The Molecular Cafe

Science-fiction stories

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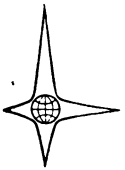
The book contains stories published by Soviet science-fiction writers in the last three or four years. Of course, neither the selection of the authors in this little book, nor the stories themselves can offer a comprehensive idea of Soviet Science fiction, which is so diverse and multiform. At present, more than a hundred Soviet writers are working in the field. Several large story collections, novels and serial books are published each year. Science, philosophy, sociology, humour, satire are some of their topics.

We hope that this book will appeal to the foreign reader and will promote understanding between our nations.

MIR PUBLISHERS



THE MOLECULAR

CAFE

Science-fiction stories

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from the Russian

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МОЛЕКУЛЯРНОЕ КАФЕ

**Сборник
научно-фантастических
рассказов**

ИЗДАТЕЛЬСТВО «МИР» МОСКВА

На английском языке

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PREFACE. Science fiction is extraordinarily popular in the USSR. Millions of copies of stories by Soviet and foreign writers are published every year. "Sci-fic" is read by people of all ages and professions. Upon thousands of readers look to it for, and discover, a reflection of the wonderful processes taking place at the present time in human society; they look for and discover new problems of history, sociology, and anthropology, which for one reason or another have not been touched by classical realist literature; they look for and discover new trends springing today from the thick of humdrum human activities and imperceptibly forming the new world of the future.

Science fiction is passing through a period of rapid growth in the USSR today. The foreign reader was able to acquaint himself with some of these stories in the collections brought out a few years ago by the Foreign Languages Publishing House in Moscow: "Andromeda", "The Heart of the Serpent", "Visitor from Outer Space", and "Destination: Amaltheia". Many new names and new titles have appeared since then. The reader

will meet some of them in the present collection of stories, which includes the work of young authors, as well as those of established "sci-fic" writers. The authors of this preface do not disguise their pleasure in introducing their colleagues to foreign readers.

Ilya Varshavsky only recently took up science fiction, but he is already one of the most interesting Soviet "sci-fic" writers. Now over fifty years of age, he is an engineer, a man of wide experience, keen intelligence, and broad erudition. His stories are paradoxical and fresh. "The Molecular Cafe", which gives its title to our collection cannot, of course, give the reader a complete picture of his versatility, but it does, undoubtedly, illustrate its general mood. Varshavsky is a prolific and enthusiastic writer and he has published two collections of stories within the past three years. Soviet readers know more than fifty of his short stories, parodies and satires.

The authors of this preface are represented by "Wanderers and Travellers"—the only short story they have published in the last three years. They have preferred to write novels, because the problems interesting them cannot be developed within the limits of the short story.

Anatoly Dneprov, who is already known to foreign readers, was one of the pioneers of postwar Soviet science fiction. "Crabs on the Island" is one of his earliest and best stories—a felicitous combination of an antiwar pamphlet and a technical picture of the vast potentialities of cybernetics.

"The Secret of Homer" is A. Poleshchuk's only short story. This interesting and original writer, who is also an engineer and inventor, has written

four novels, all devoted to the ways of knowledge and the strange and contradictory fates of discoveries. Poleshchuk's heroes are gifted and forceful, and always follow the unbeaten track. "The Secret of Homer" is unusual for Soviet science fiction, and for that very reason, perhaps, has particularly special interest.

V. Krapivin and R. Yarov are young writers, who have so far published a number of stories. They have made a good beginning and we hope that the foreign reader will come across their names many times in the years to come.

E. Voiskunsky, a former submarine officer and now a professional writer, first joined forces with I. Lukodyanov, an oil engineer, to write a lively and thrilling "sci-fic" adventure story entitled "The Crew of the Mekong". They have continued to collaborate and have published a collection of short stories, represented here by "The Black Pillar". The ideas of internationalism and friendship between peoples, and the authors' predilection for exciting subjects, their humour, and their quite exceptional scientific knowledge, are all vividly displayed in this tale.

Even in this small anthology the foreign reader will detect the main features of present-day Soviet science fiction: humanism, variety, and its close links with the real problems exercising mankind today. We hope our readers will enjoy this book and that it will further mutual understanding and sympathy between our countries.

ARKADY AND BORIS STRUGATSKY

The indicator on Mishka's Electronic Behaviour Analyser had remained at "excellent" for a whole week now, so we decided to celebrate.

Lily suggested a concert of Induced Sensations, I said we could visit the Museum of Alcoholic Odours but Mishka insisted we should go to the Molecular Cafe.

Naturally, that's where we went. After all it was Mishka who'd behaved well, and it would have been unfair not to let him choose.

We made good time there in a thought-plane, faltering only once when it occurred to me that it would be a good idea to drop in at the museum for a minute. Nobody noticed, luckily.

At the cafe we started to take a red table but Lily said she preferred food synthesized from light oils rather than dark. I reminded her that according to the papers, dark oils were just as good but she replied that that might be so, but why not have what you fancy when you're out for pleasure? We didn't argue with her, because we were very fond of our Lily, and we wanted her to get as much fun from the cafe as possible.

So we took a white table. When we sat down, the picture of a Robot in a white cap and apron appeared on the TV screen, and informed us with a smile that the Molecular Synthesis Cafe could serve any of three hundred and sixty dishes. To get the dish of one's choice all one had to do was to dial its number on the plates. It added that if we wanted anything not on the menu, we should put on the head antenna and think of it. The machine would then carry out the order.

I looked at Mishka and realized that what we wanted wouldn't be on the menu.

Lily ordered a plate of fritters and I asked for a pseudo-steak. It was rare and looked appetizing, and Lily said she couldn't manage all her fritters, could I take half? I did so and gave her half my steak.

While we were busy with this, Mishka was gloomily poking his fork into his invention which consisted of pickled cucumbers, herring, semolina and raspberry jam; and trying to figure out why it was that a combination of the nicest things could sometimes turn out so filthy.

I took pity on him and put his plate in the destructor. Lily told him he should concentrate more when thinking up things to eat.

After that Mishka started synthesizing a cake shaped like a spaceship, while I was trying to imagine what my drink would taste like if it had just a drop of cognac. I'd almost managed it when a red light came on and the Robot spoke from the screen and said such things were not allowed in the cafe.

Lily patted my hand and said there, there now, she and Mishka would go home from the cafe and I could go on to the museum. Lily always puts others before herself. I knew she really wanted to go to the concert, so I said I'd go home with Mishka and she could get to the Sensations. To which she said it would be better if we all went home and spend a quiet evening together.

To please her I thought up a fruit for her, shaped like an orange, with a taste like ice-cream and smelling of her favourite perfume. She smiled

and bravely bit off a big piece. I always like it when Lily smiles, for then I love her even more.

While we were getting into the thought-plane to go home, Lily said these old-fashioned Molecular Cafes were very sweet and the food there was a lot tastier than we got synthesized at home from the central station. I thought this was most likely due to impurities getting into the synthesis from the wires.

That evening, Lily suddenly burst out crying. She said synthetic food was filthy, that she hated cybernetics and wanted to get away from it all and live in the country, and walk and milk goats and drink real milk with tasty rye bread, and she added that Induced Sensations were a travesty of human emotions.

Mishka started bawling as well and declared that the Behaviour Analyser was a hateful invention, and that long ago there'd lived a boy called Tom Sawyer, of whom he thought very highly, who had got on very well without one. Then he said he'd only joined the electronics club to learn to deceive the Analyser and if he didn't succeed, he would make a catapult and smash the stupid thing.

I calmed them down as best I could, though it occurred to me that maybe the Museum of Odours wasn't such a wonderful invention after all, not to mention pseudo-steaks. Very likely we'd worn ourselves out ordering food.

We went to bed then.

That night I dreamed I had fought and killed a bear single-handed and we were all sitting by the campfire eating delicious bear-meat, smelling of blood and smoke.

Mishka was staffing huge pieces into his mouth, while Lily smiled at me with her wonderful shy smile.

You can't imagine how happy I was in my dream, because, I don't remember if I told you, I love Lily and Mishka very much.

When I woke up, it turned out that all that nonsense about the Molecular Cafe had simply been a dream. So I wrote this story, because it seems to me that if we give every cybernetic type a free hand the results may not be all that good.

We all of us need to keep an eye on them.

⚙⚙ *A. STRUGATSKY, B. STRUGATSKY*
WANDERERS AND TRAVELLERS

The water in the pool was not very cold, but all the same I was frozen. I had been sitting on the bottom, right under the steep bank, and for a whole hour had been cautiously turning my head from side to side and peering into the dim greenish twilight. I had to sit without moving, for septopods are sensitive and suspicious animals, they are frightened off by the slightest sound or any abrupt movement and will disappear, to return only at night, when it is better not to have anything to do with them.

An eel was busying himself under my feet, and a dozen times a pompous-looking striped perch swam past me and back again, stopping each time and staring at me with his vacuous round eyes. As soon as he was gone, a shoal of silvery small fry would appear and begin to graze just above my head. My knees and shoulders were quite numb. I was afraid that Masha might not wait any longer and would get into the water to rescue me. I succeeded in conjuring up so vivid a picture of how she was sitting all alone at the water's edge and waiting for me, how terrified she was, and how she longed to dive in and find me, that I had already made up my mind to come up, when at last a septopod swam out of the weed twenty paces or so to the right of me.

It was a fairly large specimen, and appeared noiselessly and suddenly, like a ghost, his round body foremost. His whitish mantle was pulsating gently, in a limp and inert kind of way, as it

sucked in and ejected the water, and he rocked slightly from side to side as he moved. His tentacles were tucked under him and their thin ends trailed after him resembling tattered of old rag; and the slit of his eye, nearly covered by the eyelid, shone dimly in the faint light. He was swimming slowly, as they do in the daytime, in a strange and uncanny trance, not knowing, where he was going or why. He was probably impelled by the most obscure and primitive drives, like those, perhaps, that control the movements of amoebae.

Very gently I raised the marker and aimed it at the inflated back. The silvery mass of small fry suddenly darted away and vanished and it seemed to me that the eyelid above the great glassy eye flickered. I pulled the trigger and immediately sprang up and away from the caustic sepia. When I looked again, the septopod was no longer to be seen: only a dense blue-black cloud was spreading through the water and clouding the bottom. I came to the surface and swam to shore.

It was a fine hot day. A blue haze hung above the water, the sky was white and empty, except beyond the forest where a great motionless mass of bluish cloud towered.

On the grass in front of our tent sat a stranger in bright swimming trunks with a bandage round his forehead. He was tanned and not so much muscular, as extraordinarily sinewy, as though covered with a whole network of ropes under the skin. You could see at once that he was incredibly strong. Before him stood my Masha in her blue swimsuit—long-legged, sunburnt, and with a shock of sun-bleached hair down her back. So, she

wasn't sitting by the water, anxiously waiting for her daddy. She was excitedly telling this sinewy fellow something, waving her arms the whole time. I was even hurt that she hadn't even noticed my appearance. But the man did, and quickly turned his head, looked at me intently, and smiled, waving his open hand. Masha spun round and shrieked happily "There you are!"

I climbed out on to the grass, took off my mask and wiped my face. The man was smiling as he examined me.

"How many did you mark?" asked Masha in a business-like manner.

"One". My jaws were cramped with the cold.

"Oh you!" said Masha.

She helped me to take off my aqualung, and I stretched out on the grass.

"Yesterday he marked two," explained Masha. "The day before yesterday four. If it goes on like that, we'd better move on to another lake." She took a towel and began to rub my back. "You look like a quick-frozen gander," she proclaimed. "This is Leonid Andreyevich Gorbovsky. He's an astro-archaeologist. And this, Leonid Andreyevich, is my daddy, Stanislav Ivanovich."

The sinewy Leonid Andreyevich nodded and smiled.

"Are you frozen?" he asked. "It's so lovely here—the sun, green grass. . ."

"He'll be all right soon," said Masha, rubbing me with might and main. "He's usually quite jolly, but he's chilled to the bone".

It was clear she had been saying all sorts of things about me and now was doing her best to

vindicate my reputation. Let her. I hadn't time—my teeth were chattering.

"Masha here and I were very worried about you," said Gorbovsky. "We even wanted to dive in and find you, but I don't know how. I expect you can't even imagine a man who's never had to dive in the course of his work." He turned over on his back, then on his side, and leaned on his arm. "Tomorrow I'm flying off," he confided to me. "And I simply don't know when I'll ever have the chance again to lie on the grass by a lake and have the possibility of diving with an aqualung."

"Feel it, then," I said.

He looked carefully over the aqualung and touched it.

"I certainly will," he said, and turned over on his back. He folded his arms under his head and looked at me, slowly blinking his sparse lashes. There was something irresistibly attractive about him, but what exactly I don't know. Perhaps it was his eyes, trusting and a little sad. Or perhaps it was because his ears stuck out from under the bandage in such a comical fashion. Having gazed his fill at me, he turned his eyes on a blue dragon-fly that was swaying on a blade of grass.

"Dragon-fly," he said. "Dear little dragon-fly! Blue—lakeside—beauty! There she sits, neatly and prettily, looking around to see what she can gobble up." He stretched out his hand, but the dragon-fly left the blade of grass and winged its way in an arc toward the reeds. He followed it with his eyes and lay down again. "How complicated it is, my friends," he said, and Masha immediately sat down and stared at him with round eyes. "There she is, perfect, graceful, and content

with everything. Ate up a fly, reproduced herself, and is now ready to die. Simple, elegant, rational. No spiritual perplexities, no love-pangs, no self-consciousness, no ideas about life."

"A machine," said Masha suddenly. "A boring cyber!"

This from my Masha! I nearly burst out laughing, but restrained myself, though believe I snorted, and she looked at me with disapproval.

"Boring," agreed Gorbovsky. "That's it. But now imagine, comrades, a dragon-fly of a poisonous greenish-yellow colour, with horizontal red stripes, and a wing-span of seven metres, and its jaws all covered with a nasty black slime. Well, have you pictured it to yourselves?" He raised his eyebrows and looked at us. "I see you haven't. But I have run away from them like a madman, even though I've been armed. Now, the question is, what is there in common between these two boring cybers?"

"That green one," I said, "is from another planet, I suppose?"

"No doubt about that."

"From Pandora?"

"Exactly, from Pandora," he answered.

"What have they got in common?"

"Yes, what?"

"But that's obvious." I said. "An identical level of assimilation of information. Reaction at the level of instinct."

"Words," he sighed. "Don't be angry, but these are only words, and no use to me. I've got to find traces of reason in the Universe, but I don't know what it is. It's no good talking to me about different levels of assimilation of information. I know

quite well that the dragon-fly and I have different levels, but all that is intuition. Now tell me: here I've found an ant nest—does it represent traces of reason or not? On Leonida they discovered buildings without windows and without doors—does that represent traces of reason? What have I to look for? Ruins? Inscriptions? Rusty nails? A septihedral screw? How am I to know what traces they leave? What if their aim in life is to destroy the atmosphere wherever they find one? Or to build rings round the planets? Or to hybridize life? Or to create life? Perhaps that dragon-fly was self-reproducing cybernetic apparatus set going in times beyond memory? To say nothing of the possessors of reason themselves. After all, one can pass a slimy creature croaking in a puddle twenty times and only turn away from it in loathing. But the creature looks at you with beautiful goggling yellow eyes and thinks to himself: 'Interesting, obviously a new species. An expedition should return here and catch a specimen...'"

He covered his eyes with his hand and started humming a tune. Masha had her eyes fixed on him and waited. I was waiting, too, mentally sympathizing with him: it is hard to work when your job hasn't been properly defined. Very difficult. You grope about in the dark and you get no pleasure, or satisfaction. I had heard of these astro-archaeologists. It was impossible to take them seriously—and no one did.

"But there is reason in cosmos," said Gorbovsky suddenly. "There's no doubt about that. I know that now. But it isn't what we think it is. Nor the kind we expect it to be. And we're not

looking for it there. Or not the way we ought. In fact, we don't know what we are seeking."

"That's just it," I thought. "Not that, not there, not that way. That's not serious, comrades. Just childishness—looking for the traces of ideas that once floated about in the air."

"The Voice of the Void, for instance," he continued. "Have you heard of it? I don't suppose so. Half a century ago people wrote about it, but now nobody mentions it any more. Because no progress was made, you see, and since no progress has been made, perhaps there is no Voice? We've got plenty of these cock-sparrows, you know,—they know nothing themselves about science, because either they're lazy or haven't been educated properly, but they have heard that Man is all-powerful. He's all-powerful, but he can't make head or tail of the Voice of the Void. Dear, dear, dear—what a disgrace! We can't, we won't! What cheap anthropocentrism!"

"What's the Voice of the Void?" asked Masha softly.

"It's a very curious effect. It can be perceived in certain directions in Space. If you switch your spaceship receiver over to automatic reception, sooner or later it will tune in to a strange transmission. You hear a calm, impassive voice repeating the same phrase over and over again in a strange expressionless tongue like the language of fish. It has been picked up for many years and it always repeats the same thing. I've heard it and many others have heard it, but not many talk about it. It's not very pleasant to think about. You're an unthinkable way from Earth. The Ether is empty: there are no atmospherics, nothing

but slight rustling sounds. And suddenly this voice is heard. You're on watch, alone. Everyone's asleep, everything's quiet and eerie—and then you hear this voice. It's very unpleasant, I assure you. There are recordings of it, and many people have cudgelled their brains and still are to decipher it. But in my opinion it's futile. There are other riddles. Astronauts could tell a lot, but they don't like to." He fell silent and then added with a kind of melancholy insistence: "You've got to realize—it's not simple. We don't even know what to expect, you see. We can meet them at any moment. Face to face. And you know—they can turn out to be immeasurably higher beings. People talk about collisions and conflicts, or about different conceptions of what is human and good, but I don't mind that. I'm afraid of an unparallel humiliation of humanity, of a gigantic psychological shock. We are so proud, you know. We've created such a marvellous world, we know such a lot, we have penetrated into the Great Universe, where we are exploring, discovering, studying, investigating—what? For them this Universe is their own home. For millions of years they've been living there, as we've been living on our Earth, and they can only wonder at us—what are these beings doing here amongst the stars?"

He broke off suddenly and jumped to his feet, listening to something. I started involuntarily.

"That's thunder," said Masha softly, gaping at him, open-mouthed. "Thunder. There'll be a storm soon."

He was still listening and scanning the sky.

"No, it's not thunder," he said at last, and sat down again. "It's a liner. See it, over there?"

A bright streak flashed across the blue pile of clouds and vanished. And again there was a faint rumbling in the sky.

"And now sit and wait," he said, incomprehensibly. He looked at me and smiled, but in his eyes there was a look of sadness and suspense. Then it passed and his eyes again took on their former trusting expression.

"And what do you do, Stanislav Ivanovich?" he asked.

I decided he wanted to change the subject, so I started telling him about the septopods. That they belonged to a sub-class of a dibranchiate, class of cephalopods and represent a special, hitherto unknown, family of the order of octopuses. Their main features were a reduction of the third left tentacle, opposite the third hectocotylized right one, three rows of suckers on the arms, a complete absence of coelome, an extraordinarily powerful development of the venous hearts, the maximum concentration for cephalopods of the central nervous system, and various other, less important, peculiarities. They had been discovered not long before, when a number of them appeared off the east and south-east coasts of Asia, and a year later they were being found in the lower reaches of the great rivers—the Mekong, Yangtse, Hwang Ho, and Amur, and also in lakes that were a fair distance from the sea-coast—in this one, for instance. And this is remarkable, because ordinary cephalopods are highly stenogalinaceous, and even avoid the arctic waters with their reduced salinity. Also, they hardly ever come out on dry land. But the fact remained: septopods feel quite happy in fresh water and they do come out

on to the shore. They get into boats and on to bridges, and not long ago two were found in the forest about thirty kilometres from here.

Masha was not listening—she had heard it all from me before. She went into the tent and brought out the 'minivox' and switched it to automatic reception. She was obviously impatient to pick up the Voice of the Void.

But Gorbovsky was paying great attention to what I was saying.

"Were those two alive?" he asked.

"No, they were found dead. The forest here is a game reserve. The septopods had been trampled and half-eaten by wild boar. But they were still alive thirty kilometres away from water! The mantle cavity of both of them was stuffed with damp weed. That, apparently, is the way they lay in a certain store of water for their journey across dry land. The weed was of the species that grows in lakes. There is no doubt that these septopods had come from these very lakes and were on their way deeper into the country to the south. I must mention that every single specimen so far captured has been an adult male. Not a single female, nor young septopod. Probably the females and the young cannot live in fresh water or come out on dry land. It's all very interesting," I continued. "As a rule, you know, sea animals only alter their mode of life so completely during the breeding season. Then instinct forces them to go to quite unaccustomed places. But here there is no question of breeding. Some other instinct is at work here, more primitive, perhaps, and more powerful. The main thing, now, for us is to trace their migration routes. So I spend ten hours a day

at the bottom of this lake. Today I marked one. If I'm lucky, I'll mark another one or two before evening. At night they become extraordinarily active and seize everything that comes near them. They've even been known to attack men. But that is only at night."

Masha had turned the radio on as loud as possible and was revelling in the mighty sound issuing from it.

"Quieter, Masha," I said, and she turned it down.

"So you mark them," said Gorbovsky. "That's interesting. How do you do it?"

"With generators." I extracted the cartridge from the marker and showed him an ampoule. "With pellets like these. In each one there's a generator which can be heard under water at a distance of twenty or thirty kilometers."

He took the ampoule carefully and examined it closely, and his face became sad and old-looking.

"Very clever," he murmured. "Simple and clever."

He continued to twist it about in his fingers as though trying to get the feel of it, then put it on the grass before me, and rose to his feet. His movements had become slow and irresolute. He went to where his clothes were lying, rummaged among them, found his trousers, and stood still, holding them in front of him.

I was watching him with a vague feeling of unease. Masha was holding the marker ready in her hand to show him how it was used and was also watching Gorbovsky. The corners of her lips were drawn down piteously. I had noticed long

ago that this sort of thing often happened to her, and the expression of her face would take on that of the person she was watching.

Leonid Andreyevich suddenly began to speak in a very soft voice in mocking sort of way.

"That's funny, I must say. What a vivid analogy. For centuries they've lain in the depths and then they rise and enter a strange hostile world. And what drives them? An obscure primitive instinct, you say? Or a method of assimilating information that has reached a level of unbearable curiosity? It would surely be better for them to stop at home in the salt water—but something draws them and draws them to the shore." He roused himself and started putting on his trousers. His trousers were old-fashioned and long. He hopped on one leg as he put them on. "But it's true, isn't it, Stanislav Ivanovich, that we must think they're not ordinary cephalopods?"

"In their own way, yes, of course," I agreed.

But he was not listening. He had turned to the receiver and was staring at it. Masha and I stared too. The set was emitting strident discordant signals resembling the interference caused by an X-ray apparatus. Masha put down the marker.

"6.08 metres," said she in a puzzled tone. "Some service station, but what one?"

He was listening to the signals, eyes closed and his head to one side.

"No, that's not a service station," he murmured. "It's me."

"What?"

"It's me. I'm signalling. Me—Leonid Andreyevich Gorbovsky."

"W-why?"

He laughed mirthlessly.

"Why, indeed? I'd very much like to know why." He put on his shirt. "Why should three pilots and their spaceship, after returning from their flight EN 101-EN 2657, become the transmitters of radio-waves on 6.083 metres?"

Masha and I, of course, said nothing, and he, too, fell silent as he fastened his sandals.

"We've been examined by doctors, we've been examined by physicists." He straightened up and shook the sand and grass from his trousers. "They all came to the same conclusion: it's impossible. We could have died laughing at the sight of their astonished faces. But, believe me, it was no laughing matter for us. Tolya Obozov gave up his holiday and flew to Pandora. He said he preferred to radiate as far away as possible from Earth. Walkenstein has gone to work at an under-water station. I alone am roaming the Earth and emitting radio-waves. And all the time I'm waiting for something. I wait and fear, fear, and wait. Do you understand me?"

"I don't know," I said, and glanced at Masha.

"You're right," he said. He took up the receiver and thoughtfully put it against his protuberant ear. "No one knows. It's been going on for a month, without abating and without stopping. Wah-wee, wah-wee. Night and day. Whether we're sad or gay. Hungry or full. At work or idle. Wah-wee... But radiation from Tariel has decreased. Tariel is my spaceship. It's laid up now, to be on the safe side. Its radiation interferes with the control of some aggregates on Venus, and they're sending inquiries and getting annoyed. Tomorrow I'm taking it somewhere further

away." He straightened himself again and slapped his thighs with his long arms. "Well, it's time for me to go. Good-bye, and good luck to you. Good-bye, Masha. Don't worry your head over all this. It's no simple riddle, I assure you."

He raised his hand in salute, nodded, and walked away, lanky and awkward. By our tent he stopped and said:

"You know, do try to be as careful as you can with those septopods. Otherwise you're marking them and marking them and it's all very unpleasant for them." And off he went.

I lay a little while longer face downwards and then glanced at Masha. She was still following him with her eyes. I could see at once that Leonid Andreyevich had impressed her. But not me. I was not in the least worried by his talk about the possibility of the possessors of Universal Reason being immeasurably higher than ourselves. Let them be. In my opinion, the higher they were, the less chance there was of our getting in their way. It was like a roach who didn't care a hang for a wide-meshed net. As to pride, humiliation, and shock—we'd probably get over that. I would, at any rate. And the fact that we were discovering and studying the Universe, which they had long ago made themselves at home in, well, what of it? We'd not yet made ourselves at home in it! And for us they were nothing more than a part of the Nature we had set out to explore and study, be they three times as high as us! They were external to us! Though, of course, if they started marking me, as I was marking the septopods...

I glanced at my watch and sat up abruptly. It was time to get on with my work. I noted down

the number of the last ampoule and checked my aqualung. Then I went into the tent, got my ultrasonic locator and put it in the pocket of my trunks.

"Help me on with it, Masha," I said, putting on the aqualung.

She was still sitting by the radio listening to the unremitting "wah-wee". She helped me on with the aqualung and we got into the water together. I switched on the locator and it began to emit signals—my marked septopods were drowsily floating about in the lake. We looked meaningly at each other and swam up to the surface. Masha was spitting out the water and pushing the wet hair from her forehead as she said:

"But there *is* a difference between an astrocraft and wet weed in the branchiate sac."

I told her to get on the bank and dived in again. No, I wouldn't worry as much if I were Gorbovsky. It was all much too frivolous, like his astroarchaeology. Traces of ideas.... Psychological shock. There would be no shock. Most probably, we wouldn't notice each other at all. What on earth are we to them, I'd like to know?

❁ ❁ ❁ *A. DNEPROV* CRABS ON THE ISLAND

"Hey, you there! Be careful!" shouted Cookling at the sailors who, standing up to their waists in the water, were trying to drag a small wooden case along the gunwale of the boat. It was the last of ten crates the engineer had brought to the island.

"Phew! Isn't it hot! Like a furnace," he groaned, wiping his thick red neck with a bandana handkerchief. Then he pulled off his sweat-soaked shirt and threw it on the sand. "Take your things off, Bud; there's no civilization here."

Dejectedly I watched the light schooner rocking gently on the waves at a distance of a mile or so from the shore. It would come back for us in three weeks' time.

"Why the devil did we have to come to this sun-hell with your machines?" I demanded of Cookling as I undressed. "With a sun like this we'll be peeling like cucumbers tomorrow."

"Never mind. The sun will come in useful. Incidentally, it's exactly noon, and it's just above our heads."

"It's always like that at the equator," I muttered, not taking my eyes off the "Dove". "All the geography books tell you that."

The sailors had come over to us and were standing in silence before the engineer. Unhurriedly he put his hand in his trouser pocket and took out a wad of notes.

"Is that enough?" he asked, giving them several. One of them nodded.

"In that case you can return to the ship. Remind Captain Gale we shall expect him in twenty days' time."

Then Cookling turned to me. "Let's get busy, Bud," he said. "I'm impatient to begin."

I stared at him.

"To tell you the truth, I don't know why we've come here. I understand that it may not have been convenient at the Admiralty for you to tell me about it. But I think you can now."

Cookling grimaced and looked down at the sand.

"Of course I can. I would have told you all about it even then but there was no time."

I felt he was lying, but said nothing. Cookling stood rubbing his purple neck with his greasy palm. He always did that when he was going to tell a lie, I knew, and now that was quite sufficient for me.

"You see, Bud, we're going to perform an interesting experiment to test the theories of that... what's his name...?" He hesitated and looked searchingly at me.

"Who?"

"That English scientist. Damn it, I've clean forgotten his name. No, I've got it—Charles Darwin."

I went over to him and put my hand on his bare shoulder.

"Look here, Cookling. You seem to think I'm a brainless idiot who doesn't know who Darwin was. Stop lying and tell me straight why we've landed on this blazing scrap of land in the middle of the ocean. And please don't mention Darwin to me again."

Cookling burst out laughing, displaying a mouthful of false teeth. Backing away a few paces, he said, "You're an ass, Bud, all the same. Because it is Darwin we're going to test here."

"And that's what you've dragged ten crates of old iron here for?" I demanded, moving close to him again. Hatred for this fat sweating man began to well up inside me.

"Yes," he said, and his smile vanished. "As for your duties, the first thing you have to do is to open crate No. 1 and get out the tent, water, tinned stuff and the tools to open the others."

Cookling spoke in the same tones he had used when I had first met him at the firing-ground. He had been in military uniform then, and so had I.

"Very good," I muttered and went over to case numbered one.

Within two hours we had pitched a tent on the beach, and put a spade, crowbar, hammer, chisel, several screw-drivers, and other tools into it. In addition we stowed away about a hundred tins of different foods and containers of fresh water.

In spite of being the boss, Cookling worked like a bull and was, indeed, all agog to get started. With all the work, we did not notice that the "Dove" had weighed anchor and disappeared behind the horizon.

After supper we started on crate No. 2. It contained an ordinary two-wheeled barrow of the kind used at railway stations to carry luggage.

I was turning to the third crate when Cookling stopped me.

"Let's look at the map first. We've got to distribute the things at different places."

I looked at him in amazement.

"It's for the experiment," he explained.

The island was round, like a plate turned upside down, with a small bay in the north—where we had landed. It was ringed by a sandy beach about fifty yards wide. Behind the beach stretched a low plateau overgrown with stunted shrubs of some kind, parched by the heat.

The diameter of the island did not exceed two miles.

A number of places on the map had been marked in red pencil—some along the shore, others inland.

"We've got to take the things we're going to unpack now to all these places," said Cookling.

"What are they—measuring instruments of some sort?"

"No," said the engineer and chuckled. He had the obnoxious habit of laughing when it happened that someone didn't know what he did.

The third case was incredibly heavy. It seemed to me it must contain some massive machine. But when I knocked the first boards off, I nearly gasped with astonishment. Metal bars and slabs of metal of every size and shape fell out. The case was crammed with metal billets.

"You might think we were going to play bricks!" I exclaimed, unpacking heavy rectangular, cubic, round, and spherical ingots.

"Hardly," replied Cookling, and went on to the next crate.

Case No. 4, and all the rest up to and including the ninth, were filled with similar ingots.

There were three kinds—grey, red, and silvery, and I could easily tell that they were iron, copper, and zinc.

When I was about to open the last box, Cookling said "We'll open this one when we've distributed these ingots."

We spent three days pushing them in the barrow over the island. We dumped them out in small heaps, and left some on the sand. Others, on Cookling's instructions, I buried. Some of the heaps consisted of ingots of every kind, others of only one. When it was all done, we returned to the tent for the tenth crate.

"Open it," Cookling ordered, "but be careful."

This case was much lighter and smaller than the others. It was packed tight with sawdust which covered a package wrapped in felt and oiled paper. We opened the package, and uncovered a most strange-looking apparatus.

At first glance it looked like a large metal child's toy shaped like a crab. But it was no ordinary crab. In addition to six large articulated claws, it had in front two pairs of slender tentacles whose ends were tucked into the gaping protuberant "mouth" of the hideous beast. In a depression on its back gleamed a small parabolic mirror of polished metal with a dark-red crystal in its centre. Unlike an ordinary toy crab, this one had two pairs of eyes, in front and behind.

For a long time I stared in bewilderment at this object.

"Like it?" asked Cookling after a long silence.

I shrugged my shoulders.

"It looks more as though we've come to play with bricks and kid's toys."

"This is a dangerous toy," said Cookling smugly. "You'll see in a minute. Take it up and put it on the sand."

The crab was light, not weighing more than ten pounds.

"And now what?" I asked the engineer in irony.

"Let's wait a bit until it warms up."

We sat down and watched the little metal monster. After a couple of minutes I noticed that the mirror on its back was slowly turning towards the sun.

"Oh, it's coming to life, it seems!" I exlaimed, and stood up.

As I rose my shadow accidentally fell across the mechanism. The crab's feet suddenly began to move and it made for the sun again. I was so taken aback that I jumped to one side.

Cookling burst out laughing. "There's your toy! Gave you a fright, did it?" I wiped my damp forehead.

"For God's sake, Cookling, tell me—what are we going to do with it? Why have we come here?"

He got up, came over me, and said in tones that were now serious. "To test Darwin's theory."

"But that's a biological theory, a theory of natural selection, evolution, and so on. . ," I muttered.

"Exactly. Now look, our hero's gone to get a drink."

I was astounded. The toy had crawled up to the water's edge and, lowering its proboscis, was quite evidently drinking. Having sucked up its fill, it crawled back into the sunshine and stopped motionless.

I stared at the little machine and was conscious of a strange feeling of revulsion, mingled with fear, toward it. For an instant the clumsy toy crab reminded me somehow of Cookling himself.

"Did you invent it?" I asked the engineer after a pause.

"Uhuh," he mumbled, and stretched himself out on the sand.

I lay down too and watched the strange machine in silence. It seemed now to be quite lifeless.

I crawled over to it on my belly and began to scrutinize it.

The crab's back could be described as a semicylinder with flat depressions in front and behind. In each of these there were two openings resembling eyes. This impression was strengthened by the fact that the gleam of crystals deep in the interior could be seen through them. Underneath there was a flat surface for a belly. From just above this platform three pairs of large jointed pincers and two pairs of small ones protruded. I was unable to see inside the crab.

As I looked at the toy, I tried to understand why the Admiralty should attach so much importance to it that it had equipped a special ship for the expedition to the island.

Cookling and I lay on the sand until the sun had sunk so low on the horizon that the shadow cast by the bushes growing some distance away fell on the metal crab. As soon as this happened, it moved slightly and crawled out again into the sunlight. But the shadow overtook it and then our crab started crawling along the shore, coming closer and closer to the water, which was still lit by the sun. The warmth of the sun's rays was quite indispensable to it, it seemed.

We got to our feet and slowly followed the machine.

In this way we gradually circled the island, until we finally came to its western shore.

There, almost at the water's edge, lay one of the heaps of metal. When the crab got within some ten paces of the heap, it suddenly made a rush for it as if it had forgotten all about the sun and stopped dead by one of the copper bars.

Cookling touched my arm. "Let's get back to the tent now," he said. "We'll see something interesting tomorrow morning."

We ate our supper in silence in the tent and then wrapped ourselves in light flannel blankets. It seemed to me that Cookling was pleased that I hadn't asked him any questions. Before falling asleep, I heard him tossing from side to side and chuckling now and again, which meant he knew something nobody else did.

Early next morning I went for a bathe. The water was warm and I had a long swim, enjoying the sight, to the east, of the crimson rays of the sun just rising above the water whose mirror-like surface was scarcely ruffled by the long slow swell. When I returned and entered the tent, the engineer was no longer there.

"Gone to feast his eyes on his mechanical monster," I thought, and opened a tin of pineapple.

But I had no more than swallowed three slices when I heard his voice, from a distance at first, and then getting louder and louder. "Lieutenant, come here quick!" he was shouting. "It's begun! Hurry! Run quick!"

I went out of the tent and saw Cookling standing among the bushes on a hillock and waving to me.

"Come on," he said, puffing like a steam engine. "Be quick!"

"Where to?"

"Where we left our little beauty yesterday."

The sun was already high in the sky when, running all the way, we reached the heap of metal. The ingots were shining so brightly I could make out nothing at first.

It was only when we were a couple of steps away that I noticed two thin streams of bluish smoke rising above the heap, and then—I stopped as if paralysed. I rubbed my eyes, but the apparition did not vanish. By the heap of metal stood two crabs, exactly like the one we had unpacked yesterday.

"Could one of them have been buried in that heap of scrap?" I exclaimed.

Cookling doubled up several times, chuckling and rubbing his hands.

"Stop playing the fool!" I shouted. "Where did the second crab come from?"

"It was born! It was born last night."

I bit my lip and without saying a word went right up to the crabs, above whose backs the thin wisps of smoke were rising. At first I thought I was suffering from hallucinations: both crabs were hard at work!

Exactly, they were at work, their slender front tentacles moving rapidly up and down. The tentacles were in contact with the bars and, producing an electric arc on their surface, as in electric welding, they were cutting off bits of metal. The crabs quickly pushed the metal into their wide mouths. Inside these mechanical creatures could be heard a humming noise. At times a shower of

hissing sparks was ejected from their mouths, and then the second pair of tentacles extracted finished components.

These components were put together in definite order on a little flat platform that gradually moved out from under the crab.

An almost complete copy of a third crab had been created on the platform of one of the crabs, while only the outlines of one had appeared on that of the other. I was astounded by the sight.

"But these awful things are creating others in their own image!" I exclaimed.

"Quite so. The whole purpose of this machine is to create machines in its own image," said Cookling.

"But is that possible?" I asked, in utter perplexity.

"Why not? Any machine tool, a lathe, for example, makes parts for lathes like itself. So I conceived the notion of making an automatic machine that would manufacture copies of itself from start to finish. My crab is the model of such a machine."

I thought over the engineer's words, trying to grasp their import. Just then the first crab's mouth opened and a wide ribbon of metal issued from it, covering the entire mechanism on the platform and thus forming the back of the third automaton. When the back was properly in place, the nimble front legs welded on metal ends with openings at front and back, and the new crab was ready. As with its brothers, one could see the gleam of a metal mirror with a red crystal in the depression on its back.

The crab manufacturer pulled the platform in

under its belly and its "baby" got down on to the sand. I noted how the mirror on its back began slowly to turn toward the sun. After a while, the crab crawled to the water's edge and had a drink. Then it crawled into the sunshine and stood motionless, warming itself.

I thought I was dreaming.

As I watched the new-born creature, I heard Cookling say: "And here's the fourth."

A turned my head and saw that a fourth crab had been born. The first two, quite unconcerned, continued to stand by the heap of metal, cutting off bits and shoving them inside them—repeating what they had done before.

The fourth crab also went for a drink of seawater.

"Why the hell do they swill water?" I demanded.

"They're filling the battery. While the sun shines, its energy is transformed into electricity by means of the mirror on their back and a silicon battery. It's enough for all their day-time work and to charge the accumulator. At night the robot is fed by the power stored in the accumulator."

"So these creatures work day and night?"

"Yes, day and night, without a break."

The third crab stirred and crawled over to the heap of metal. Now three robots were working, while the fourth was charging itself with solar energy.

"But there's no material for silicon batteries in these heaps of metal," I remarked, trying to grasp the technology of this monstrous self-production of machines.

"There's no need. There's plenty of it here."

Cookling clumsily kicked up the sand. "Sand is an oxide of silicon. It is reduced to pure silicon inside the crab by an electric arc."

We returned to the tent in the evening, by which time six robot-crabs were working by the heap of metal and two were warming themselves in the sun.

"What's it all for?" I asked Cookling during supper.

"For war. These crabs are a terrible means of sabotage," he said bluntly.

"I don't get it."

Cookling went on chewing his stewed beef and then, without haste, explained: "Imagine what would happen if these things were secretly introduced into enemy territory."

"Well?" I said, and stopped eating.

"You know what progression means?"

"Of course."

"Yesterday we began with one crab. Now there are eight. Tomorrow there will be sixty-four, the day after tomorrow—five hundred and twelve, and so on. In ten days' time there would be over ten million. And that would require thirty thousand tons of metal."

I was struck dumb when I heard these figures.

"Yes, but. . ."

"In a short time these crabs could devour all the enemy's metal—all his tanks, guns, and aircrafts. All his machine tools, plant, and equipment. All the metal on his territory. Within a month not a scrap of metal would remain on the face of the earth. It would all have gone to reproduce these crabs. And in wartime, don't forget, metal is the most important strategic material."

"So that's why the Admiralty was so interested in your toy!" I whispered.

"Exactly. But this is only the first model. I'm going to simplify it considerably in order to speed up the process of reproduction. Speed it up two or three times. Make the construction stronger and firmer. Make them more mobile. Increase the sensitivity of the indicators to metal deposits. Then my robots will be more dangerous in wartime than the plague. I want the enemy to be deprived of his metal potential within two or three days."

"Yes, but when they've eaten up all the metal on the enemy's territory, they'll move over to their own," I exclaimed.

"That's another question. We can code their work and knowing this code, stop them working the moment they appear on our territory. And incidentally, we can get hold of the enemy's whole metal supply this way."

All that night I had nightmares. Swarms of metal crabs were crawling over me, their feelers rustling, thin columns of blue smoke rising from their metal bodies.

Within four days the whole island was covered with Cookling's robots.

According to his calculations, there were over four thousand of them now. Shining in the sunlight, they could be seen everywhere. When the metal in one heap came to an end, they began to search all over the island and found others.

Just before sunset on the fifth day I witnessed terrible scene: two crabs fighting over a piece of zinc.

This was on the south side of the island where we had buried a number of zinc bars in the sand.

The crabs working in other parts of the island came here from time to time to make a certain zinc component. It so happened that about a score of crabs had all scuttled at the same time to the zinc cache, and a real scramble resulted. The machines got into each other's way. One crab particularly distinguished itself: it was nimbler than the others and, it seemed to me, stronger and more aggressive.

It pushed its brothers aside and climbed over their backs in its endeavour to get a bit of metal from the bottom of the hole. But just as it was achieving its purpose, another crab seized the same piece with its pincers. The two machines tugged at the bar in opposite directions. Finally, the crab that seemed to me the more agile, tore the bar away from its rival. But the latter, unwilling to give up its prey, came up from behind, got on the robot's back, and thrust its pincers into the other's mouth. The pincers of both twisted together and they began to tear at each other with terrible force.

None of the other machines took the slightest notice of all this; but for these two it was a life and death struggle. I saw the crab that had mounted the other suddenly fell over on its back, belly uppermost while its iron platform slipped down, exposing its metal insides. In a flash its enemy had begun to cut it up with a rapid succession of electric sparks. When the victim's body finally broke into pieces, the conqueror started tearing out levers, gear wheels and wires, and shoving them quickly into its mouth.

As the components thus acquired entered the body of the predator, its platform began to move

out rapidly and the feverish assembly of a new machine began on it.

Some minutes later, a new crab had fallen from the platform on to the sand.

When I told Cookling what I had seen, he just chuckled.

"That's exactly what I wanted," he said.

"Why?"

"Surely I told you I want to improve my robots."

"Well, so what? Take your blue prints and work out how to do it. Why this civil war? If this goes on, they will devour each other."

"Just so. And the most perfect ones will survive."

I thought for a moment and then said : "What does that mean, the most perfect? They're all alike, aren't they? As far as I understand it, they are reproducing themselves."

"But do you think it's ever possible to make an absolutely exact copy? As you surely know even in the manufacture of ball-bearings it's impossible to make two exactly similar balls. And there are simpler things. Here the robot-reproducer has a copying mechanism that compares the copy it is making with its own construction. Can you imagine what will happen if each subsequent copy is made, not according to the original model, but copying one immediately preceding it? Ultimately, a mechanism may result that bears no resemblance at all to the original."

"But if it doesn't resemble the original, that means it won't be fulfilling its main function—of reproducing itself," I objected.

"Well, what of it? That's very good. Better copies will make another robot from its corpse, and the better copies will be precisely those in which will be accumulated, quite fortuitously, those details in their construction that make them more viable. So stronger, faster, simpler copies must come into being. That's why I don't intend to worry about my blue prints. All I've got to do is to wait until the robots have eaten up all the metal on the island and begin an internecine war, devouring each other and reproducing themselves anew. That's how the robots I need will come about."

That night I sat for a long time on the sand in front of the tent, watching the sea and smoking. Had Cookling really started something that might have grave consequences for humanity? Had we started an appalling plague on this godforsaken little island in the middle of the ocean that could eat up all the metal in the world?

As I sat thinking about all this, several of the metal creatures ran past me. They continued to work, their mechanisms creaking, even as they ran. One of the crabs knocked against me, and I kicked it away in disgust. It fell over helplessly on its back. Almost immediately two other crabs pounced upon it and dazzling electric sparks flashed in the dark. The wretched thing was being cut to pieces by sparks! It was too much for me. I rushed into the tent and got a crowbar from the tool box. Cookling was already snoring.

Noiselessly approaching the crowd of crabs, I struck one of them with all my might. I'd imagined for some reason that this would frighten off the others, but nothing of the sort. The crabs fell

on the one I had smashed, and sparks began to fly again.

I hit out several times more but this only increased the quantity of sparks; and more of the creatures come rushing to the spot from the interior of the island.

In the darkness I could only make out the outlines of the machines, and it seemed to me that one of the swarm looked exceptionally big. I aimed a blow at this crab. But no sooner had my crowbar come into contact with its back than I gave a scream and jumped aside: the crowbar had given me an electric shock! Somehow or other the body of this monster had been charged with electricity. "Defence as a result of evolution," crossed my mind.

Trembling all over, I approached the droning mass of machines in order to retrieve my weapon, but it was out of the question. By the flickering light of many electric arcs I saw my crowbar being cut up and the very big robot that I had intended to smash was working hardest of all.

I went back to the tent and lay down.

I soon fell into a heavy sleep, but not for long, apparently. I was suddenly wakened, feeling something cold and heavy crawling over my body. I jumped up. A crab—I had not realized at first what it was—disappeared in the back of the tent. A few seconds later I saw a bright electric spark. The damned crab had come into our tent in its search for metal and its electrode was cutting up the tin containing our drinking water.

I quickly shook Cookling awake and stammered an account of what had happened.

"All tins into the sea. All the grub and water into the sea!" he ordered.

We took all the tins down to the shore and laid them on the sandy bottom at a waist-deep in the water. Our tools were put in the same place.

Wet and exhausted, we sat on the beach till morning without closing our eyes. Cookling was breathing heavily, and down deep I was glad he was also suffering from his venture, for now I hated him and wished even heavier punishment for him.

I cannot remember how long had passed since our arrival on the island, but one fine day Cookling announced triumphantly: "Now the most interesting moment has arrived. All the metal's been eaten up."

In fact, we looked at all the spots where metal billets had been lying, and nothing was left. Along the shore and among the bushes could be seen empty holes.

The metal pigs, bars and rods had been turned into machines that were rushing about the island in huge numbers. Their movements had become rapid and spasmodic. Their batteries had been charged to the limit and they were not using their power for work, but were wandering aimlessly about the beach, crawling through the bushes on the plateau, running into each other, and often into us.

As I studied them I realized Cookling had been right. The crabs really were varied. They differed from each other in size, the length of their pincers, the capacity of their workshop maws. Some were more active, others less. There were probably

even more profound differences in their internal structure.

"Well," said Cookling. "It's time for them to start fighting."

"Are you serious?" I asked.

"Of course, I am. It will be quite enough to give them a taste of cobalt. The mechanism is so constructed that the slightest admixture of this metal will suppress, if that is the right expression for it, their mutual respect for each other."

Next morning we went to our "ocean storeroom". From the sea-bottom we fished up the usual number of tins of food and water, and four heavy grey bars of cobalt, which Cookling had kept specially for the decisive stage of the experiment.

When he waded out on to the sand, holding the cobalt bars high in the air, he was immediately surrounded by a number of crabs. They did not cross into his shadow, but one could see that the appearance of the new metal had greatly disturbed them. I was standing at a few paces away and I observed with astonishment how some of the machines were clumsily trying to jump.

"See that! What a variety of movements! How unlike they all are! And in the civil war, we'll make them wage, the strongest and fittest will survive. And they will have even more perfect progeny."

With these words Cookling threw one bar after another into the bushes.

It is difficult to describe what followed.

Several machines fell simultaneously on the bars and, jostling each other, started cutting them up with electric sparks. Others crowded behind,

also trying to get hold of a scrap of metal. Some climbed on to the backs of their fellows striving to get into the middle.

"Look, there's the first battle!" exclaimed Cookling happily, clapping his hands.

Within a few minutes the place where he had thrown the metal had become the arena of a terrible battle, which more and more robots came running to join.

As parts of broken up machines and bits of cobalt entered the maws of more and more machines, they turned into savage and fearless predators that immediately attacked their fellows.

During the first stage of this war the attackers were those that had tasted cobalt. It was they that cut up the robots that had come here running from all over the island in the hope of getting the metal they needed. But as more and more crabs got a taste of cobalt, the war became fiercer. And now the new-born ones, produced in the course of the battle, joined in.

This was a remarkable generation of robots—smaller in size and extraordinarily fast moving. And I was surprised that they were able to dispense with the usual process of charging their accumulators. The solar energy absorbed by the much bigger mirrors on their backs amply sufficed. They were remarkably aggressive, and attacked several crabs simultaneously cutting up two or three at a time with their sparks.

Cookling stood in the water with an expression of infinite self-satisfaction on his face, rubbing his hands and exclaiming: "Good, good! I can just imagine what's going to happen!"

As for me, I watched this battle of machines

with deep disgust and fear. What would be born as a result of this struggle?

By midday the whole beach around our tent had become a vast battlefield. Robots had come from all over the island and fought in silence, without cries or screams, without shots or gunfire. Only the crackle of innumerable electric sparks and the clanking of the metal bodies of the machines gave this strange fight a peculiar rustling and grinding accompaniment.

Although most of the new generation now coming into being were squat and very mobile, other new types were nevertheless beginning to appear. These were very much larger than any of the rest. Their movements were slow, but one sensed their power, and they had no difficulty in coping with their dwarfish attackers.

As the sun began to set, a sudden change took place in the movements of the small machines; they all crowded together on the west side and began to move more slowly.

"The devil take it! That lot's doomed!" Cookling said in a hoarse voice. "They've got no accumulators. As soon as the sun sets, they'll be finished."

And so it was. As soon as the shadows cast by the bushes lengthened out sufficiently to cover the huge crowd of small robots, they stopped dead. They were no longer an army of aggressive predators, but a vast collection of lifeless metal boxes.

Colossal crabs, nearly half a man's height, came crawling slowly up to them and began to eat them up one by one. The outlines of even more enor-

mous progeny could be seen on the platforms of their gigantic parents.

Cookling frowned. This was not the evolution he had wanted, that was clear. Slow-moving crab-robots of great size would be much too poor a weapon for sabotage behind enemy's lines!

While the giants were exterminating the dwarf generation, there was a temporary lull on the beach. I waded out of the water and Cookling followed me in silence. We made for the eastern side of the island in order to get some rest.

I was very tired and fell asleep almost as soon as I had stretched out on the warm soft sand.

I was awakened in the middle of the night by a terrible shriek. I could see nothing when I jumped up but the greyish strip of sand and the sea, which had merged with the black starry sky.

The cry was repeated, but not so loudly, from the direction of the shrubbery. Only then did I noticed that Cookling was not with me. I rushed towards the spot from which, as I thought, his voice had come.

The sea, as usual, was very calm, and the ripples breaking on the sand were few and far between. But it seemed to me that the surface of the water was ruffled at the spot where we had deposited our food and water containers. Something was splashing and squelching there. I decided that Cookling must be there.

"What are you doing here, engineer?" I cried, approaching our under-water store.

"I'm over here!" I suddenly heard a voice calling from the right.

"Where are you, for God's sake?"

"Here," I heard him say again. "I'm up to my chin in the water; come here."

I entered the water and stumbled against something hard. It was an immense crab standing deep down in the water on its long pincers.

"Why have you got in so deep? What are you doing there?" I asked.

"They were chasing me and drove me right out here!" the fat man squaked pitiably.

"Chasing you? Who?"

"The crabs!"

"It can't be! They're not chasing me!"

Again I stumbled against a robot in the water, but moved away from it, and finally got to the engineer. He was, indeed, chin-deep in the water.

"Tell me what happened?"

"I don't understand it myself," he said in a quavering voice. "While I was asleep, suddenly one of the robots attacked me... I thought it was an accident and moved away, but it came near me again and touched my face with its claw... Then I got up and moved away to one side. It followed me. I started running. So did the crab. Then another crab joined in. And another. A whole crowd of them. And they drove me out here..."

"Strange! That's never happened before," I said. "If they've already developed a man-hating instinct as a result of evolution, they wouldn't have spared me."

"I don't know," said Cookling in a hoarse voice. "But I'm afraid to come out on the beach."

"Nonsense," I said, and took his arm. "Walk along the shore to the east. I'll protect you."

"But how?"

"We'll come soon to our food dump and I'll get some heavy tool. A hammer or something."

"Only not a metal one," groaned the engineer. "Better take a board from one of the boxes or something made of wood."

Slowly we made our way along the shore. When we reached our dump, I left Cookling alone and waded towards the beach.

I could hear loud splashes and the familiar drone of the machines. The metal creatures had broken into the tinned stuff. They had found their way to our under-water storehouse.

"Cookling, we're lost!" I yelled. "They've eaten up all our tins!"

"Have they?" he said plaintively. "What are we to do now?"

"It's up to you to think what to do. You're responsible for this stupid venture. You've evolved the type of sabotage instrument you wanted. Now you sort out the mess."

I went round the crowd of robots and came out on the beach. There, crawling in the dark among the crabs I groped about picking up bits of meat and tinned pineapple, apples, and other things from the sand, and took them up on to the plateau. Judging by the amount of stuff lying on the beach, the creatures had worked pretty hard while we slept. I didn't find a single whole tin.

While I was occupied collecting the remnants of our provisions, Cookling remained standing up to his chin in the water about twenty paces from the shore. I was so engrossed in what I was doing and so upset by what had happened, that I had

quite forgotten about him, but very soon a piercing shriek reminded me of his existence.

"For God's sake, Bud, help me, they're after me!"

I dashed into the water, and, stumbling over the metal monsters, hurried to Cookling. About five paces from him, I stumbled against another crab. It took no notice of me.

"Why the devil do they dislike you so much? Surely you can claim to be their daddy," I said.

"I don't know," gurgled the engineer hoarsely. "But do something, Bud, to drive it away. If a taller crab than this one is born, I'm done for."

"Well, that's evolution for you. Incidentally, which part of the crab is most vulnerable? How can the mechanism be wrecked?"

"Before, it would have been enough to smash the parabolic mirror or to extract the accumulator from inside. But now I don't know... It'll take some special research."

"To hell with your research," I muttered through clenched teeth, and seized the crab's slender front claw that was reaching out in the direction of the engineer's face.

The robot moved back. I found the second leg and bent it as well—the tentacles twisted easily, like copper wire.

The metal creature clearly didn't like this procedure and it began to wade slowly out of the water. Cookling and I moved further along the shore.

At sunrise all the robots crawled out of the water and began sunning themselves on the beach. I succeeded in smashing the mirrors on the backs

of at least fifty of the monsters with stones, and all these ceased moving.

But unfortunately that did not improve matters; they immediately fell victim to other creatures and new robots were manufactured from them with amazing speed. I hadn't the strength to smash the silicon batteries on the backs of all the machines. Several times I came into contact with electrified robots, and that weakened my resolve to try and fight them.

All this time Cookling remained standing in the sea.

Soon the war of the monsters started all over again and it seemed as though they had forgotten all about Cookling.

We left the battlefield and moved over to the other side of the island. Cookling was so numb after his long bathe, which had lasted for hours, that he lay down on the sand, stretched out and asked me, with chattering teeth, to cover him over with hot sand.

After that I returned to our original camp site to fetch our clothes and what was left of our provisions. There I discovered that the tent had been destroyed; the metal pegs that had been driven into the sand had disappeared, and so had the metal rings where the guy ropes had been fastened to the tent.

Under the tarpaulin I found our clothes, but even here again one could see the traces of the crabs' search for metal. Every metal hook, button and buckle had disappeared, leaving behind shreds of scorched cloth.

Meanwhile the battle of the robots had shifted from the shore to the interior of the island. From

the plateau I could see, more or less in the centre of the island, several monsters almost as tall as men standing on their pincers among the bushes. Slowly, two by two, they moved to opposite sides, and then rushed at each other with terrific speed. A metallic clanging accompanied the encounter. Behind the slow movements of these giants, there was obviously immense power and weight.

Before my eyes several machines were knocked over and forthwith cut to pieces.

But I was sick to death of watching these battle scenes between mad machines; so, loading myself with everything I could find on our old camp site, I slowly made my way back to Cookling. The sun was beating down mercilessly and before reaching the spot where I'd buried him in the sand, I took several dips in the sea.

I was just approaching the mound under which Cookling, exhausted after his nocturnal bathing, was sleeping, when an enormous crab appeared from behind the shrubs on the plateau.

It was taller than me. Its claws were long and massive, and it moved in a series of awkward hops, with its body leaning bent forward in a peculiar way. Its front, working, tentacles were incredibly long and trailed on the sand. The maw of its workshop was particularly hypertrophied, and took up nearly half the body.

The "ichthyosaurus", as I called it to myself, slid clumsily down on to the beach, and began to sway slowly in all directions, as if scanning the locality. Automatically I brandished the tent at it, as one does at a cow that gets in one's way. But it took no notice of me whatsoever, and in a strange oblique way, describing a wide detour, it

approached the mound of sand under which Cookling lay sleeping.

If I had realized the monster was making for him, I would have rushed to his aid immediately; but the direction in which the machine was moving seemed so vague that I thought at first it was going into the sea. And it was only when, having just touched the water with its feet, it turned abruptly and moved rapidly towards Cookling that I dropped the things I was carrying and ran forward.

The "ichthyosaurus" stopped by him and squatted slightly. I saw the ends of its long tentacles working in the sand just by his face.

The next moment the heap had become a great sand cloud. Cookling had jumped up as though stung and, panic-stricken, was trying to break away from the monster.

But it was too late.

The slender tentacles had wound themselves tightly round his thick neck and were lifting him up, towards the mouth of the machine. Cookling hung helplessly in the air, his arms and legs dangling grotesquely.

Though I detested him with all my heart, nevertheless I could not allow him to perish in a fight with an irrational metal freak. Without thinking I seized the tall claws of the crab and pulled with all my strength. But I might as well have tried to pull over a steel post driven deep into the ground. The "ichthyosaurus" did not even budge.

I reached up and got on its back. For an instant Cookling's distorted face came level with

mine. "His teeth!" suddenly crossed my mind. "His stainless steel false teeth!"

I struck the parabolic mirror, shining in the sunlight, as hard as I could with my fist.

The crab spun round as it stood. Cookling's livid face and bulging eyes were now level with the mouth of the workshop. Then something horrible happened. An electric spark struck his forehead and temples. The crab's tentacles suddenly relaxed, and the heavy lifeless body of the creator of this iron plague crashed down on the sand.

While I was burying him, several huge crabs were chasing each other over the island, taking absolutely no notice either of me or the corpse.

I wrapped it in the canvas of the tent and buried him in a shallow grave in the sand in the middle of the island and did so with no feeling whatsoever of regret. My parched mouth was gritty with sand and I was inwardly cursing the dead man for his horrible invention. From the point of view of Christian ethics, I committed a terrible sacrilege.

After that I lay motionless on the beach for several days on end, watching the horizon where the "Dove" should appear. Time dragged with agonizing slowness and the pitiless sun seemed to have stopped above my head. From time to time I crawled down to the water and dipped my scorched face in it.

To forget my hunger and terrible thirst I tried to think of abstract things. I thought of how many able people in our days had used the powers of reason to do harm to others. Cookling's invention, for instance. I was sure it could have been used to good purpose—in metal-mining, possibly. The

evolution of these creatures could have been so directed that they might have performed that function with the utmost proficiency. I came to the conclusion that if the machine had been perfected properly it would not have degenerated into a gigantic clumsy monster.

One day a great round shadow fell across me. I raised my head with difficulty and looked to see what had come between me and the sun. I found that I was lying between the tentacles of an enormous giant of a crab which had come down to the water's edge and seemed to be watching the horizon and waiting for something.

Then I began to have hallucinations. In my fevered brain the gigantic crab became a vat of fresh water raised so high that I couldn't reach the top.

I came to on board the schooner. When Captain Gale asked me whether they should take aboard the huge, strange-looking mechanism lying on the beach, I answered that for the present it was quite unnecessary.

❁❁❁❁ *A. POLESHCHUK* THE SECRET OF HOMER

To this day I can't make out how it happened, and I've never been in such a state of mental confusion. It all began during the last session of the Moscow Society of Lovers of Classical Literature. At the meeting there was a stranger who came up to me afterwards, introduced himself, and asked me to visit his school. "I'm worried about my boys," he said. "Technology, mathematics, and physics have absorbed all their interests. I'd like to inject a fresh stream into their education."

I accepted his invitation and have not regretted it. The senior pupils—boys of sixteen and seventeen—greated me warily and after the first lesson one of them asked me point-blank, "Have they sent you to cure us of our technical 'abscess'? "

"No," I answered. "But didn't you find what I was talking about interesting?"

"Not bad," answered someone sitting on the window-sill, "Not bad so far."

But, as I knew quite well they were still only boys and when the hexameters of the ancient myths resounded in the snug classroom, the eyes of these self-confident adolescents lit up with enthusiasm and curiosity. I must admit that in my work with students reading philology and history I've never encountered such attention and such interest. What apparently was a duty for arts students was a marvellous fairy-tale for these lads.

I came to them once a week, and every time they astonished me with their freshness of perception and their remarkable memory. And only

one of them—the tallest and probably the strongest lad who sat in the second row and beat time to rhythm of the verses with his brawny arm thrown over the back of the chair—never asked me any questions. Sometimes I put a question to him myself but his answers were laconic and monosyllabic.

"You talk like a Spartan," I said to him once, and that, perhaps, was my first mistake.

A month passed, and another. The boys I knew were working hard at their favourite subject, and had nearly finished assembling an extremely complicated apparatus something like "time machine". My lessons were only a kind of "pedagogical adjunct", so I was quite literally thunderstruck when the taciturn lad suddenly stopped beating time during one of my talks and said, "The stress. It's wrong. Your. . ."

"Come now," I said. "The stress in this word only changed during the Roman Empire. Have you started learning ancient Greek?"

"He's learnt it already," said one of the boys.

"Is that true?" I asked.

"Oh no. I just read the textbook you were talking about. That's all."

"Don't believe him," said a chorus of voices. "Artem knows the 'Iliad' by heart."

"Is that true, Artem?"

"Well, yes."

I asked him a number of questions. Choosing his words without difficulty, Artem answered me in the language of Homer. His pronunciation was not perfect, but that fault could be easily eliminated.

Then, about ten days ago, Artem and I had an argument. We had just been reading the place in the "Aethiopis", that tells how Achilles, having mortally wounded Penthesilea, the queen of the Amazons, divests her of her helmet, his trophy by right of victory, and suddenly, struck by her beauty, falls in love with the dying woman.

"It is thought that Arctinus of Miletus, the author of this poem, was a pupil of Homer's," I remarked.

"I don't doubt it," said Artem. "What a scene!"

"Smashing!" said one of the boys.

"Really, friends," I said, turning to the whole class, "can't you find a better sounding expression than 'smashing' ?"

"Emotion does not always dictate euphonious expressions. You know that better than anybody else," returned Artem.

"But such masterpieces as the 'Aethiopis', the 'Iliad'. . ."

"In expurgated translations—yes. Homer's heroes are live people. Sometimes tender, sometimes stern, but they always have a ready tongue. Achilles shouts at Agamemnon: 'You sot, you son of a bitch!', but the translator hums and haws and thinks up idiotic words—'Wine-bibber! Dog-like man!' And how Zeus abuses Hera!"

Artem gave a short laugh.

"That's where Homer is great," he continued. "In everything an artist, in everything a poet. Anyone else would have started the story of the Trojan War with Adam, but Homer plunges straight into what is most important and most vivid:

"Of Peleus' son, Achilles, sing, O Muse,
The vengeance, deep and deadly; whence to Greece
Unnumbered ills arose."

"Perhaps you are right," I began carefully, approaching the subject of that day's lesson—"the Homeric Question", "but the whole point is that Homer never existed. . . ."

"What do you mean—never existed. That can't be!" cried the lads.

"No, Homer never was. There was a collective creator—hundreds of bards who clothed the original nucleus of the legend in a poem of surpassing beauty."

"Is that absolutely certain?" asked Artem.

"Absolutely and I personally hold the same opinion. In the seventeenth century the Abbé d'Aubigniac expressed doubts about the existence of Homer, pointing out a large number of contradictions, and since then the research carried out by Grote and Hermann, and before them by Wolf, has confirmed this completely. There had been arguments about it before in fact, but opinion of Aristarchus that Homer created the 'Iliad' in his youth and the 'Odyssey' much later, in his old age, prevailed."

"But the ancients did believe Homer existed?" persisted Artem.

"The ancients did not know the analytical method developed in the middle of the nineteenth century."

"In questions like this you have to integrate," someone remarked.

"What did you say? Integrate?" said I, laugh-

ing. "Technical terms again in a lesson in the humanities?"

"Don't be angry," said Artem in conciliatory tones. "But it's difficult for me and my comrades to believe that Homer never existed. The question must be gone into."

"Do you know, boys," I said, "how the ancients viewed this question? Seven towns disputed the honour of being the birthplace of the poet, and an ancient quatrain has come down to us:

'Attempt not to discover, where Homer was born, and who he was;
All cities proudly claim to be his birthplace;
The spirit is all, not the place;
The birthplace of the poet was the glory of the 'Iliad', the story of Odysseus.'

Nor is that all. Homer was thought to be the son of Apollo and the Muse Calliope, he was called a native of Chios, Lydia, Cyprus, Thessaly, Luca, Rhodes, and Rome; and even a descendant of Odysseus himself, the son of Telemachus and Polycasta, daughter of Nestor."

"Warm!" cried Artem suddenly. "Warm! That last one's the theory to be checked. It's no accident that Odysseus occupies such an important place in both the 'Iliad' and the 'Odyssey'. There were special reasons that impelled the ancient bard. . . ."

"Or ancient bards," I hastened to add.

"No, the ancient bard to make Odysseus the central figure in the second epic. Any way, the only song of the 'Iliad' that is not directly connected with the subject—the wrath of Achilles

and its consequences—tells of the adventures of Odysseus."

"You mean the 'Dolonia'?" I asked.

"I'm speaking of the song in which Odysseus and Diomedes go scouting and kill the Trojan spy."

"They kill Dolon the spy and so the song has been called 'Dolonia' by the experts. But what follows from that?"

"There was some connection between Homer and Odysseus. That's what follows."

"As a matter of fact, the archaeologist Schliemann who got permission from the Turkish government to excavate ancient Troy, had no doubts at all about the existence of Odysseus. On the island of Ithaca, of which Odysseus was king, Schliemann discovered the remains of the stump of an old olive-tree among some stone ruins. You remember how to test Odysseus, his wife Penelope, ordered her servant Eurycleia to carry her husband's bed outside, and the angry Odysseus said:

'. . .there's a wordrous contrivance
Hid in that well-wrought bed, which myself and no other invented.
Once, in the courtyard, there grew a leafy and wide-spreading olive,
Flourishing and full-grown, and like to a pillar in thickness.
Round it I built a wall with great stones fitted together,
Making a chamber, and then, on top, I roofed it securely.
And I make folding doors of solid construction to guard it.

Then I cut off the boughs of the leafy and
wide-spreading olive;
Then I cut off the trunk and smoothed the
stump with the hatchet.
As a good craftsman should, and shaped it
true with the T-square
So as to form a post and bored in it holes with
an auger.' "

"And was it that very bed that Schliemann discovered?" exclaimed Artem.

"Schliemann found the remains of a huge olive-tree surrounded by stone walls, but that may well have been a coincidence. What conclusions can be drawn from this passage?"

"Plenty. This bed was a secret known only to Odysseus' family, and only he or his son could have been acquainted with it. Even Eurycleia the nurse didn't know the bed could not be moved. And if Odysseus really did exist, then why deny the possibility of Homer's existence? All that must be checked."

Those were the words he used: "That must be checked." There was something unusual in Artem's words. I recalled the exclamation made by one of the boys 'smashing'. But I only said:

"My job is not to 'win you over' to the side of the humanities.

"All I wanted to do was to interest you a little in the art of the ancients and their history. After all, acquaintance with art ennobles man."

"And doesn't working together on the solution of man's urgent problems ennoble us?" asked Artem, rising to his feet.

He went quickly out of the classroom and

somebody remarked, "Artem's gone straight to the lab."

I did not see him again until one very memorable day when he came up to me himself and said, a little embarrassed: "I've got everything ready; we can set out in search of him now, if you like."

"In search of whom?"

"Of whom? Of Homer."

I burst out laughing.

"But Homer must be 'sought' in ancient manuscripts. One has to analyze and compare texts, and plunge into an infinitude of commentaries."

"Or plunge into the infinitude of time," remarked Artem. "The machine is ready. I thought you'd agree."

I was so bewildered I let Artem take me to the laboratory. Some sort of apparatus stood by the window, its polished metal gleaming, and, on the whole, resembling a twentieth-century battery truck.

I got on to the metal seat and Artem sat down beside me. I swear now, hand on heart, that I had not taken any of it seriously. I was sure that Artem had simply decided to play a trick on me and would laughingly confess to his joke. But nothing of the sort happened. He bent over the control panel and suddenly the walls of the laboratory began to disappear slowly before our eyes. Vague outlines of human figures appeared, demolishing the walls of the laboratory with strange movements. The sun blazed for an instant, and as suddenly vanished.

It was some time before I came to myself. Our "truck" was running down a stony road. We were

surrounded by green groves, and the sun was high in the sky. Artem stopped the truck at a bend in the road, from which the sea could be seen.

"Where are we?" I asked.

"We'll soon know," answered Artem.

He leaped lightly from the "truck" and began quickly to climb a knoll. At the top sat a man in a yellow garment, of unusual cut. When he got up and bowed to Artem, I saw that its sleeves had been cut short. "Why, it's a chiton!" I thought. Beyond the knoll lay steep slopes, and in the distance towered great rocky mountains. A voice seemed to whisper in my ears, "Olympus. This is Olympus."

Artem came running down the hill, and jumped into his seat on the truck.

"Well, what did you find out?"

"Everything's fine. The goatherd said that Homer is dead, but his grandfather remembered the poet very well."

"What century is it now?" I asked, still not believing that all this was not a dream.

"Now?" Artem bent over the instruments and turned a knob above something that looked like a speedometer. "We're in the twelfth century—B.C., I mean."

There were several more "stops" and finally we came to a halt in the middle of a broad meadow. Evening was falling and singing could be heard coming from a hamlet whose low cottages showed through the trees. There was no one to be seen. Artem asked me to get up for a moment, took a packet from under the seat, and opening it, offered me a cheese sandwich.

"Where are we now?"

"I'm afraid we may have gone too far this time."

Artem took a huge bite from his sandwich with great relish and then suddenly nudged me, pointing towards the hamlet. A horseman was galloping at full speed through the dewy grass toward us. He was approaching us rapidly and the clank of his armour drowned the barking of the dogs and the song and the incessant singing of the cicadas. The horseman galloped up to us and pulled up in astonishment, raising his heavy spear in his right hand. I drew my head into my shoulders, expecting the blow to fall any moment, but Artem, without getting up from his seat, raised his hand, still holding the lunch packet, and greeted the horseman loudly in Aeolian.

"Rejoice!" said Artem. "Rejoice!"

"Thou, too, rejoice, youthful warrior, and thou honourable sir," replied the horseman, jumping off his horse.

"We are seeking Homer," said Artem. "Have you not seen him?"

"Homer?" repeated the warrior. "Homer.... I have not heard of this basileus. Or perhaps he is a simple swineherd who has fled from your house?"

"No, he makes verses."

"Makes verses? Then it must be the poor singer! He was with us yesterday and sang for a long time in the square, but may the curses of the Gods fall on my head if any one of us gave him so much as an old bone. He is better off in other places where there are still stupid dogs who have forgotten what Troy cost us. This beggar took the road to the sea."

Artem turned a key and our "truck" began to

move gently over the grass. The horse gave a start, and shied, and galloped off towards the hamlet, and for a long time we heard the voice of the horseman calling his steed.

In the morning we saw the sea. The air was clear; a quivering line of jagged rocks marked the contours of a distant island. Artem got out of the "truck" and helped me get down. The sun was rising in a blue cloudless sky, promising a hot day.

"Someone's sitting over there," said Artem, nodding toward a rocky precipice. True enough, about a hundred yards from us, a man was sitting on a rock. At that distance he merged into the grey rocks, but as we came nearer I saw an old man, sitting motionless, his gaze fixed on the narrow strip of the distant island.

We approached nearer.

"It's Homer!" exclaimed Artem. "It's Homer! And that's as true as that island there is Ithaca."

The old man did not turn his head at the sound of our footsteps and seemed to be asleep; but when Artem addressed him, he immediately returned his greeting. Yes, the legend was true: Homer was blind.

"He can't see," said Artem. "He's blind." I examined the old man's face, expecting to see the sightless eyes of the poet, known to us all from the classical bust, but suddenly realized something more. He was not just blind. The wrinkled lids had sunk into the sockets. Homer had been blinded.

"Homer," I said. "Men of the future are speaking to you. Do you understand? We are separated by thirty-three centuries."

"Are you Gods?" asked the old man sonorously and simply.

"Oh, no! Not at all! We are mortals but have come here from the distant future. You are remembered and honoured, Homer, as a great poet. Your songs have been taken down in writing—both the 'Iliad' and the 'Odyssey'."

"Written down? I do not understand."

"Well, with signs made on thin white sheets."

"The Phoenicians do that," said Homer thoughtfully. "I have heard about that."

"But I must pain you. Some people doubt whether you ever really existed, Homer."

"Gods know no doubts. You are mortals," said Homer, smiling ironically, and with a quick movement grasped the rock on which he was sitting and I saw that his hand was strong and deft. Then he bent down and picked up a stone from the ground, clenching it hard in his fist.

"You see, we are very interested in certain contradictions in your poems."

"Are you not mocking me, strangers?" said Homer in a loud voice. Through the rents in his grey cloak one could see his still-powerful muscles grow tense.

"Careful!" cried Artem, and he seized the old man by the hand he had raised, ready to strike.

For a moment Homer struggled, then his hand opened, and the stone fell over the cliff. The sea, far below, received it with a splash.

"Anyone can insult a blind man nowadays," said Homer sadly. "What do you want of me? Go your way."

"We did not want to offend you at all—we are telling the truth—but there are certain contradic-

tions in your poems.... For instance, I would like to know.... You often speak in the songs about the 'Odyssey', of ironware and the use of iron weapons. But surely in your day iron was unknown, wasn't it?"

"Unknown? Yes, it was unknown to him who had no sharp-horned bulls to barter for an axe of grey iron, a sword, or a knife. Have you never met traders who bring ornaments and weapons from overseas? They take much for them in prisoners, wine, bulls, and hides."

"Perhaps, perhaps. But you must admit, Homer...."

"Just a minute," interrupted Artem. "It's my turn to ask questions. Homer, have you eaten anything today?"

"Neither yesterday, nor today," replied Homer. "Nobody wants to listen to my songs here. Twelve crimson-cheeked ships, full of bold warriors, did Odysseus, the son of Laertes, lead to the shores of Ilium, and they did not return. They have not forgotten that here."

Artem rushed to our "truck" and got the lunch packet out. Before he got back to us, I took the opportunity to ask Homer point-blank: "It is believed that you yourself, Homer, fought in the ranks of the Achaeans in the war with Troy. Is that true?"

"I did," answered Homer in a very pensive manner. "With which of the heroes do they compare me?"

I shrugged my shoulders. "With none of them. It is believed that you were a simple warrior and that afterwards you sang of what you had seen."

Artem came running up to us and opening the

packet, took Homer's hand gently and put a piece of bread and cheese in it.

"Eat," said Artem. "It's bread and cheese."

Homer slowly bit off a small piece of the bread and cheese, swallowed it, and put the rest in the folds of his cloak. "The bread is like air," he said, "and the cheese tastes good. I believe you, strangers, when you say you are not mocking an old beggar. Ask, and I shall tell you everything."

"From your songs, Homer, we know that Odysseus, having killed Penelope's suitors, once again became the king of Ithaca. Did he live a long time?"

"One day I shall sing about that," said Homer. "Not now—later. Yes, Odysseus killed the suitors. Wailing and groaning, the kinsfolk of the murdered men carried the corpses out of the house. Those who had lived in Ithaca were buried by their own peoples, those who were natives of other cities were sent home in swift fishermen's boats. But Eupeithes stirred up the Cephallenians against him. . . ."

"We know, we know," said I. "Let me recite this place to you by heart: 'Friends, there has terrible havoc been wrought, among the noble Achaeans, by this Odysseus here. . . . To unborn generations with scorn will our name be remembered, if we should fail to avenge the death of our sons and our brothers'."

"Yes, that is what he said, and brought a host of the Cephallenians to the house of Odysseus."

"And he was killed?"

"Yes, he was killed."

"But afterwards, what happened afterwards?" asked Artem impatiently.

"The fishermen came to the kinsmen of the murdered suitors, and in the night seven black-cheeked ships silently came ashore on Ithaca. When Odysseus sighted their masts, it was too late. And the Cephallenians—some with indifference, others with secret malice,—watched Odysseus fighting at the door of his house. Telemachus, the son of Odysseus, was the first to be killed. Eumaeus was slain by an arrow, thus the swineherd perished, that faithful, brave old man. The sword was knocked from Odysseus' hand, and he was bound hand and foot. Then cries were heard 'Kill Odysseus! Death to him, death!' 'No,' said those who remembered the might and wisdom of the hero, of him who wore the helmet and armour of Achilles by right. 'Then let him be blinded!' cried a stranger in the crowd, his eyes burning with hatred. Probably he was the kinsman of one who had perished at the hand of Odysseus. And they blinded the hero. Laughing, they pushed him into a boat. The sea was seething. 'Receive our sacrifice, O Poseidon!' shouting thus, they sent forth the boat with the hero in it. For many days it drifted over the great waves, and the sea-breeze whispered in the ear of the martyr 'Do you remember how you blinded Polyphemus? Now we are quits. Live if you can, O hero!' "

"And what happened then?"

"The waves cast the bark on a sandy shore. The gulls were screaming and circling boldly above Odysseus' head, crying plaintively 'You live, Odysseus!' Long did the hero wander, but everyone repelled him. A crust of bread here, a bunch of grapes there. That was all his food. The years

passed. No one would have dreamed of recognizing the hero in the blind old man. One day in Athens, Odysseus was sitting by the fireside with a bowl of soup the noble master of the house had ordered to give him. Someone was singing, the strings were twanging, and it was noisy all around. Then the conversation in some way turned to the war and the losses incurred, and someone mentioned the name of Odysseus, saying 'No, Troy would not have fallen if that wise man had not boldly used his cunning.' So they talked, and the old beggar moved closer to the hearth. No light could he see without eyes, but the warmth reached him. And suddenly the heroes, his friends, appeared around him. 'You alone, Odysseus, have survived us. Have we indeed disappeared from this life without trace?' So said the heroes, and then Odysseus, remembering everything, rose suddenly, and carefully making his way barefoot towards the corner where the cithern sang, asked for it timidly. And, striking all the strings together with his palm, he let them go at once. Scarcely had the sound died away, than Odysseus began to sing of Achilles and of his terrible wrath, that brought so much suffering to the Achaeans. And so the hero wanders over his beloved land. Some give him food, some set their dogs on him, but the fame of the deeds of the great heroes lives, and with it they live. And often a mysterious force drives him to this shore. He knows that there, in the haze, lies the shore of his native Ithaca."

We returned to the apparatus. The "truck" answered Artem's touch with a growl of its motors. Artem dialled some numbers on the controls,

while I sank into the seat lost in thought.

"Judging by all that, this old man considers Odysseus and Homer to be the same person," I said. "I don't know what my colleagues will think of it. Some, no doubt, will receive my communication without enthusiasm."

"Look here," said Artem, getting onto the ground. Leaning over the side of the "truck", he bent over me. "Turn this lever towards you."

I did as he said, but only when Artem had gone up the path toward the old man and the latter rose to his feet and came to meet him, did I understand by the familiar quivering of the objects vanishing before my eyes, that Artem was remaining behind. And suddenly somewhere I heard a cry, in a strangely distorted voice, from the old man: "O Zeus, Our father! There are Gods on bright Olympus still! Is not that you, my son Telemachus?"

To this day I cannot make out what happened. Least of all could I have expected a person so in love with technology, to behave so. Least of all....

❁❁❁❁❁ *V. KRAPIVIN* I'M GOING TO MEET MY BROTHER

Watch for the "Magellan"

I

Whoever has been to Konsata must remember the steep narrow steps down the cliffs. They start from a colonnade at the top and lead down to the sea. At the bottom there is just a narrow strip of shore between them and the water. Covered with porous rocks and shingle, this strip stretches along the yellow-white cliffs from South Valley right up to the North Point, where the obelisk to dead astronauts pierces the sky like an inclined needle.

It is a pleasant spot to collect the coloured stones rounded and smoothed by the waves, and to hunt for the fierce black crabs. The boys from the school whose grounds lie to the south of Ratal Cosmodrome, always stop here for a while on their way home. They cram their pockets with treasures whose value adults never have understood, and never will, and then run up the steep steps, which they prefer to the escalator that climbs the cliff a hundred yards or so further on.

At the time I'm writing about I had just finished a paper on the third expedition to the Amazon basin. Now for a whole month I could read the ordinary books I had missed from pressure of work.

I would take a book of poems, or a collection of Randin's stories, and go to the top of the Old Steps. The place was deserted. Grass grew be-

tween the flag stones and birds had built nests in the scrolls of the heavy capitals.

At first I was all alone at the colonnade, but later a tall dark man wearing a grey jacket of strange cut started coming there. To begin with we took no notice of one another as though by mutual agreement. But as hardly anyone else ever came there, and we were meeting every day, eventually we began to salute though we never spoke to one another. I read and the stranger, who seemed to have something on his mind, was too preoccupied to want to strike up a conversation.

This man always came in the evening. Then the sun hung over North Point, behind which rose the white buildings of Konsata, the blue of the sea was beginning to fade, and the waves were taking on a grey metallic hue. To the east the arches of the old viaduct would be tinted pink by the rays of the evening sun. The viaduct lay at the end of Ratal Cosmodrome, as a memorial of the days when planetary liners had not yet been adapted for vertical takeoff.

The stranger would seat himself on the plinth of one of the columns and, sit there, chin in hand, in silence.

He brightened up only when the schoolboys appeared on the beach. Then he would stand on the top step of the stairway and watch them at play until a fair-haired lad in a black-and-orange striped jacket would spot him and dash up the steps. Each time he would rush at such speed that his striped jacket, which he had flung over his shoulders, would stream out like a gaudy banner.

The gloomy stranger would change visible. He would cheerily meet the boy, and the two of them

nodding goodbye to me would go off, discussing their affairs with animation.

At first I thought they were father and son. But one day I heard the boy shouting to someone as he ran: "I'm going to meet my brother."

Later I learnt, from the brothers' conversation, that the elder was called Alexander.

What ensues took place about a week after I first saw Alexander. He came along at the usual time and sat down by a column, whistling a strange and somewhat harsh tune. I was reading, but without much concentration, because I knew Valentine Randin's "Song of the Blue Planet" almost by heart. From time to time I looked up from my book to glance at Alexander and it seemed to me that his face was somehow familiar.

There was a slight breeze. As I was turning the pages of my tattered book a loose page blew away and fluttered over the flags. It came to a stop almost at Alexander's feet. He picked it up and got up to give it to me. I got up as well and met in the middle of the colonnade.

This was the first time I had seen him so close and I found he was younger than I had thought. The wrinkles between his eyebrows gave his features a stern expression, but now he was smiling and the wrinkles had gone.

"Your book isn't very interesting it seems?" he said, giving me the page.

"It's just that I know it so well." I didn't want the conversation to end here, so I remarked, "Your brother's late."

"He was going to be late today, but I had forgotten."

We sat down together. Alexander asked me to

let him have a look at my book. I was surprised he did not know Randin's short stories, but I said nothing. As he opened the book and laid his palm across the pages to keep them from blowing away, I noticed a white forked scar on the back of it. He caught my glance and said: "It happened out there... on Yellow Rose."

Immediately I recalled everything. "The Snow Planet?" I exclaimed. "Alexander Sneg!" *

The unusual broadcasts, and special numbers of magazines with pictures of Sneg and his three companions—were all recent history, and all over the world people had spoken their names with admiration.

Before me I saw a man who had returned to Earth three hundred years after setting out from it. That in itself was not astonishing—after all "Banderilla" and "Mousson" had also been in space for more than two centuries. And though the story of the photon frigate in which Sneg had returned was more unusual than that of the others, I was not thinking of that just then.

"Alexander," I said, feeling I had come up against a strange riddle, "surely three hundred years... and the boy is not more than twelve. How are you his brother?"

"I know you're an archaeologist," said Alexander after a pause. "You must feel time better than others. And understand people. Will you help me if I tell you everything?"

"I'll try to help you."

"Only three people, besides myself, know about what I am going to tell you. But they cannot help

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* Sneg–snow.–*Tr.*

me. I badly need your advice. Only, where shall I begin? Though really, it all began on these steps."

II

It all began on these steps.

For the first time since the death of his parents Naal had come down to the seashore. The sea, brilliantly blue and foam-flecked and bordered by the great curve of the white town, was gentle and sunlit, as though no ship had ever perished in its depths.

Naal went down to the water. The nearer he got to the sea, the faster he ran down the steps, until finally he was rushing headlong toward the vast blue expanse with its sparkling spray and salty breeze.

He tripped over a stone and fell. He had not hurt himself badly, so, biting his lip and limping, he continued his descent. Like all boys, Naal believed salt water was the best cure for scratches and grazes, and had kicked off his sandals and was on the point of entering the water when, among the stones that were washed every now and again by the ripples, he saw a big black crab. Involuntarily he jumped back.

It is one thing to give way momentarily to fright, but quite another to be a coward. So in order to test his courage and revenge himself on the crab for his fright, Naal determined to catch the black hermit and throw him far out to sea.

The crab, apparently sensing danger, scuttled off and hid himself among the stones.

"Look out for yourself!" muttered the boy. He was engrossed in the sport and began to turn over a stone.

The flat stone splashed into the water, and the crab, seeing that he had been discovered, scuttled away even faster. But Naal was no longer looking for him. On the wet shingle he had seen a small blue box, round and smooth, like a water-worn stone. Where could it have come from, to be washed up on this shore by the sea?

The boy sat down on the shingle and examined his find. The box was tightly sealed, and Naal spent all of an hour scratching at it with the buckle of his belt before he was able to prize open the lid. Inside, wrapped in an old piece of paper, lay a strange badge: a golden spray with gleaming stars scattered among its leaves. The stem bore the single short word: "Search".

Naal was so absorbed in his examination of the badge that he forgot about the paper, and he would not have remembered it if the wind had not blown it on to his lap. He smoothed the crumpled paper out and saw that it was a page of a very very old magazine. Water had not soaked through into the box and the paper was not spoiled.

Naal began to read it deciphering the old type with difficulty, and his face suddenly became very serious. But he went on reading, and at the bottom of the page found words as startling as the loud and sudden twang of strings.

When the schoolboys came to the shore two hours later, Naal was still sitting in the same place, his elbows resting on a sun-warmed rock watching the white crests rising along the coast.

"We've been looking for you," said an older

boy. "We didn't know you'd gone to the beach. Why are you alone here?"

Naal did not hear him. The wind had grown stronger and the waves were getting louder. Do you know the noise of the waves? First there is a swelling sound as the wave comes rolling in. Then it breaks and crashes on the rocks, and the water spreads out and, hissing, sweeps up the shore. And it is followed by another.

III

Nothing in particular distinguished Naal from the other schoolboys in the South Valley. Like all the others, he was fond of swinging high and dangerously close to the gnarled and twisted trees, and of playing with his ball in the sunny copse. He was not very fond of studying the history of the discovery of the great planets. He could run faster than many of the boys, but was not a very good swimmer. He would join with pleasure in any game, but he never came first. Only once had he done something that not everyone could have done.

A springy branch of a bush growing near the shore had torn the badge from his shirt, and the golden spray with its blue stars had fallen into the sea. Through the transparent water he could see it sinking to the bottom. Without a moment's thought, Naal had dived from the six-foot embankment, by good fortune missing the sharp rocks below.

He soon came out on the beach, holding the badge in one hand, and without saying a word started squeezing his shirt out with the other.

No one knew where he had got this badge and why he treasured it so much, but no one questioned him. Everyone can have his own secrets, and since the loss of his parents Naal seemed to have grown much older and did not always answer the questions of his classmates.

Outwardly nothing very much had changed in his life since he learned of his misfortune. Even before, he had lived most of the time at school. Both his father and mother were authorities on ocean deeps and were often away on expeditions. But now he knew that the bathyscaphe "Reindeer" would never return and never again would someone appear at the end of the walk to whom he could rush at top speed, forgetting everything else in the world.

Months had passed. There had been quiet mornings with school lessons, and days full of sun and noisy games, and sparkling rain. Perhaps he would have forgotten his grief. But one day the waves washed the small blue box ashore by the Old Steps. Wherefrom, he had no idea. Only it was not a relic of the lost bathyscaphe.

At night, when the windows reflected the orange gleam of Ratal Lighthouse, Naal would get the crumpled page out from the blue box. He needed no light: he knew every line by heart. It was from a very old magazine, published about three hundred years ago and it told of the setting out of the photon frigate "Magellan".

The textbook on the history of astroflight spoke of this ship briefly and drily: the "Magellan" had set out for one of the yellow stars with the aim of finding a planet like Earth. Apparently, the

crew had used information about this planet, obtained from the wrecked frigate "Globe", which had not been correct. The "Magellan" should have returned after a hundred and twelve years, but there had been no news of it. The young astronauts, stirred by legend and lacking experience, had obviously perished without achieving their aim.

The textbook didn't even give their names. Naal had learned them in the page he had found. The captain's name was Alexander Sneg.

Naal had heard from his father that one of their ancestors was an astronaut. And when, on the beach that day, he had read the name "Sneg", he had felt both pride and resentment—resentment at the textbook for its dry and probably incorrect words about the cosmonauts. There may have been many reasons why the frigate was lost. And was the crew to blame?

"What if they didn't find anything when they reached that yellow star and continued their flight? What if... what if they're still flying?" thought Naal, arguing with the book. But at this thought he suddenly screwed up his eyes, as though frightened by his own thought. He conjured up the long shady walks in the school park and at the end of it a tall man in the silvery jacket of an astronaut, a man to whom he could run, forgetting everything else in the world.

And what if he returned? He might still return. Time passes many times slower in a spacecraft than on Earth. What if the frigate returned? Then Naal would meet, not an ancestor, not a stranger from another century, but a brother. Because at the bottom of the page from the magazine the boy

had read what someone had said to the crew of the "Magellan": "Don't forget the old names. You'll return in many years' time, but the grandsons of your friends will meet you like friends. The grandsons of your brothers will become your brothers. . . ."

Naal realized that all this was pure fantasy. Yet he vividly pictured to himself how it would happen. It would be morning. He saw this morning clearly—the bright sun, already high overhead, and the sky so blue it was reflected on the white buildings, the white clothes, and the silvery sides of the frigate. Auxiliary rockets had just landed the spacecraft gently on the field of the cosmoport, and this huge astrofrigate—a glittering tower with a black crest one hundred and fifty metres high—stood still, resting on the black cylinders of the photon reflectors. The luminous letters in old-fashioned script of the name "Magellan" stood out distinctly on the crest. Naal could see the tiny figures of the astronauts descending slowly by the spiral gangway. Now they would set foot on land and walk towards the people meeting them. Naal would be the first to welcome them, he would get in front of all the others. He would ask at once which of them was Alexander Sneg. And then. . . . No, he wouldn't say much. To begin with he would just say his name. For he, too, was a Sneg.

Naal was not used to concealing his joys and his sorrows. But he spoke about this to nobody. For, without willing it, he had begun to dream of a miracle—and who would believe in miracles? But sometimes at night, watching the gleaming cosmodrome beacons, Naal would get out the

crumpled page. Everyone, after all, has the right to his dream, even if it's unrealizable.

There are no miracles; but by a strange coincidence, that very year the Fifth Pilot Station received a signal that stirred the whole of our planet: "Earth.... Send me return signal. I am coming in. I am 'Magellan'."

IV

The moon had not yet risen, but the upper part of the Power Ring had shown itself above the hills as a steep irregular curve. Its diffused yellowish light shimmered through the window and lay in a broad band on the carpet.

Naal switched on his wrist radio, but there was nothing new. The boy could wait no longer, however. He hesitated a moment, then jumped out of bed, and was dressed in a flash. Throwing his jacket over his shoulders, he went over to the window. It was half-open; it was never really shut because a crimson Martian convolvulus, clinging to the ledge with tiny thorns, had found its way into the room. The slender stalk would have been cut in two if the window had been shut tight.

Outside the window the bushes, wet from the recent rain, glistened in the light of the Ring. They cast a barely perceptible greenish reflection on the white walls and broad panes of the school buildings. Above the hills an orange ray quivered on the thin clouds and died away: Ratal Cosmodrome was signalling to someone again.

Naal pushed the glass of the window aside and stepped out on to a well-trodden path.

The Head of the school, Alexei Oskar, had not yet gone to bed, and was reading. Fresh air, smelling of rain burst through an opened door and stirred the pages of his book.

A boy stood in the doorway.

"Naal?"

"Yes."

Stammering slightly and hurrying to finish the conversation, Naal told his story for the first time.

Oskar rose and turned toward the window. Contrary to general opinion, he did not consider himself an experienced teacher. He was simply gifted with the ability to make the right decision at the right time. But now he was at a loss. What could he say? Try some explanation or talk the boy out of it? But could he? And if he did, would it be right?

The Head said nothing, but time was passing, and he could stay silent no longer.

"Listen, Naal," he began, not yet knowing what he would say next. "It's . . . night-time now. . . ."

"Oskar, let me go to the Summer Coast," said the boy quietly. It was not even a request. There was a yearning in his voice like that irrepressible longing for Earth that makes astronauts perform desperate deeds.

There are times when ordinary ideas and rules are powerless. What could Oskar say? Only that it was night-time and that he ought to wait till morning. But what was the use of that?

"I'll drive you to the station," he said.

"There's no need to. I'd rather walk. Alone. . .".

The boy went out.

Oskar went over to the videophone, called the Summer Coast, and dialling the number of the

pilot's station, frenziedly pressed the button for urgent calls.

No one answered. Only a robot said calmly: "All is well."

Journey by night

I

It would have been better if he had not taken that road.

As a short cut, Naal had decided to get to the station across the hills. In a quarter of an hour he had reached the pass. Above the rounded summits hung the white moon in the bright ellipse of the Power Ring. To the right the beacons of Ratal were winking slowly. To the left, partly concealed by a line of low hills, shone the lights of Konsata, stretching in a broad semi-circle; and behind them, like a misty wall, stood the sea, shimmering faintly in the moonlight.

The whole valley was crossed by an old viaduct—the huge black Bridge of Ratal.

So far Naal had not been afraid of the meeting and had no doubts about his decision. The news of the "Magellan" was too unexpected and wonderful, and his happiness left no room for doubts.

And he felt no fear until the moment he first saw the viaduct. Naal could not have explained why he began to have qualms. Perhaps it was that the two-hundred-metre-high arches which stood like gigantic gates across the road were too dark and enormous. They reminded him of the inconceivable magnitude of everything connected with space, of the distances traversed by the "Magel-

lan", of the three centuries.... "The grandsons of your brothers will become your brothers!" Anyone could have said anything three hundred years ago!

The black supports of the viaduct stood like a double line of Atlantes and mutely questioned the boy: where was he going? Why? What absurd ideas had got in his head?

Naal looked back as though hoping for support. But the lights of South Valley were hidden behind the hill now.

He stopped in his tracks for an instant and then, all at once, dashed towards the viaduct, running straight toward it through the tall, damp grass. Some prickly plant scratched his leg, and he stopped vindictively tore it up by the roots and then ran on. Faster, faster, so that throbbing fear would not catch him! In a minute he was crossing the broad band of shadow and would leave the black gates of Ratal Bridge behind.

II

The carriage of the Circle Express, which passed through Summer Coast to the northern tip of the continent, was empty. Naal made himself comfortable in the seat and watched the darkness fly past the windows at five hundred kilometres an hour.

He was tired. At any other time he would have fallen asleep, of course, but that fear, like a boring tune, kept ringing in his years: "What if he doesn't answer me? Or if he thinks it's all a joke? What interest is a kid to a space hero just returned to Earth after three hundred years?"

The boy suddenly pictured to himself the immense field of the cosmoport filled with thousands of welcoming people. Thousands of greetings, thousands of hands stretched out to be shaken, and what would he be doing there? What would he say?

And as suddenly the thought came into his head that he must not spend the night in town, waiting for morning and landing of the spaceship. He must tell Alexander everything immediately. "Pilot-5" was keeping in touch with the frigate. The station was forty kilometres from Summer Coast. It would only take another five minutes.

Waiting for the next revolution, Naal alighted on the moving circular platform. As the circles' speed slackened, he jumped from one to another until he reached the stationary centre—then down the tunnel from the platform.

A dark field lay before him. Behind shone the dim lights of the platform; in the distance in front he could see the luminous blue spire of the pilot's station. A breeze was blowing and its gentle murmur soothed Naal for some reason or another. Striding through the long grass, he made straight for the spire.

It had obviously been raining here too quite recently. The wet blades stuck to his knees. The breeze was warm and damp.

Soon Naal came out to the road and began to walk faster. The wind, too, blew faster, trying to tear the light jacket from his shoulders.

III

Pilot Station 5 had long ceased to give any detailed information. To all inquiries the robot-

phone replied briefly: "All is well." Many people tried to tune in on the spaceship's wave, but failed: no one knew the old system of broadcasting.

The first communication about approaching photon frigate had been received from the intermediate station on Jupiter. But now Earth was in direct touch with the ship. The pilots did not leave their station for a minute. Three were on duty at the vector beacon, a fourth slept in an armchair by it. The crew of the spaceship had already transferred control to Earth, and it was up to the pilots to land the frigate on Coast Cosmodrome.

Only a few hours ago Sergei Kostyor had established two-way sound communication with the frigate. But so far the crew had transmitted no other information than data on the automatic system needed for landing.

The pilots brought the ship into a circular orbit, and it hung above Earth, a satellite with a twenty-four hour revolution.

Sergei had finished transmitting his coordinates, when Miguel Nuevos said:

"Somebody's been signalling for over an hour and wants a reply."

"Somebody's got insomnia," retorted Sergei without turning round. He was intently following the vector that was crossing the black spot of the cosmodrome on the luminous map.

"It's an urgent call—six frantic signals. That's not just curiosity."

"If it's important, why don't they get into direct communication?"

"I don't know."

A few minutes later Sergei himself heard the pips of the urgent call. But neither he, nor the

other two pilots on duty at the parallel transmitters, could go to the videophone.

"Misha, you might answer, after all," Sergei pleaded. But Miguel had already fallen asleep in his armchair.

The signal was not repeated.

Another half hour passed. The automatic instruments on the ship had been given their final instructions. Sergei closed his eyes with relief. But the red line of figures still danced before him and his eyelids ached with fatigue.

At that moment somebody touched him on the sleeve. The pilot took his hand from his eyes and saw before him a twelve-year-old boy, fair-haired and sunburnt, in an unbuttoned striped jacket, with a gold badge on his pale-green shirt and fresh scratches on his legs. The boy was looking up at Sergei, and wanting, apparently, to explain everything in one breath, said a few words, whose meaning the pilot did not immediately catch.

"What are you talking about? How did you get here?" asked Sergei.

When he had reached the central building, Naal had at once discovered a door and found himself in a long narrow corridor, down which his footsteps echoed hollowly. The floor was as smooth and shiny as glass and reflected the high ceiling. As he walked down the corridor, that feeling of alarm began to ring again in Naal's ears, and became a steady whine. He began to feel anxious again, a lump came into his throat. Naal felt his heart thumping unevenly, like a ball bouncing downstairs.

At the end of the corridor there was a sharp bend, leading to a broad staircase. Naal went up,

stopped for an instant with his hand raised, then, making up his mind, pushed open the frosted transluscent doors.

He saw a round hall with low walls and a transparent cupola criss-crossed with meaningless white lines. The stars could be seen through the grid of these lines. The floor, which was inlaid with black and white diamonds rose slightly in the centre, where there was a small dais. Three men were standing on it in front of a black cone-shaped apparatus. Not far from the dais a fourth man was sleeping in one of the armchairs scattered about the hall. The men at the apparatus were talking, and their voices sounded hollow and unnatural. Naal heard every word, but could not understand what they were talking about. Fatigue, probably, had made him slightly giddy and everything had somehow become unreal. He walked across the black and white diamonds to the centre, mounted the dais, and took one of the pilots by the sleeve. The man turned, and by the expression of astonishment in his face, Naal realized he had not heard his footsteps.

Then, in order to explain everything at once, the boy said: "I've come to meet my brother."

It was like a dream. Naal was telling his story and heard his own voice, like someone else's echoing and vanishing in the great hall. He did not remember how long he talked. Probably not very long. The lights on the control panels by the circular walls were flickering, and the blue zigzags on the screens were all the time rapidly changing their design.

"What do you think, pilot? He won't refuse to answer?" asked Naal, throwing off his torpor for

an instant. A short silence followed. Then someone uttered a phrase which for its simplicity and banality, was quite out of keeping with what was happening.

"What a business!"

Somebody was trying to wake the sleeper. "Misha! Miguel! Get up! Listen!"

Flashes were dancing rapidly on the screens, and the senior pilot, who was called Sergei, said suddenly, "You're asleep, sonny."

He took him up in his arms and laid him in a big soft armchair. But Naal was not asleep. He was watching the dancing lights and heard the words echoing under the dome:

"A man. . . ."

"Three centuries. . . ."

"He wasn't afraid. . . . And what if?"

"He's asleep."

"No."

The man who had said "no" asked Naal: "What's your name, spaceman's brother?"

"Naal."

He did not hear their question repeated, but he felt the pilots had not understood, so he said:

"Nathaniel Sneg."

"Sneg!" he heard voices say.

"A strange combination."

Naal wanted to say "There's nothing strange about it. I was named after Nathaniel Leeds, captain of the bathyscaphe 'Light'."

Somebody moved the armchair and said: "He's asleep."

"I'm not asleep," said Naal and opened his eyes. "Pilot, has the 'Magellan' replied?"

Sergei bent over him. "You go to sleep. They

said they'd meet you in a week. The crew have decided to land by rocket in the forest zone. Apparently they don't want a noisy welcome. They've missed Earth and the wind, and the forest so much. In a few days they'll come to Summer Coast on foot.

Naal's dream was dwindling fast.

"And me? And the people? Don't they want to meet anyone?"

"Don't worry," said Sergei. "They've promised to meet you in a week, haven't they?"

Naal saw now that the hall of the pilot's station was not so very big. The screens were dimmer and the sky above the transparent cupola had become low and cloudy.

"Where are they going to land?"

"They asked us not to say."

"Can't I know?"

"White Cape Peninsula."

Naal got up.

"Stop here for the night," said Sergei. "In the morning we'll decide what to do."

"No, I'm going home."

"I'll go with you."

"No."

So it was all over. It had been a silly fairy-tale he'd been foolish enough to believe in.... Three hundred years....

He did not wait to hear what else the pilot had to say and strode off quickly, then ran across the black-and-white diamonds of the hall, down the glassy floor of the corridor, and along the gravelled path. Once again he found himself in the dark field and went on towards the distant platform.

He walked slowly. Why hurry? "We'll meet in a week." But if somebody wants to meet someone else, he doesn't even wait an hour.

IV

Maybe it would all have ended there. But about a hundred yards from the station Naal passed a stand of "bee" planes. And an idea popped into his head that seemed quite ridiculous at first. But, having walked a little further, he stopped. "Perhaps Alexander couldn't reverse his decision about landing, when he heard everything from the pilot? He isn't alone, after all," thought Naal.

Feeling his heart thump with this new hope, Naal went back hesitatingly to the machines. He would be twelve in only three months and that was the age when you were allowed to pilot a "bee" on your own. Could he break the rule?

Still undecided, he got into the cockpit and pulled down the protective hood. Then he checked the engine. Yellow lights twinkled encouragingly on the controls panel. Then Naal took off on the horizontal propellers and immediately turned the "bee" to the north-east.

The high speed would enable him to reach the White Cape in two hours.

He may have fallen asleep during his flight. At any rate, it seemed very short to Naal. There was only one thought in his head: "I'll go to him and tell him who I am. I don't care what happens."

If he were met with cold stares, he would get into the cabin without saying a word, and take off, and fly south-west.

Trouble started when the "bee", having crossed the gulf with the stars reflected in it, was flying above the dark forest towards the cape. The east was beginning to turn blue, but at the zenith the sky was still dark. Somewhere up there hovered the "Magellan", abandoned by its crew.

Naal tried in vain to see lights down below or, at any rate, the darkcone of the landing rocket. Twice he flew to the tip of the cape just above the tops of the trees. And then the engine began to fail. Its batteries were exhausted. The lad realized he had taken a machine that was not ready for flying. To get a last broad look at the dark forest below, Naal began to climb on the horizontal propellers, and continued to climb until the engine failed. The propellers stopped, and the "bee", spreading its wings, glided to the ground.

Naal realized his mistake too late. Down below was dense forest, and it was quite impossible to make a landing by gliding.

But for some reason he did not feel very frightened. As he watched the trees rushing past right under the wings, he tried to level his flight. But when he saw the black tree-tops in front of him, he automatically applied the brakes. There was a crash, a series of violent jolts, then a softer one. The back of the seat hit him between the shoulders and something hard pressed against them. Some fragrant dry stalks clung to his cheek. "Where's the rocket?" thought the boy, and collapsed on the grass.

The fourth sun

I

"Of course, neither the pilots nor the boy knew the reasons for our strange decision," said Alexander. "The reason was perplexity. Not the ordinary perplexity that can be caused by unexpected news, but a kind of helplessness and panic. What could we reply?

"I won't say anything about the flight. They are all alike, unless there's an accident. Work and long sleep in a state of anabiosis. Half a century had passed on Earth and about twelve years in the ship when, having gone into orbit round Yellow Rose, we at last approached the planet.

"At first we felt the bitterness of an unsuccessful search. Before us we saw a land of ice—without life, without the rustle of forests, without the splashing of waves. Shrouded in a haze of cold mist, the great bright yellow sun could be seen above the broken contours of the mountains. It certainly did resemble a yellow rose. The frozen ocean shimmered with pinks and yellows. The clefts in the rocks, the cracks in the ice, the shadows of the gloomy precipices—all were deep blue. Ice.... A cold glitter.... Silence.

"The only thing to cheer us up was the air—real, almost terrestrial air, only as cold as a mountain spring. The very first day we discarded our helmets and breathed it with our teeth clenched from the cold. We were heartily sick of the chemcially pure insipid air of the ship's compartments. I myself believe that is what causes nostalgia for Earth so agonizing that it's terrible even

to think about. But there, on the Snow Planet, we no longer suffered that so acutely. There was something congenial to humans in that frozen world, ice-bound by the cold, but we did not realize it at first. Each time we left the frigate, we saw only a kingdom of snow, rock, and ice."

II

They saw deep gorges clouded with a blue haze. The broad flat rays of the sun turned from orange to green as they penetrated into the ravines through fissures in their steep walls and broke up into hundreds of emerald sparks amid the broken ice. When the rays reached the bottom, the mass of ice crystals sparkled in a cluster of fantastic lights.

Through the windows of the "Magellan" the sky looked at night like a black wall with the broken outlines of blue constellations on it. At times the high transparent clouds would begin to shimmer with a yellowish light which streamed over the icy faces of the mountains, lighting up great rock cliffs in the darkness.

But yet it was not dead, this cold planet. Sometimes heavy clouds would come from the west, shrouding the orange sinking sun and sweeping the hideous black shadows off the ice. And then it would begin to snow, real snow, like that on the coast of the Kara Sea or around the cities of the Antarctic. It melted on the palms of their hands, turning to ordinary water. And the water would get warm.

And once, they discovered a valley in the southern hemisphere where there was neither snow nor

ice. There the rocks were bare, the stones silvery with moisture, and there was gravel on the banks of the unfrozen brook. A sparkling waterfall, surrounded by hundreds of tiny rainbows, thundered among the rocks. It seemed to want to waken the world slumbering in the cold.

Not far from the waterfall Kar discovered a small plant with black leaves clinging to the rock face. He took off his glove with the intention of pulling the slender knotty stalk, but the pointed black leaves suddenly jerked and bent towards his hand. Kar automatically pulled his hand back.

"Don't touch it," advised the cautious Larsen. "Who knows what it is?" But Kar had his own ideas. A sly smile flickered on his lips. He passed his hand over the little black shrub and once again its slender leaves bent towards him.

"It's attracted by the warmth," said Kar in a soft voice, and then he shouted to the biologist, who had fallen behind: "Thael! Here's a real discovery for you at last!"

At that moment the navigator did not fully understand the importance of his discovery.

In the evening they all gathered in the messroom of the "Magellan". There were five of them: blond, broad-shouldered Knud Larsen, good-natured and absent-minded in everything not connected with computers; two Africans—the merry little biologist Thael and the navigator Tey Karat, who was always called simply Kar; the pilot and astronomer George Rogov, who was fair-haired like Larsen, but swarthy like the Africans, and was the youngest member of the crew; and finally, Alexander Sneg, who was the reconnaissance nav-

igator and artist. Lately he had been so engrossed with his sketches that he had handed over command to Kar.

When they had assembled, Kar said: "It's a strange planet, isn't it? But one thing is obvious: if it weren't covered with ice, there'd be life on it. The sun, Yellow Rose, I mean, will thaw the ice one day: that's obvious. But we don't know how many millennia that will take. Should we melt the ice ourselves?"

He suggested firing four artificial suns above the Snow Planet in line with Vorontsov's system. This was an old and fairly simple system, which had been used to create atomic suns above Earth in the first decades after men, having destroyed all weapons, had been able to apply nuclear energy to peaceful uses. It was then that the ice of Greenland and the coastal regions of the Antarctic had been melted.

"But why four?" asked George.

"That is the minimum. You can't have fewer than four—otherwise all the ice will not be melted and eternal winter will once again spread over the whole planet."

But four suns would use up two-thirds of their remaining stellar fuel. That meant the cosmonauts would be unable to accelerate sufficiently and that they would not get back to Earth before two hundred and fifty years. They would have to spend the major part of the flight in a state of anabiosis—two hundred and fifty years. But they would have given men a planet which could become a new outpost of mankind in space. Their distant search would not have been fruitless.

"What do we need for this?" asked Larsen.

"Agreement," said Kar, looking round at everybody.

"Yes," said Larsen.

"Of course!" exclaimed Thael.

George nodded, without saying a word.

"No!" rapped out Sneg suddenly, standing up.

A few seconds of surprised silence passed before he began to speak.

He said that it would be stupid to turn the planet into an incubator. Men must not be afraid of bleak ice, of the fight with Nature in the unknown planet. Without struggle life lost its meaning. And then—what if the artificial suns burned out before all the ice had been melted? What would happen to the first inhabitants of the Snow Planet if eternal winter returned? But supposing the suns did not burn out. Supposing the ice did all melt. What would men see then? Bare mountains, treeless plains, grey deserts.

They listened to him, and there were moments when each one was on the point of agreeing with him. Not so much because his actual words were convincing but because his fervour and persistence were so persuasive. Sneg always argued in this manner when he was firmly convinced he was right. It was with the same fervour that he had insisted on Earth on his right to fly to "his star".

III

His friends remembered how he had stood before a pale, dry man in a large room in the Palace of Stars and said with fierce directness: "I am surprised that the Union of Astronauts could

leave the decision on such a question to you alone, a man incapable of believing in legends."

The man had grown even paler, but his irritation was manifested only in the slight hesitancy of his quiet responses: "Every youth who has been beyond the orbit of Jupiter considers himself fit for independent search and ready to fly to the centre of the Galaxy. It's ridiculous. Your head has been turned with fairy tales about the planets of Yellow Rose. Yellow Rose is an insidious star. It's tempting, of course; but it's an eternal truth—the fairy tales are fascinating."

"You pretend to know eternal truths, but you've forgotten one: in every legend there is a grain of truth. We believe there are planets. . . ."

Rotais bent his head.

"I shall permit myself to terminate this useless conversation. I see no foundation for your claim for an independent expedition of discovery. . . . And in any case I am very upset and it is difficult for me to speak. An hour ago Valentine Amber crashed in a hydroflier. He is at home now and I am in a hurry to see him."

But he was not in such a great hurry, apparently, because when Alexander arrived at the old astronaut's house, he found only the doctors there. They told him that Amber had refused an operation.

"I shan't be able to fly any more, and my life. . . . Well, it's been long enough, as it is," he had declared.

Silently Sneg entered the room where Amber was lying. The astronaut said to the embarrassed doctor, "Please go."

The room was in semi-darkness. The windows

were not curtained, but were covered with masses of apple-blossom. Alexander approached the bed. Amber was covered to the chin with a white coverlet. Over it lay his matted white beard. A bloody gash ran right across his wrinkled forehead.

"No one can understand me except you," began Alexander. "Other people may accuse me of callousness, obsession, egoism. But you and I can speak the truth to one another. You will never fly again."

"Well."

"They won't let our crew go exploring," said Alexander quietly. "Give us your right to a second flight, and we will go."

"To Leda? To my planet?" Amber moved neither his hands nor his head, but his eyes lit up with joy. "Is it settled?"

At that moment perhaps he saw the blue world of Leda, a planet whose mysteries have still not been entirely solved—with its ruins of turquoise cities, and white mountains rising above the purple masses of dense forests shrouded in clouds of poisonous blue-grey mist. But the marvellous vision vanished. Before him he saw once more the stern, tense face of Alexander.

"No, of course not. Not to my planet," muttered Amber in a hollow voice.

"Everyone has his own star," said Sneg.

He sat down by the bed and told his story briefly: about the latest despatch from the "Globe", the mystery of Yellow Rose, the plan for independent exploration that the five young astronauts had conceived, and his last conversation with Rotais.

"Leda needs archaeologists. But we are explorers. We want to discover a planet where the air is like that on Earth. Men need such planets."

Amber closed his eyes.

"Good... the right is yours."

"He won't believe me," objected Alexander, recalling Rotais' pale impassive face.

"Take my badge. In the blue shell on the table."

In this shell, which had been found on Leda, lay a gold badge with blue stars and the inscription "Search".

Alexander glanced at the badge, and then at the injured astronaut. For the first time his resolution failed him. He clenched his teeth and let his outstretched hand fall.

"Take it," repeated Amber. "You're right."

"Break the window," he said, when Alexander had picked up the badge.

"No, don't open it—break the glass. It's old and very fragile.... Good," he said, when he heard the crack of the shattered pane.

Alexander broke off a large branch outside the window and a ray of sun penetrated the room.

"A happy start!" said Valentine Amber, endeavouring by sheer willpower to suppress the growing pain in his chest. "May every one of you return to Earth!"

"That doesn't often happen."

"That's why I wish it."

Outside Sneg met Rotais and showed him the badge in his palm of his hand. Rotais shrugged his shoulder slightly and nodded his head, at once expressing veiled indignation at the young astronaut's behaviour and, forced assent. No one in the whole solar system could reject the right to a

second flight: a cosmonaut who had discovered a new planet and had returned to Earth could set out again in any expedition he liked, at any time, and on any spaceship that was ready to take off. He could also cede his right to another captain.

For one second Alexander had a flash of Amber's face, the face of the celebrated captain of the "Search", his wrinkled forehead with its bloody gash, and his deep-blue eyes that seemed to reflect the fantastic world of Leda. "To Leda? To my planet? Have you made up your mind?" The old astronaut had understood Alexander however. But Rotais?

Alexander turned and said in a cold voice to Rotais' back: "Inform East Cosmoport. We have chosen the 'Magellan'."

He did more than anybody for this flight. Yet it was more difficult for him than for any of the rest to set off. Each of them had relatives on Earth, but Sneg, alone, had a girl-friend besides.

To outsiders this silent friendship seemed odd. They were not often seen together, and they rarely talked about each other. Only their friends knew about their love.

A week before the start Alexander met her in a new sunny garden—what is now the Golden Park of Konsata. The wind was tearing off the leaves, and the sun was dancing on the white sand of path. The girl was silent.

"You knew I was an astronaut," said Sneg.

He could be calm when necessary.

Before taking off he gave her the gold badge.

Once, happening to put his head into the messroom of the "Magellan", George saw Sneg take

a small stereophoto and put it in front of him, staring at it and saying nothing.

"I'd put that picture away for ever," said George.

Alexander glanced up at him with a mixed expression of mockery and astonishment.

"You think everything will be forgotten?"

He covered his eyes with his hand and with a few bold strokes of his pencil dashed off a sketch of the girl with remarkable fidelity on a piece of cardboard.

"There."

Over seven years had passed, reckoning by "Magellan" time, since the start of the flight.

IV

And now Alexander Sneg, the most eager to go on this expedition, was fighting for the icy planet, as if destruction, and not rebirth, were awaiting it.

"A grey desert! Stunted shrubs! If there's no ice, what will be left? A dead land, dead rocks."

"Men will do everything!" returned Thael. "Men will do everything that has to be done."

"And there's something else," continued Sneg. "We have no right to deprive people of the world we have discovered here, because it is beautiful. Don't you understand that?"

He threw his sketches on the table. They all fell silent, when they saw once more what they had seen before, but had begun to forget oppressed by the domain of ice. The colours were extraordinarily true to life: the black-and-orange sun-

sets; the blue ravines with their luminous mists; the morning kindled golden sparks on the broken ice; the yellow sky with its great masses of grey cloud.

The pictures rustled slowly. At last Kar said. "Very well. But it's not right—cold and death for beauty's sake. What use is dead ice?"

"It's not dead," said Alexander, shaking his head. "It has its own life. Wind, streams, bushes. Everything here is awakening gradually. But there must be no hurry. Otherwise it will be a desert."

"There'll be no desert. There'll be an ocean, boundless and blue, as on Earth. There'll be enough melted ice for that. Waterfalls will roar. Just imagine, Alexander—thousands of silvery waterfalls cascading down the rocks in iridescent mist. Nature will still be severe, it will still have its own beauty, but there will be life as well. Surely that is the kind of planet we were looking for."

"There'll be an ocean and islands covered with forests," said Thael softly.

"Where will the forests come from? Will the black shrubs grow into trees?"

"Men will plant forests."

"On the rocks?"

"You're wrong, Sasha," quietly said George, who had hitherto been silent. "Remember Antarctica."

Sneg was going to reply, but suddenly sat down wearily, and said, "All right. I'm not arguing."

"You'll help with the calculations?"

"With the work, yes, but not with the calculations. What sort of mathematician am I?"

V

They worked a long time, using robots and pneumatic spanners. Then they put four landing rockets, surrounded by a network of magnetic regulators, into orbit. The rockets had no autopilots, so Kar and Larsen got into the cabins themselves and then baled out in life-suits. They did that twice. The four rockets, with stellar fuel RE-202-esane formed the points of a trihedral pyramid, within which hung the Snow Planet.

No one recalled the argument. Alexander worked with a will, and even made some calculations concerning one of the artificial suns. Each had his own sun, except Kar, who had taken on the general calculations and control.

When work was finished on the last day the crew of the "Magellan" gathered in a gorge, where the control station had been set up.

"Well... ye Gods creating spring," said Kar, rather too seriously.

"Go ahead," said Thael, and sighed audibly.

"Go?"

"Go on."

The signal was given. Three screens were lit by a blinding flash. Then mountains and masses of ice, illumined by two or three suns, appeared on them. But the opaque surface of the fourth screen remained white and impassive.

"Mine," said Sneg.

The fourth sun had not fired.

No one knew what had happened. Possibly, the system of magnetic regulators had gone wrong. The slightest jarring or impact with a meteorite

no bigger than a grain of sand might be all that was needed for the sun to blaze up in a few moments. But what were the chances that a meteorite would strike the rocket?

"What's it matter? There'll be an ice-cap, like there used to be in the Antarctic. What the devil, it'll be fine—the Sneg snow plateau!" exclaimed the ingenuous Larsen.

"Oh yes, it'll be marvellous," said Alexander drily.

An embarrassed silence followed. No one imagined of course that Sneg had deliberately miscalculated. He knew that himself. But why did it have to be his that should fail?

"I'll go up in a rocket and neutralize the system of regulators with a jet stream," said Sneg quietly and firmly when they had returned to the "Magellan".

"Let's go to bed," he added. "I'll prove it's possible."

"What, to go to bed?"

"To smash the controlling system of regulators and get away in time from the flash."

Larsen obediently sat down at the keyboard of the electronic brain. Alexander dictated.

"It's possible in principle, you see," he declared, when he had finished his calculations.

"In principle," grumbled Larsen. "Don't be a fool—you'll be burned up."

"Let's go to bed, Sasha," said George. "It's not all that bad." But everyone knew it was bad—very bad.

They had used up two-thirds of their esane. They could only get back to Earth in two hundred and fifty years. And they would return empty-

handed. By that time the cold would have the Snow Planet once again in its icy grasp, and when would men come here again and light atomic suns? Yet everything had been almost ready. Without that mistake, the crew of the "Magellan" would have brought news to Earth of a planet suitable for normal life. Men needed such planets—outposts of mankind in the boundless universe, jumping-off grounds for new, even more distant, leaps.

They were awakened in the night by a loud call signal. Alexander's voice, amplified by the receiver, said "I'm in the rocket. Don't be angry, lads, it's got to be tried."

"Sasha," said George. "We all beg you—don't do it. Damn the planet. Think of Earth."

"Nothing will happen."

"You're arguing again."

"No."

"Sneg! I order you to return!" cried Kar.

"Don't be angry, Kar.... But I'm the captain, after all."

"But you yourself wanted the planet to remain ice-bound," said Larsen timidly.

There was a sound like Alexander laughing.

"That's Kar's fault. He described the ocean, and waterfalls, and islands so well. And I'm an artist. I wanted to paint it all."

Kar swore softly.

"Switch on the videophone," said Thael.

Sneg did so. Everyone saw his face on the screen. He was whistling as he bent over the controls and seemed to be quite calm.

"Be careful," said George.

Sneg nodded, still whistling.

"Just before returning to Earth! Why are you doing it?" cried Kar in despair. "What if it blazes up right away?"

"You know what. But it's got to be finished."

The whine of the engine interrupted the conversation. The image on the screen jerked and then they saw Alexander's face, strained and distorted. Then acceleration stopped and the speed began to fall. At high speed, Alexander would not be able to turn the rocket and strike the regulators with a jet stream. They were all silent and saw nothing but his tense face. And then the moment came when a blinding white flash lit up the screen. . . .

VI

"How did you manage to escape?" I asked Alexander.

He looked gloomily at me.

"That's the point. My name is George Rogov. Sneg perished. Can you understand what we all felt when the pilot sent us the message about the boy? A little chap on Earth was eagerly awaiting for his brother. Perhaps it's difficult for you to understand. But we who had not seen Earth or people for so many years knew this feeling of longing and expectation very well. It's particularly hard when you know you won't meet a single familiar face. Three hundred years. You can't even trace the old names. And here was a brother! We understood the boy and his yearning for someone near and dear. It was very difficult to tell the truth. Impossible, in fact."

Thael showed himself the most resourceful of us all. The reply he sent to the station helped us to gain time.

"But that's no solution," said Larsen. "What'll we say to him afterwards?"

"What's the boy called?" I asked.

Kar told me. Then he looked at me with an odd expression in his eyes, but said nothing at the time.

The engine of the landing rocket gave out just above Earth, and we baled out in our life-suits.

It was still dark. The first blue of dawn was just beginning to show. I can't remember everything. There was a smell of damp leaves and earth. Thael stood pressing his dark face against a birch-tree, its stem showing white in the half-light. Larsen lay on the ground, exclaiming "Look! Grass!"

I was watching the sky. Suddenly, the bright yellow dawn began to blaze up, and the zenith became a pure deep blue, and it seemed to me that the sky was singing. I never knew that it could sing like millions of finely tuned strings. A light cloud above my head slowly took on a rosy glow. And then a sudden horror seized me. I thought that this was all another agonizing dream about the Earth, the dream that each one of us had suffered from when we were on the Snow Planet. This fear was like an electric shock. I lay down on the grass and closed my eyes. I clutched the root of a bush. It was rough and wet.

A moment later I loosened by fingers and opened my eyes. Once more the blue sky was ring-

ing above the forest. And mingled with this sound I could hear Larsen saying again "Look! Leaves!"

Then the sun rose.

Have you ever seen the sun rise out of the grass? You have to be lying down to see it. The grass looks like a fantastic forest above which a bright star rises. The dewdrops sparkle like coloured sparks.

Naal watched the sun through the grass. He remembered everything; he could even see the smashed "bee" out of the corner of his eye, but he felt no emotion, nor belated fear. Everything that had happened last night was like a confused dream, and the lad felt his dreams had been impractical.

When the sun was sufficiently high for its lower rim to touch the heads of the tallest flowers growing on the edge of the meadow, Naal got up. His head whirled a bit, and his injured shoulder hurt. But he had been lucky. The shock-absorbers had thrown him out on soft grass, and had fallen asleep without even trying to get up—he was so exhausted.

The boy looked slowly about him. There was no need to hurry. The forest stretched for hundreds of miles all round. The leaves were quivering in the wind.

Then he heard a voice full of joy and surprise exclaim behind him: "Look! A human being!"

Naal turned at the sound of the voice and was petrified. He saw men in blue space-suits with broad white straps crossing them.

With beating heart he cried: "Are you from the 'Magellan'!"

"Naal," said a swarthy fair-haired airman.

"I spotted him later than the others," said George. "And strangely enough, I seemed to know that boy. Perhaps I recognized myself as I was in my boyhood? There he was, turning eagerly towards us—a little fellow, fair-haired, his shirt torn on one of the shoulders, a bit of dry grass stuck to his cheek, his knee grazed. He stared at me with wide-open deep blue eyes. I think I called him by his name."

Suddenly Kar said in a loud voice, pushing me by the shoulder, 'Alexander, meet your brother.'

"Perhaps I acted selfishly," continued George. "But at that moment I quite forgot Naal was not my brother. You have to understand what it means to meet someone near to you on Earth, when you are not expecting it at all. But gradually the thought has kept recurring more and more frequently: had I the right?"

I did not understand George. Then he said, "Alexander fired the sun, the last one, which made it possible to destroy the ice. Now there are islands, and oceans there. Had I the right to deprive the boy of such brother?"

"A dead one?"

"Even a dead one."

"George," I said. "It's difficult for me to judge. Perhaps Alexander had other reasons for risking his life? Did he want to return? That girl. . . ."

George's lips curled in a slight smile. He obviously thought my question quite stupid.

"He did. He loved Earth. Who doesn't want to return to Earth?"

We were silent for a while.

"He was always whistling some old song," said George suddenly. "I only know a few words of it:

'Though the Earth is only a dot
In the impenetrable darkness of space,
It's good on Earth now, is it not?. . . .'

"If everything remains as it is," he resumed, "it will be even worse, I expect. I haven't just deprived the boy of a brother. I've deprived Alexander of a heroic deed. And nobody will know how the fourth sun was kindled."

"You've deprived yourself of a name as well. George Rogov is thought to have perished, isn't he?"

"My name has no value".

"Now take my advice. You asked for it. Let everything remain as it is. The fourth sun won't go out as a result, will it? You have to think of Naal as well."

"I'm thinking of him all the time. But what about Sneg?"

"One day people will learn the whole truth. By the way, you only remember three lines of that song. I know more: don't forget I'm an historian. It's the song of the explorers of Venus. This is the last verse:

'Let those who follow us take heed—
If we create new stars,
No fame, nor glory do we need:
We kindle them for men.' "

"But Alexander's memory! The memory of his feat! What he did is an example to the living.

Perhaps Naal will have to kindle his own sun one day."

I glanced at George. He was waiting for my objections. He wanted to hear them, because they gave him back his brother. "May be," I said. "But above which planet will he kindle his sun? Teach him to be an explorer—that's your duty as a brother. He'll kindle the sun himself."

The sun had set long ago. A half-moon, bounded on one side by an arc of the Power Ring, hung low above the water.

A clatter of footsteps on the stone steps interrupted our conversation. But in fact, there was nothing more to discuss.

They nodded goodbye, and went off, the astronaut holding his brother's little hand firmly in his own.

Before me, on a page torn from an exercise-book, lies the gold badge, whose history nobody knows. Naal gave it to me before we took off.

We archaeologists are flying to Leda, to the planet whose secret Valentine Amber had not fully succeeded in unravelling. It will be a long time before we return.

Perhaps in eighty years I will be met on Earth by someone in the crowd, someone I don't know as yet—an adult or a child, it does not matter. And he will say to his friends: "I'M GOING TO MEET MY BROTHER!"

At first he had peeped through a chink in the fence; then, jumping up, he had caught hold of its pointed palings, pulled himself up, and sat down on the horizontal rail. Night had fallen: the last traces of the pale twilight had disappeared from the sky beyond the horizon. When the boy closed his eyes, the road stretched before him like a landing strip and he saw the green forest; when he opened them, everything vanished in the dark. Only one spot in this hushed world was lit up. The house stood on the hill and somewhere far below, at a point where forest, sky, and the narrow path met, there was a fire. Great yellow flame, surrounded by the darkness, like the rim of goblet, flared upward and outward, smoke swirling in the empty space above it.

The boy looked back. Though lurred and indistinct the house was quite visible, and this gave him a feeling of security. He heard the hum of an engine: an aircraft flew past high up. The boy watched on the distant fire intently, then jumped off the fence, trying to make no noise.

The house was the last one in the village and the road downhill began just there. The dust, though cold on the surface had retained the warmth of daytime underneath. This discovery pleased the boy, and for a time he trudged on, digging his toes as deep as he could in the dust. Then abruptly he wondered where he was. He had gone a fair way, and when he looked back, he could see neither the summit of the hill, nor

his house, nor the other taller houses. The fire ahead was no longer visible either; another hill concealed it. The boy stopped. He saw the sky with all its little stars, looking so clean, even slightly moist and shiny, like a fresh paper transfer. He suddenly remembered the dim glassy sky of the big city, and no longer hesitating resumed his course, looking up from time to time in an endeavour to find Mars. His former feeling of security returned and made him happy.

He could feel no heat yet, but there was a strong smell of dry smoke; and every minute he expected to come upon the blazing torch behind the dark trunks of the trees. He was tired from the long ascents and descents, the fearsome nocturnal forest, the great shaggy arm of the fir-trees that kept shutting out the sky, the sharp twigs and low branches, the prickly shrubs and the gnarled roots. Drops of sweat rolled from his face and down past his open shirt-collar.

Holding on to the warm trunk of a tree, the boy stood on the edge of the clearing. A sphere as high as a three-storey house was swaying right in the middle of it, and glowing. The bushes at the edge of the clearing were still smoking, and the branches facing the sphere were charred, but there was no more fire.

"An interplanetary spacecraft could even burn up in the atmosphere," the boy said to himself.

The sphere was cooling rapidly. When the boy had been watching it from the top of the hill all he had seen was a shapeless orange clump; as he approached, it had become a pale rose and its colour continued to change. Not so long ago the

boy had been on an excursion to a factory: the pieces of metal taken from the furnace of the forge had cooled in just the same way. The envelope of the sphere became paler and paler and bluish streaks streamed down it, running into one another. The rose glow died away and it became dark. The sphere had probably become quite cold already. Then a searchlight blazed out on its summit, and its beam, brighter than any earthly one, but not at all blinding, began to turn like a gigantic radius. It came close to the boy, but he did not move away even when it fixed itself on him. A chink appeared in the side of the sphere and, as it grew rapidly wider, the boy realized that a hatch was being opened. The opening was illuminated from inside; a ladder appeared in it and lightly unrolled down to the ground.

"Our gangways are driven up," the boy thought. He went over to the ladder and felt its edge. It was hard to believe it had just unrolled itself, the surface he touched was so hard.

The light in the aperture grew brighter, and IT appeared, and slowly descended its steep gangway. Its figure was upright like that of a human, and two arms, like human arms, hung one on each side of its body. But the boy did not like its face. It was all bumps and folds and did not resemble a human face. It reached the bottom of the gangway and stopped, as though pausing to consider and listen; then it stepped down on to Earth and threw the mask off its face.

"I congratulate you on your safe arrival," said the boy with a friendly smile. "I know why you have such an ugly space-suit. I read a book a while ago about bats—they have the same folds.

That's so they can find their way about in the dark, with the aid of ultrasonics."

The unknown being observed the boy in silence. It had large eyes—about twice the size of human ones—but their expression was pleasant.

"Where have you come from?"

Out of his pocket the boy took a creased, much thumbed stellar map of the sky. With scarcely a glance at it, the newcomer raised his hand and, like a conjurer, displayed on his palm an object of some kind, that he handed to the boy. It was a three-dimensional model of the solar system. It was incomprehensible how everything was held in position there, inside the transparent case, but there shone the Sun with the planets orbiting around it. The boy found Earth's orbit and wondered at the power of the distant telescopes, that had been able to make out on a tiny sphere the familiar outlines of the oceans and continents, and even pick out big cities. The long thin finger of the stranger pointed to Mars.

"You're a Martian!" exclaimed the boy overjoyed. "That's what I thought somehow. Well, hello! Let's introduce ourselves! I'm Sasha, an inhabitant of the Earth." He pointed to himself.

"Oo," said the Martian, doing the same.

The boy held out his hand, and the Martian his. His firm grip did not hurt the boy.

"Come on," said the latter, pulling the Martian along. "People must know as soon as possible about your arrival. They must have seen your spaceship—they couldn't have taken it for a shooting star. They may even be searching for us already: do you hear the hum of the engines? But they can't see anything because of the trees.

There's a village not far away with a telegraph office and all sorts of people."

He got out a bit of pencil and wrote on the back of his stellar map: "Not to be touched until the arrival of the Academy of Sciences," and stuck the note on a thorn on a nearby bush. Then he glanced for a last time at the clearing where the greatest event in his life had taken place: the dark trees seemed to have parted and he saw all the great cities of the world and crowds of people rushing about.

The Martian waved his hand; the gangway rolled up and disappeared through the opening, the door closed, and the light on top the sphere went out.

"We'll be back soon." The boy started off, the Martian following. Thoughts were racing through the boy's head.

"I ran here without looking where I was going, and I didn't mind getting scratched; but now we'll go right round until we find the path, so that not a single twig touches you. Because you are a guest of Earth. Oh! How I love you, Martian! How I've been waiting for you! I believed you'd already visited us once before but, not having met anyone of equal intelligence, had flown away again. And now you're here again! You aren't at all cruel, Martian, you're kind. You won't destroy anything of ours and you won't try to conquer us, because you're a highly-developed being, you know. How I waited for you, Martian! If you hadn't flown here, I'd have found the way to you myself. In ten, fifteen, or twenty years I'd have come. May be we'll fly together yet—to some other galaxy, perhaps."

They were following the path, the boy pushing branches aside and holding them back and making sure the Martian did not stumble over the tangled roots. It was already getting light, and the dew was glistening, and the birds singing, and a mist rising from the forest ravines. The boy kept glancing at the Martian, wanting to see how he liked the colours, smells, and sounds of Earth.

Three helicopters were hovering above the edge of the forest. No sooner did the boy and the Martian come out into the open, than the helicopters began to descend, rope ladders were flung out, and civilians and military men got down. The first to land was a man in the black cap of an Academician and a bushy grey beard that was blowing about in the wind. Taking the Martian by the hand, the boy ran to meet them.

"This is a Martian!" He led his companion up to them and stepped back.

The Academician lifted his cap, the military men saluted, the cameras clicked.

"His sphere is over there in the forest," said the boy. "I saw the glow at night."

"Good lad!" The Academician pulled out a big notebook with gold letters on it. "Your name and address? I shall inform all the newspapers. Tomorrow we shall have a big expedition here and I shall wire for you. But now, get home."

He motioned the Martian towards the ladder. The Martian nodded and got into the cabin. The Academician followed him, and all the rest of the men ran to their machines. The blades of the helicopters began to revolve faster and faster and ripples swept over the grass. The boy raised his head:

"Goodbye, Martian! I'll be waiting for you! Goodbye!"

The helicopters made straight for the red rising sun. It was getting larger and larger, as in the window of a spacecraft, and fiery spirals wound round the blades of the helicopters.

A rescue team had been quickly got together. Six men went by road to the forest, going off in different directions to start searching for the boy. It was a fine day, the sky was clear, clouds of dust were raised as loaded lorries one after the other passed along the road. They did not have to search long: they found the boy at the very edge of the forest. He was fast asleep under a bush; tall blades of grass swayed above the pale untanned face of the city-dweller. His bare legs below his shorts were a mass of scratches, and his light sandals were grimy with ashes. His breathing was irregular, and he twitched in his sleep, and he was scratching with his hands. A doctor bent over him, listened for a moment, and then straightened himself.

"It's all right. He's only asleep."

The men—all in high rubber boots—stood around motionless, looking serious. They did not know whether to wake the boy and give him a welcome scolding then and there or to sit down and have a smoke, and wait.

"I can't understand it, I just can't!" The father was still bewildered, but was beginning to recover his ability to think. "I come here for my holiday and bring him with me, and the third night he runs away. Where to? Why?"

"He's only a boy." The doctor shrugged his

shoulders. "Perhaps the fire attracted him? A haystack burned down on the clearing. It took him some time to get there and to come back again. It was all quickly put out."

E. VOISKUNSKY
I. LUKODYANOV

THE BLACK PILLAR

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 woodpulp. 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 omelet 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 milli-

metres. 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 be-

cause 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.

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

* 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.

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 thermoplasmic 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 thermoplasmic 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 polymerized 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 Neftyaniye 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 Macpherson, 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 Neftyaniye 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.

III

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 reducting 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 mag-

azine. 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 blowout 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 Ali-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 guests through the taut ropes, whistled a pirate song.

The pointer on the load indicator crept trem-

bling 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.

"Nitroglycerine," 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—Macpherson'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.

"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 well.

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 by 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 *? 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

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* Bilirsen–do you understand? (Azerbaijanian).–*Tr.*

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.

IX

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

"Señores, 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, Señor 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 PQK-6A. It cuts through the toughest material in a flash."

"PQK-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.

"Señor Macpherson!"

"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. Macpherson, 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, Señor 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.

"Señores," 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, Señores, 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 grunpy "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 entubación!" * 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 of his chair.

Kravtsov helped him to get up.

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* The casing (Spanish.)–*Tr.*

"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, Señor 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 Bra-

mulla. "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, Macpherson? 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, Señor 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

* Balam–sonny (Azerbaijanian).–*Tr.*

puckered and crackled like tin. As they went, they pushed a truck with the photoquantum 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 laryngophone pressed against his throat carried his voice to the helmetophones of his companions.

Chulkov, Jim Parkinson, and the tall Romanian, whose name was Gheorghi, 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 Gheorghi came up and got hold of Jim, and Kravtsov of Gheorghi, 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.

XIV

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 'Fukuoka'?"

"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.

"Señores, 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 ve-

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* Cumulative shell–a shell for directed explosions.

randah 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 Gheorghi. "I held on to Jim, so. . ." and Gheorghi 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.

"Señora, 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, Señora, no! Whenever you like, but not now, please! Excuse me, Señora!" 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, Señora—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."

"Señora," 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 Macpherson 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 magnificant 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 writ-

ten 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 surveyer'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, Macpherson?" 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. Macpherson 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 Macpherson 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 the 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 diffi-

cult: 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 Mendeleyev 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. "Macpherson 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 Macpherson 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 maître, 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 communique 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 communique?"

"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. Nat-

urally, 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 communique.

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 collossal 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 cur-

rent 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 sparking 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 Sanson 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 risque 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!"

"Macpherson'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! Macpherson'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!" * 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

* You son of an ass, ashes on your head! (Azerbaijanian).—*Tr.*

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 labora-

tory 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," interacted 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 Macpherson'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 Macpherson," 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 protonic or neutronic matter?"

"No, Mr. Macpherson. 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." Macpherson 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

* Bahadur–hero (Azerbaijanian).–*Tr.*

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.

"Macpherson 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 deck 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 insu-

lators, 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 Gheorghi, 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 your 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."

"Macpherson 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 motorboat? 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 inter-

jected. "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 Reuter'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 flags. 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 flags, 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 Maru". 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 ap-

paratus, 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 pluto-

nium 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 Macpherson. 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. Macpherson!" 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, Macpherson! Pull yourself together and apologize at once to Academician Tokunaga!"

Tokunaga touched Morozov's sleeve.

"No," he said in his high-pitched voice. "Mr. Macpherson 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 Olovyannikov.

"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 deal-

ing 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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