the upper strata and ... well, expanding them. But all that, of course, is a frightfully slow process."

"Well, this is what Stamm said—that new heavy particles—protons and neutrons, I believe—are continually coming into being in the interior of the Earth and are increasing the mass of the Earth. But where do the new particles come from?"

"That's the big question," said Kravtsov. "I don't really remember it now, but we had violent arguments then about this hypothesis; at one time one of our lecturers was a pupil of its

author, Kirillov.... Where do the new particles come from? I remember talk about the mutual transition of fields and substances, that is, of qualitatively different forms of matter: this transition creates an impression of ... the birth, as it were, of a new substance. In short, it's the combined action of gravitational, electromagnetic, and some other fields, as yet unknown. What's the good of talking? Only a single theory of fields would open our eyes."

"Are you perchance suggesting, Mr. Kravtsov," the Scotsman's mocking voice was heard to say, "that our darling pillar consists of pro-tonic or neutronic matter?"

"No, Mr. McPherson. I'm merely recapitulating the hypothesis our darling Stamm proclaims."

"And what do you proclaim?"

"Boiled buckwheat, Will, as you know very well." Kravtsov took a tiny plasticine aircraft from the table and turned it over in his hands. "I see you're turning to new subjects in your art."

"Give it here." McPherson took the model from him and crumpled it up.

"After all, it's a good thing, Will, that you became a drilling engineer and not a sculptor," remarked Kravtsov.

"You always know what's good and what's bad. An omniscient young man."

"Well, I never thought you'd be offended," said Kravtsov, with surprise.

"Rot," said the Scotsman. "I'm not offended, laddie. But I don't like it when you start rowing with the Americans."

"I didn't start it, Will. I'm not all that pugnacious."

There was silence for a while. The flame of the lamp flickered, and shadows flitted about the cabin.

"I want to sleep a lot now," said Ali-Ovsad suddenly. "Before I slept very little. Now I want a lot. Probably because the magnetic field is all wrong."

"Everything can be blamed on the magnetic field now," said Kravtsov, smiling. "Or on the gravitational field."

"Gravitation," continued Ali-Ovsad. "Everyone says 'gravitation'. I didn't know that word before, now I dream of gravitation. What is it?"

"But I explained it to you, Ali-Ovsad."

"Ai balam, you explained badly. You tell me straight! Is it weight or force? I drilled the earth a lot. I know the earth has great

force inside."

"Who's arguing?" said Kravtsov.

"No wonder it's respectfully called 'Mother Damp Earth' in all the Russian fairy tales," observed Olovyannikov. "Sasha, do you remember the ballad of Mikula Selyaninovich?"

"A ballad? Tell it, please, would you?" asked Will.

"How he loves stories," thought Kravtsov. "That's all he wants."

"Well," began Olovyannikov with relish. "Once upon a time there was a ploughman named Mikula Selyaninovich. One day he was ploughing near the road and he had put his bag of victuals on the ground. He ploughed and ploughed and kept watching the sun, because he wanted to get done early. While he ploughed the great champion Volga passed by on his powerful steed. He felt bored with riding and was complaining aloud to himself: 'There's nowhere for me to use my champion's strength. Everything's too weak and too easy.' Mikula Selyaninovich heard the champion boasting and said to him: 'Try to lift my bag.' His bag! Hursh! What a challenge! Volga bent down without getting off his horse and took hold of the bag with one hand. It wouldn't budge. He had to dismount and take it in both hands. And he still couldn't lift it. Volga the champion got angry and pulled at the bag with all his might, but he didn't lift it. Instead he himself sank knee-deep into the earth. And Mikula Selyaninovich explained to him: 'They say there's pull in the bag from the damp earth.' "

"Your's a good story," said the Scotsman, approvingly.

"A story with a clear social implication," explained Kravtsov. "Mikula personifies peaceful toil, while the Volga the champion...."

"Maybe so. Or maybe it's simply that your wise forefathers felt the irresistibility of gravity. That's where the fantastic propositions of our times originate.... Mikula—what did you call him?"

"Mikula Selyaninovich," said Olovyannikov.

"Aye. His bag and H. G. Wells' Cavorite. Eh, gentlemen?"

"Now I'll tell a story," announced Ali-Ovsad, fingering the black smudge of moustache in the hollow above his lip. "Long ago there lived a certain Rustem-bahadur. When he walked, his feet sank deep into the ground."

"Was he so heavy?" asked Olovyannikov.

"Why heavy? Did I even say 'heavy'? Simply he was a little too strong. So strong that when he wanted to tread softly, his foot sank half a metre into the ground. So Rustem went to a devil one day

and said, 'Take half of my strength and put it away, and when I'm an old man I'll come back for it.' "

Kravtsov got up and started pacing up and down the cabin; the shadows on the walls fluttered and danced.

"What can we do," he said, pausing before Will's bed, "what can we do to make the pillar's own force compel it to sink back into the ground? Only its own force can cope with it."

"You want to overturn the black pillar?" laughed Ali-Ovsad. "Good lad!"

## XXVIII

Kravtsov stood fretting outside the saloon. The usual conference was in progress there, and a hum of voices rose and fell. At regular intervals a shadow passed across the opaque glass of the door as one of the scientists paced back and forth in the saloon.

"What the devil am I doing here?" thought Kravtsov. "They're not interested in me. The ablest geophysicists in the world are gathered here; all the brains, the winners of every prize there is. And I'll go in to them with my half-baked idea? To use the pillar's own force—that's my idea!"

Deep down in his heart Kravtsov knew quite well that he only wanted a pretext for a talk with Morozov. This waiting and uncertainty were beyond endurance. Yes, he would summon up courage and ask Morozov point-blank: how much longer they were going to wait?

A steward with a tray laden with bottles and siphons slipped into the saloon. Through the half-open door Kravtsov caught a momentary glimpse of someone's great bald head and someone's hands holding a sheet of drawing paper; and he heard a few words said in broken Russian: "You won't have room for such an installation..."

An installation! So they're already talking about some installation!

Kravtsov threw himself into an armchair, then began pacing up and down again in the dimly-lit lounge. Time dragged tediously, and it was getting on for 2 a.m.

At last the door opened and the scientists, still talking, began to come out of the saloon. Tokunaga, looking tired, was listening to

Stamm, who was endeavouring to prove some point. Fat Bramulla stalked out, mopping his bald head with a handkerchief. Professor Bernstein, tiny and grey-moustached, was surrounded by several scientists Kravtsov did not know, one wearing an Indian turban. And finally, out of the clouds of tobacco-smoke, there emerged the tall upright figure of Morozov, with a huge folder under his arm.

His keen eyes immediately caught sight of Kravtsov, standing modestly in a corner, and he nodded and said to him, with a smile, as he passed, "So it's an atom bomb, is it?"

Kravtsov went up to him.

"Victor Konstantinovich, may I have a word with you?"

"No time, my dear chap. I've been wanting a chat with you myself for a long while—but no time. Still... ." He put his arm round Kravtsov's shoulders and went down the passage with him. "If it doesn't take too long, tell me what's worrying you."

"You see," said Kravtsov, nervously, "we've been thinking.... Wouldn't it be possible to use the pillar's own force?... Or rather, to change the direction of its field...."

"I understand, I understand," and Morozov burst out laughing. "Better tell me how you fought the Texans."

"What's there to tell? We had a bit of a row, and then made it up. Victor Konstantinovich, forgive me for bothering you like this. I really wanted to ask you how much longer we've got to wait?"

"Not much longer, I hope, my dear chap. We've got to be very very quick about it, because...-Anyhow, we've got to anticipate every kind of unpleasantness. Actually, a plan is ready; it only remains to check the calculations."

Kravtsov felt greatly cheered, "So very soon..."

"Yes, soon." Morozov paused at the door of his cabin. "You want to cut the pillar with an atom bomb?" he asked again.

"McPherson thought of it," Kravtsov said. "But the pillar would continue to grow just the same and re-enter the iono..."

"Come in," said Morozov, interrupting him, and showing him into his spacious cabin or rather study, with its tables covered with drawings and plans. "Sit down," he said, and sat down himself on one of the tables. "Tell me, Comrade Kravtsov, are you thoroughly acquainted with the rig and its rooms and passages?"

"I am. "

"Look at this diagram. Do you recognize it?"

"It's the middle deck," replied Kravtsov.

"Right. How long would it take to build a circular passage here?" and Morozov described a circle round the rig with his pencil.

"A circular passage?" repeated Kravtsov, frowning and scratching himself under the ear.

"Look. Take this drawing and think it over properly. A closed circular passage six metres wide and no less than four and a half high."

"I'll think it over, Victor Konstantinovich."

"Fine. Come tomorrow evening, as late as you like, with your answer."

## XXIX

"My darling Marina,

The day before yesterday two letters arrived from you by air, and it was a good thing they did, because I was beginning to get worried. You ask why I don't come home since there's nothing for me to do here. To tell you the truth, I don't know myself why I've been stuck here for a whole month doing nothing. All the time I was waiting and waiting—today, maybe, or tomorrow, at any rate.... Well, it's come at last. A plan has been drawn up and approved by the International Commission. It's called 'Operation Black Pillar'. You'll probably read about it in the papers before this letter arrives. In a nutshell—an apparatus has been designed to stop the black pillar. You'd probably like to know the details of the plan, as a physics teacher. But to tell you the truth, it's so complicated that I don't understand it all myself. The scientists have apparently solved the mystery of the pillar's field and the apparatus will exert a definite combination of powerful fields of force on it. Their interaction with that of the pillar is expected to stop its upward movement.

Of course, the pillar will have to be cut first of all, in order to eliminate the short circuit, restore the normal structure of the magnetic field, and produce electricity; then the apparatus will begin to function.

The apparatus will be set up on the rig, and for that we're building a circular corridor inside it. That's what I'm doing now. It's pretty hot on the rig, I must say, but it's bearable. We've long ago

got used to the thunderstorm, and to the fireballs and lightning. But don't worry: the pillar acts as a sort of lightning conductor.

How long will the operation take? I haven't the least idea, dearest. You'll know I'm dying to finish it all as soon as possible and return to you and Vovka. You are my darlings, and I miss you both very much. Write to me as often as you can, won't you? And let Vovka scribble something too. I'll take every opportunity to write, of course.

Oh yes, you'll ask me how we intend to cut the pillar. Well, this is what we...."

Kravtsov did not finish his letter. There was a knock at the door. Chulkov put his head in and said, "Alexander Vitalyevich, the third shift's just leaving."

Kravtsov put his unfinished letter into the drawer of his desk and hurried to the launch.

### XXX

So, 'Operation Black Pillar' had begun.

A whole flotilla of ships lay round the rig. There were the aircraft carrier "Furious" with its huge runway, the floating mechanical base "Ivan Kulibin", self-propelled barges, and floating cranes. Big steam launches, puffing coal smoke, flitted incessantly between the rig and the ships and, as before, the headquarters for the operation was the "Fukuoka Maru".

With all possible speed the factories of the Soviet Union, the United States, Japan, and many other countries were turning out assemblies and components for a circular core of unheard-of dimensions. The holds of steamships flying the blue flag of -the United Nations and the nacelles of freight airships propelled by steam turbines were filled with metal components, blocks of high-frequency panels, sets of enormous insulators, crates of tyres—all for the rig. Tankers came, and timber transports, and vessels laden with provisions, and liners with fitters and engineers, and government commissions.

Men worked day and night in protective clothing, without a break. Speed was imperative because—as the scientists knew—a lethal stream of cosmic rays was penetrating deeper and deeper into the lower atmosphere.

And the black pillar meanwhile, girdled with lightning and enveloped in a white shroud of steam, continued to rush upwards through the clouds, bending and forming a ring round the Earth in outer space.

### XXXI

At 9.0 p.m. engineer Kravtsov's shift, consisting of our old friends, the riggers of Ali-Ovsad's and Parkinson's crews, and the Romanian Gheorghii, climbed the zigzag metal ladder to the middle deck of the rig.

Kravtsov was taking over from the head of a shift that had just done its five hours.

"Well, Cesare, you have slashed up the section, and no mistake," he said, glancing at the hacked beams and narrow catwalks, below which a black chasm yawned.

"The level was higher here, all the decking had to be cut up," the Italian engineer answered, wiping his swarthy face with a towel. "Look at the mark."

He showed Kravtsov the drawing.

"I know," said Kravtsov. "But there's an atomic pile below us."

"But it's not functioning."

"But it will be functioning. And you have smashed the deck down on top of it." Kravtsov flashed his torch downwards.

"What do you want me to do, Alessandro?"

"We'll have to raise the decking. There mustn't be anything above the reactor except the roof."

The Italian, like Kravtsov, was an Esperantist, and conversation between them was easy. The riggers of both shifts listened trying to make out what was being said. The acetylene lamps cast a bluish light on their naked shoulders and backs, glistening with sweat.

"We've exceeded our stint today by seven metres," said the Italian. "The main thing is to finish the corridor as soon as possible, and if we leave a little litter underneath..."

"Anywhere but here," interrupted Kravtsov. "All right, Cesare, take your shift away," slipping into English, he added. "We'll have to rig up a tackle and clear your mess up a bit."

"What's that?" a hoarse voice cried suddenly. "Those Dagoes make a mess and we've got to clear it up?"



"Who said that?" Kravtsov turned abruptly.

For several seconds there was a hush in the compartment, except for the now familiar rumble of thunder overhead. Olovyannikov, who was also there, translated these exchanges to Ali-Ovsad.

"Ai-ai-ai," said Ali-Ovsad, shaking his head and clicking his tongue.

"Who said that?" repeated Kravtsov. "It was one of your boys, Jim."

Jim Parkinson, who was holding on to an I-beam of the roof with his long arm, maintained a sullen silence.

Then the stocky Texan with his head tied up in a bandana handkerchief stepped out of the crowd. "O.K., I said it," he growled, scowling at Kravtsov. "What about it? I'm not going to do other people's dirty work."

"I thought so. Apologize at once to the Italian shift, Fletcher."

"Not if I know it!" Fletcher tossed his head. "Let them apologize."

"In that case I'm firing you—you're not working here any more. Go down and get back to the "Fukuoka" on the first launch. Tomorrow morning you'll be paid off."

"Blast your work!" roared Fletcher. "It can all go to hell! I'm damned if I want to roast any longer in this bloody heat!"

He spat and, running ' along the catwalks, made for the passage leading to the top of the ladder.

The riggers all began talking at once, and the compartment was filled with the buzz of voices.

"Shut up!" cried Kravtsov. "We're all working together here, lads, because that's the only way we can finish the enormous job we've undertaken. We can argue or disagree with people, but let's respect one another. Am I right?"

"Right!" came the answering cries.

"To hell with him! Let's get on with the job!"

"You've got no right to fire people!"

"Right, engineer!"

"Shut up!" Kravtsov threw up both his hands.

"I tell you straight: as long as I'm the head of this shift, no one insults anybody of another nationality and gets away with it. Do you all understand what I've said? That's all, then. Put on ^our protective suits!"

Cesare came up to Kravtsov and smiling broadly slapped him on

the shoulder. The Italians, exhausted and wet with sweat, shuffled along in single file to the exit, talking and gesticulating excitedly as they went.

Kravtsov ordered the tackle to be set up. "Who'll go down and hitch on that girders?" he asked.

"I'll go," said Chulkov at once.

The figure of the Italian engineer, followed by several of his fitters, suddenly emerged again in the semi-gloom of the next compartment.

"Alessandro," he said, jumping over the catwalks to Kravtsov, "my lads have decided to do a bit more. We'll tidy up down there."

## XXXII

Five hours were a long time in the hellish heat and humidity inside the rig. And the noise!— the roaring flames of the cutters, the thud of the steam-winch, the grinding of the steel sheets, the hiss of welding-machines. Yard by yard they went ahead. Not so many remained. Soon the circular corridor would close and girdle the perimeter of the middle deck of the floating island. Plasterers, following the fitters, covered the walls and ceiling of the corridor with a white heat-resistant plastic substance, and electricians were already installing the blocks of the gigantic circular core. The fitters drove themselves on and on. At dawn Kravtsov's shift returned to the "Fukuoka Maru". They had just enough strength left to make their way to the warm showers.

Now they had nothing to do but sleep. Just sleep! But Kravtsov was overtired, and whenever that happened, he was unable to fall asleep for a long time. He turned and twisted on his narrow bunk and tried counting to a hundred—but sleep would not come. He screwed up his eyes, but still he saw beams and girders, and there was a buzzing in his ears and the roar of the cutters. What was he to do?

He took a box of matches and lit the oil lamp. Should he have a look at the papers?.. . No, of course not—he'd finish his letter.

"I had to leave off yesterday, so I'll finish it today. What a life we're leading, Marina! We've no time to scratch ourselves, let alone anything else. We're sick to death of being without electricity, so we're working as hard as we can. We're nearly there now!

"You see, as soon as the pillar is cut, magnets will become magnets again, and the turbogenerators of the atomic pile will send electric current through the coils of the exciters of the core. The combination of superimposed fields will interact instantaneously with the field of the pillar and it will stop.

"The pillar is extraordinarily strong, but they expect a guided atomic explosion will cut it. Do you remember my telling you in one of my letters how the pillar pulled in and carried a container up with apparatus inside it? Well..."

There was gentle tap at the door. Jim Parkinson stuck his head in.

"Excuse me, sir, but I saw a light in your cabin. .."

"Come in, Jim. Why aren't you asleep?"

"I can't sleep after a shower. And Fletcher won't leave me alone."

"Fletcher? What does he want?"

"He asks you not to fire him. After all, there's nowhere that pays like here."

"Listen, Jim, I can forgive a lot, but this..."

"I know. You're for equality and all that. He's ready to apologize to the Italian engineer."

"All right," said Kravtsov wearily. At last he felt sleepy and could hardly keep his eyes open. "Let him apologize tomorrow to the whole Italian shift. In front of our boys."

"I'll tell him," answered Jim in a rather dubious tone. "Well, good night." And he went out.

Kravtsov's pen nearly dropped from his hand. He dragged himself over to his bunk by sheer will-power and fell fast asleep.

### XXXIII

The steam crane had lifted the last block of the circular core from the broad deck of the "Ivan Kulibin", suspended it in mid-air, and then slowly lowered it onto a barge. A steam launch towed the barge over to the rig.

The riggers, lying about the deck of the "Kulibin", were smoking and chatting, just as though it were an ordinary day like other ordinary days.

But it was no ordinary day. Today assembly of the core would

be completed. It would turn the rig into an electromagnetic belt, and its exciters, ready for the assault, were aimed at the pillar.

Morozov had come up on the upper deck of the "Kulibin" from below. And with him came little Bernstein, Bramulla in a vast raincoat, and several electrical engineers. They stopped on the starboard side, waiting for a launch to take them to the rig.

Kravtsov threw his cigarette-end overboard and went over to Morozov.

"Victor Konstantinovich, I've heard the 'fire-fly' is being brought in tomorrow?"

"Fire-fly" was what someone had called the guided atom bomb that was to cut the pillar, and this nickname had stuck.

"Yes, it's on its way," answered Morozov. "I believe the whole Security Council, or very nearly, are accompanying the precious thing."

"I'd like to have a look at it. I've never seen an atom bomb."

"And you won't. It's none of your business." "Of course. My business is drilling wells." Morozov looked at Kravtsov through puckered lids. "What do you want, Alexander Vitalyevich?"

"Nothing," Kravtsov looked away. "What should I want? Only for everything to be finished quickly and then off home."

"Oh, no! By your sly expression I see you've got something up your sleeve."

"No, really, Victor Konstantinovich!" "Now listen, my dear chap, I'll tell you in advance: don't ask and don't try. Many have asked already. The bomb will be launched by experts. By atomic specialists. Do you understand?"

"The specialists have nothing to do there. All they've got to do is to switch on the clockwork mechanism, and then return to their launch at their leisure."

"That makes no difference. It's no good asking."

"But I'm not asking... But it seems to me that the right to start things belongs to those who were on the last watch on the rig."

"The right of the discoverers?"

"You can call it that."

"McPherson is ill, only Kravtsov is left. Not a bad idea." Morozov laughed and looked at his watch. "What's happened to the launch?"

A little way off Ali-Ovsad was talking to Bramulla, and this time the conversation concerned lofty matters. The Chilean

understood very little of what the old driller was trying to explain to him, but out of courtesy nodded, grunted agreement, and blew clouds of cigar smoke from mouth and nose.

"What's worrying you, Ali-Ovsad?" asked Morozov.

"I'm asking, Comrade Morozov, who will turn this wheel core?"

"No one's going to turn it."

"There's a wheel and it won't turn?" Ali-Ovsad clicked his tongue with a puzzled air. "Well, then, it won't work."

"Why won't it?"

"A machine must turn," returned the driller with conviction. "It works when it turns—everybody knows that."

"Not always, Ali-Ovsad, not always," said Morozov with a smile. "A radio set, for instance, doesn't turn, does it?"

"What do you mean—it doesn't turn? It's got all sorts of knobs." Ali-Ovsad was adamant. "And what about electric current? Protons-electrons, everything turns."

Morozov was just going to explain to the old man how the circular core would work, when the launch arrived, and the scientists left for the rig.

Standing in the stern with the wind in his face, Morozov screwed up his eyes and gazed thoughtfully at the approaching rig. "A machine must turn... . That's true, actually: if, at the moment of cutting the pillar, the rig and the core were rotating round the pillar, we'd be able to dispense with the cumbersome transformers which, in any case, will only be ready at the last moment. The pillar is the stator, the rig and core—the rotor. We must think this out and make the necessary calculations. It could save a tremendous lot of time. A steamer could be brought alongside the rig and the machine set going...."

He turned to Bernstein. "What's your opinion, colleague, of this immature but interesting idea?..."

#### XXXIV

"What a never ending letter I'm writing you! I feel as though I were talking to you, my darling, and it makes me happy; but I'm being interrupted all the time.

"It's pandemonium here. You see, they've brought the atom bomb—we call it the 'fire-fly'— and so many diplomats and

military men have arrived that the place is swarming with them. You know, of course, that this is the first time since the banning of nuclear tests there's been any need to explode one. Naturally, the Security Council has the wind up and has sent its representatives here. It's as crowded on the 'Fukuoka' as the beach at Kuntsevo on a Sunday in summer. Do you remember how we used to go there in a motor-boat? That was in those happy days when our little terrestrial globe had its normal magnetic coat.

"We'll put the apparatus with the 'fire-fly' on a platform and send it toward the pillar. It will stick to the pillar and..."

"I've been interrupted again. Morozov has just phoned and asked me to see him. And it's already past midnight. Good night, Marina!"

### XXXV

Will was sitting in an armchair modelling, his long fingers kneading a yellow 'lump of plasticine. Norma Hampton, who was sitting and sewing at the table, stretched out her hand and lowered the smoking flame of the lamp.

"What about Howard, dear?" she asked.

"Do as you like," answered Will. "He asked you."

"If he'd asked for twenty or thirty pounds, as he used to, I'd not have bothered you. I'd have sent it to him, and that would have been the end to it. But now the boy asks..."

"The boy's twenty-four years old," Will interjected. "At his age I didn't cadge off my parents."

"Will, he writes that if he doesn't get this money he'll lose a golden opportunity. He and two young men of very good family want to start a 'scratch club' : it's all the rage now, it's something like a mediaeval tournament, with armour and lances, only not on horseback but on motor-scooters."

"And I thought it was on horseback! Well, of course, since it's on motor-scooters, you must send him a cheque."

"Don't joke, please. If I send him a sum like that, I'll have nothing left. Do be serious about it, Will. After all, he's our son..."

"Our son! He's ashamed of the fact his father was once an ordinary driller on the oilfields." Will, please.. ."

"I'm as obstinate and miserly as all Highlanders. Not a penny, do

you hear? Not a single penny will that good-for-nothing get from me!"

"All right, dear, but don't excite yourself, please."

"Let him wait," said Will in a low voice after a long silence. "His name's mentioned in my will. Let him wait, and then he can found his damned club."

Norma sighed and shook her golden mane and took up her needlework again. In Will's fingers the plasticine turned into a head with a thin face and a very prominent lower jaw. Will took a penknife and made eyes, nostrils, and a mouth. There was a knock at the door of the cabin and Kravtsov came in. He looked as if he'd just won a hundred thousand. His jacket was wide open and his brown hair resembled the undergrowth of a forest.

"Good evening!" he cried on the threshold. And, restraining the joyful note in his voice with difficulty, he added: "Will, congratulate me! Mrs. Hampton, congratulate me!"

"What's happened, laddie?" asked the Scotsman.

"I'm going to launch the bomb!" Kravtsov laughed happily. "Isn't that marvellous? I got round the old man! Jim Parkinson and me. Marvellous, Will."

"Congratulations," muttered Will, "though I don't -see why you're so happy."

"Well, I understand," said Norma, smiling, and giving Kravtsov her hand. "Congratulations, Mr. Kravtsov. Of course it's a great honour. I shall send the news to my paper. When will it be?"

"In two days time."

"I wouldn't know you, Mrs. Hampton," thought Kravtsov. "You used to be such a pusher before —you always got the news before anyone else. And now all you want to do is to sit here...."

"In two days time!" Norma laid aside her work and straightened herself. "I suppose I ought to write... Still, I expect Reuters have sent the official statement to Britain."

As there was no radio communication with the rest of the world, the main press agencies had arranged to send out news on their own jet aircraft."

Kravtsov confirmed this, saying that Renter's plane had taken off as usual that morning from the "Furious"; Norma took up her needlework again.

"They'll be testing for another couple of days," Kravtsov continued excitedly, "and then, ladies and gentlemen, then we'll

send the 'fire-fly' up into the air and smash the pillar..."

"What the devil are you meddling in this for?" demanded Will. "Let the atomic scientists do it themselves!"

"But they are doing it. They'll prepare everything and then Jim and I will switch on the clockwork. I had a job to persuade Morozov. Tokunaga had no objection and the Security Council approved."

"Go on, go on! Do your best for the papers. Before the launching say something—well, impressive."

"Will, do you really think like that about it?" Kravtsov was disconcerted and all his joy was damped. "Do you really think I'm doing it for the sake of?..."

He broke off. Will did not reply but his fingers worked violently at the yellow lump of plasticine.

"Well, all right," said Kravtsov. "Good night!"

## XXXVI

It was a fresh morning, with a wind and flasks.

Lit up by the lightning, the gay bunting with which the ships of the flotilla were dressed overall flapped and fluttered in the wind: red flag's, the Stars and Stripes, white flags with red circles on them, and many others, and, of course, the blue flags of the United Nations.

The storm raged over the ocean. Clouds billowed and swirled, and it was a long time since the men had seen sunshine. But soon they would—very, very soon!

A streamlined launch danced on the choppy sea alongside the white hull of the "Fukuoka Marti". Before long Alexander Kravtsov and Jim Parkinson would step into it, but just now they were on board the flagship and hearing their last instructions.

"Do you remember everything exactly?" asked the senior atomic engineer.

"I wish you success, gentlemen," the portly representative of the Security Council said solemnly.

"A pity they won't let me go with you," said Ali-Ovsad.

"Don't delay, my dear fellows. As soon as you've switched on, back into the launch immediately, and home," said Morozov.

"Good luck," said Tokunaga softly.



And now Kravtsov and Parkinson, in their crackling grey-blue protective suits, had boarded the launch and away it sped, leaving along wake of foam behind. On board the "Fukuoka" men waved and shouted, and the upper decks of the other ships were black with people also shouting and waving; while the brass band on the "Furious" crashed out 'and a mighty resounding cheer came from the "Ivan Kulibin".

"Jim, have you ever review troops like a big shot?" Kravtsov tried to conceal his excitement under a joke.

"Sure, sir." As always, Jim was imperturbable and seemed casual. "When I was a kid I worked as a cowboy for a crazy rancher. He used to parade his cows across the ranch."

The rig was rising from the ocean swell. At first only its upper tip was visible, and then its whole hull emerged. It had long ago lost its spruce white look. Now it was blackened with smoke, ripped by gas welders, covered with purple bruises. Its tall side hid the sea and sky from view, now slowly it circled round the black pillar: a steamer with rudder fixed had been moored to it for the purpose. The crew had been taken off and its boilers were fed by a mechanical stoker.

The launch came to a standstill by the landing stage. A petty officer, dextrously hooking on to one of the stanchions, said in broken English:

"It's a great day today," and smiled respectfully.

Kravtsov and Parkinson stepped out on the landing and proceeded towards the ladder, the glasscloth of their protective suits rustling and racking at every step. Through the visors of their air-tight helmets everything looked yellow.

Up the zigzags of the ladder, no lift, of course, and it was tough going with thirty metres to climb. The narrow steel treads vibrated underfoot. So the two men clambered up, stopping more and more frequently to take breath. From that height, the white launch looked like a small plastic toy on the grey sea.

The upper deck at last.

They went slowly past the deserted verandah of the messroom, past the row of cabins with wide-open doors, past the chaotic heaps of wooden and metal scaffolding, now no longer needed. The steam crane, its long neck bent, seemed to greet

them. But they must not look down at the ocean: the spinning horizon made them giddy.

They were dazzled by the ceaseless flashes of lightning, which struck deafeningly again and again at the black pillar just above their heads.

"I think it's got wider still," thought Kravtsov to himself, his mind fixed on the mysterious field of the pillar. He purposely took a few steps towards the centre of the rig, and then returned to the side. It was certainly more difficult to return.

It had certainly become wider. A control apparatus set up on a post near the platform, confirmed this.

And here was the platform. A huge container resembling a torpedo stood on it. And so Kravtsov never saw the atom bomb with his own eyes: the "fire-fly" had been put on the rig in a special container with a device to direct the explosion horizontally. Outside, only the muzzles of the instruments, covered with copper nets, could be seen. The eye of the safety device shone with a friendly green light, just as it had done the evening before, after a long, trying day of testing, tuning, and checking.

Under the framework of the platform there was a tube filled with the compressed rings of solid rocket fuel. The simplest of all possible jet engines. The day before, a similar platform—with a steel block on it instead of a bomb—driven by a similar engine, had rolled faster and faster along the rails to the centre of the rig. The pillar had drawn it to itself and the platform, crashing into its black side, had rushed upward with the pillar at the speed of a passenger plane.

It was an eerie sight!

They switched on the batteries of the intercom, and the usual static noises were heard in their helmetphones.

"Can you hear me?" asked Kravtsov.

"Yes. Shall we start?"

"Yes, come on!"

First, they had to pull out the safety chocks. And that, it seemed, was not easy. The wheels of the platform were jammed with them, and they had to get crowbars and push the platform back a bit.

The chocks were thrown off the rails.

That done, Kravtsov carefully moved the pointers of the first clockwork mechanism, which was connected to the fuse of the jet engine. He made a sign to Jim, who pressed the launching button.

The green light went out. A red light flashed on.

And that was all. In four hours' time exactly the clockwork

mechanism would begin to function and the jet engine, having then been fired by it, would propel the platform toward the black pillar. At the moment of impact with the pillar, a second mechanism, connected with the detonator fuse of the atom bomb, would be switched on. The fuse would detonate a charge after an interval of seven minutes. Within those seven minutes the pillar would have carried the container and the bomb to a height of sixty kilometres. The fuse would then operate, and the "fire-fly" would explode in accordance with all the rules. The guided explosion would smash the pillar, the short circuit would be broken, and the automatic devices would be switched on instantaneously. Powerful fields of force, emanating from this apparatus, would come into precalculated contact with the field of the pillar and compel it to change direction. The pillar would come to a standstill. As to its severed upper part, it would remain in space. It had already completed just over one revolution round the Earth and it would interfere with nobody.

And in the evening holiday illuminations would blaze out in all the cities all over the planet. If he could switch to Moscow for that evening! Everything had been done. They could leave now. Four hours gave them ample time, not only to return in the launch to the "Fukuoka Maru", but to have a cup of tea with Ali-Ovsad, as well. Kravtsov was in no hurry. He raised the shield of his helmet in order to hear the clockwork mechanism working. Jim lifted his shield too. The hot air burned their faces.

Tick, tick, tick. Distinctly, methodically, the clockwork on the edge of the immense deserted deck counted out the seconds. "Right, Jim, let's go."

But suddenly a new sound intruded on the clockwork ticking. It was also a ticking sound, but it did not coincide with the first. Softer, more rapid, with a slight musical resonance....

No one ever discovered why the timing-device of the atom bomb detonator got switched on. It was to have started functioning four hours later, when the platform struck the pillar. But now. .. Kravtsov stared aghast at Parkinson, who shrank back slowly, his lips trembling, his eyes filled with horror....

Seven minutes! Only seven minutes—and the explosive charge would dash two lumps of plutonium together. The violent burst of energy thus released would demolish the rig, and with it the apparatus.

And the black pillar—two hundred and fifty metres away—might not even suffer. The explosion would not affect it: the bomb must be close up against.

Ting—ting—ting.

The ticking of the timer seemed to pierce his brain.

Should he take the mechanism to pieces and stop it? In seven minutes? Nonsense!

Should they run and throw themselves into the launch? They'd never have time to reach a safe distance....

There was no escape. No escape.

And what would people do afterwards, without them, without the rig? Build another rig, another apparatus? But the cosmic rays would not wait.

No!

No!

How long has passed already? Half a minute?

Ting, ting.

Kravtsov leapt up and pushed with his hands against the back of the platform.

"Jim, quick!"

Jim's hands were there, beside Kravtsov's. They tried pushing the heavy platform, but it did not budge; again they tried and again...

"Come on!" gasped Kravtsov. "Come on!"

It moved!

The platform jerked and moved along the rails. They ran, pushing it with their hands. Faster, faster! They could hardly breathe. The air was like fire in their throats: they had not had time to lower their shields.

The platform gathered speed, and was already being pulled by the pillar; a little more, and it would run on by itself, and the pillar would seize it and carry it up, higher and higher, at a speed of nearly nine kilometres a minute.... Kravtsov glanced at the dial of the timer. They'd lost only two minutes. They'd be in time. It would explode high enough up. Perhaps not sixty kilometres— but forty kilometres, anyway.

"Nothing will happen to us, we'll cover our faces, and lie face downwards on the deck. The explosion will be horizontal, at an immense height. Radiation? We're wearing hermetically sealed protective suits, and so are the men in the launch.

"It's all right. Only drive it on faster. Come on! A bit more!

"I don't want to die...."

Jim's muffled voice said: "That's enough... It'll go on by itself now

"A bit more! Come on!"

A mad race! Jim tripped over the head of a bolt and fell with a crash; an agonizing pain shot through his arm.

"Stop!" he yelled, panting for breath.

But Kravtsov ran on and on.

"Alexander! Stop!"

What was the matter with him? Why did he?....

A terrible thought struck Jim.

"A...a...a...."

Frantically he banged his uninjured hand on the rail, crawled along, stared with his eyes starting out of his head at Kravtsov's receding protective suit.

Kravtsov was no longer running after the platform. The platform had drawn him to itself and he could not tear himself away or jump to one side. His legs were being dragged helplessly along the deck....

He fell horizontally.... Like falling over a precipice....

"Alexa...a...a...."

A violent spasm contracted Jim's throat.

The platform, shrouded in a cloud of steam, had reached the base of the pillar. Jim caught a glimpse of a grey-blue protective suit. Then there was a hollow thud.

Jim closed his burning eyes.

Suddenly he remembered the men, they had left in the launch. Jim jumped up and ran, panting, to the edge of the rig.

Leaning over the rail, he opened and closed his mouth, but no sound came; he was unable to catch his breath and shout.

The Japanese sailors in the launch noticed him, and stared up at him.

"Get below!" Jim yelled at last. "Under the deck! Shut the hatch! Close your helmets! Faces down!"

He saw them start running about in the launch.

Jim lifted a hatch in the upper deck and groaning with the piercing pain in his arm, jumped down. How dark and close it was there!

He slammed the hatch after him.

A tremor shook the rig. The prolonged low distant rumble of the explosion echoed and re-echoed.

## XXXVII

The flags of the flotilla were at half-mast.

The saloon of the "Fukuoka Maru" was flooded with electric light. All our friends were gathered there, except Will and Norma Hampton, who had to stay in their cabin.

Jim Parkinson was not there either. After the explosion had finished blazing and roaring in the sky, a signals ship with atomic engineers and a band of volunteers on board was sent to the rig. In the tiny cabin of the launch they found the three terrified Japanese sailors, who only knew that just before the explosion a man in a protective suit had appeared overhead and shouted a warning to them. The volunteers, in protective suits, boarded the rig and searched the whole deck. The Geiger counters suspended from their protective clothing recorded a lower level of radioactivity than they had expected. After a search lasting several hours they had almost given up hope of finding Kravtsov and Parkinson, when Chulkov, who was one of the volunteers, suddenly raised a hatch and flashing his torch, saw a man in protective clothing lying at the bottom. Parkinson was in a dead faint. He came to in the cabin on the return journey, but did not utter a word, and there was a wild look in his eyes. It was only in the sick-bay of the "Fukuoka Maru" that he recovered a little from the shock and was able to recall what had happened. The search for Kravtsov was called off. Jim's broken arm was put into plaster.

No Alexander Kravtsov....

There was a hush in the saloon. From time to time a steward came in with a pile of radiograms on a black lacquered tray and put them on the table before Morozov and Tokunaga. Congratulations were pouring in from every continent. Congratulations—and condolences. Morozov glanced over the radiograms and read some of them out in a low voice. The Japanese academician sat motionless in an armchair, his eyes covered with his hands. He looked particularly ill that day.

The door was flung open with a bang. On the threshold stood William McPherson. His shirt was unbuttoned and his jacket

thrown carelessly over his shoulders. His lower jaw was thrust out obstinately and aggressively.

"Hullo!" he said, casting a truculent look round the saloon, his voice unnecessarily loud. "Good evening, gentlemen!"

He went up to the table at which the leaders of the Operation were seated. He leaned his hands on the table and said to Tokunaga, exhaling a strong smell of rum, "How are you, sir?"

The Japanese slowly raised his head. His face was sallow and weary, and covered with a fine network of wrinkles.

"What do you want, please?" Tokunaga's voice was that of a very sick man.

"I want... I want to ask you... Why the devil did you send that laddie to his death?"

There was an instant of dead silence.

"How dare you, Mr. McPherson!" Morozov angrily straightened himself in his armchair. "How dare you..."

"Be quiet!" roared Will, sweeping the radiograms off the table with one movement of his hand.

"Lock him up! He should have been put under lock and key..."

"Calm yourself, McPherson! Pull yourself together and apologize at once to Academician Tokunaga!"

Tokunaga touched Morozov's sleeve.

"No," he said in his high-pitched voice. "Mr. McPherson is right. I should never have agreed. I should have gone myself because... because it is all the same to me..."

His voice died away. He covered his eyes with his hand again.

Norma Hampton burst into the saloon.

"Will! My God! What's the matter with you!" She tore Will's hands from the table and dragged him to the door. "You've simply gone mad. You simply want to kill yourself."

Will fell against the doorpost groaning like a wounded animal, his back heaving convulsively. Norma stood by helplessly, stroking his shoulder.

Ali-Ovsad came over to Will.

"Don't cry, Englishman," he said with deep feeling. "You're not a girl—you're a man. Kravtsov was my friend. He was a friend of us all."

He and Norma took Will under the arms and led him away.

Once again it was quiet in the saloon.

The sharp sound of a telephone buzzer made Tokunaga start

nervously. Morozov took up the receiver and listened.

"Moscow on the line," he said, rising to his feet.

Tokunaga rose as well, and left the saloon with Morozov. They were met in the radio cabin by Olovyanikov.

"She's at the offices of 'Izvestia'," he said softly, and handed Morozov the receiver.

"Marina Sergeyevna? Morozov speaking. Can you hear me? Marina Sergeyevna, I know all words of condolence are useless, but let an old man tell you he is proud of your husband."

\* \* \*

And that is all.

You may think it strange that in order to cut the black pillar, people had to use such a dangerous antiquated monstrosity as an atom bomb. But don't forget that all these events took place fifty years ago, when there were still no such things as graviquantum rays. In those days indeed they were only just beginning to guess at the existence of the single field.

What happened next? If you have forgotten, switch on your teaching record for the fourth class. It will remind you that the astronauts Myshlyaev and Errera went into an orbit parallel to the severed section of the black pillar, which had been named "Kravtsov's Ring". They adjusted the speed of their spaceship to that of the Ring, walked out into space in protective suits, and attached the first automatic-station data transmitters to the disconnected ends of the Ring.

And now interplanetary space stations for rocket trains, cosmic communication posts, and much else, have been installed on Kravtsov's Ring. You know all that very well.

Now that you know Alexander Kravtsov better, take another look at his picture: you can find it in the geophysics textbook in the section dealing with Kravtsov's Ring. An ordinary-looking chap, isn't he? He had no intention at all of becoming a hero.

It was just that he easily forgot himself when he thought of others.



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