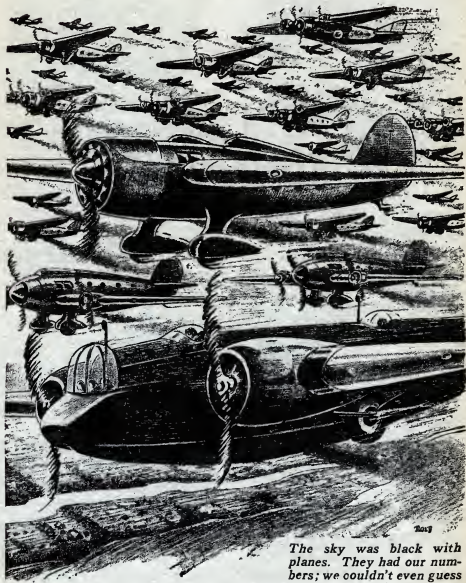


TWELVE EIGHTY-

*Colossal forces vie in combat
such as only super-science
can conceive and understand!*



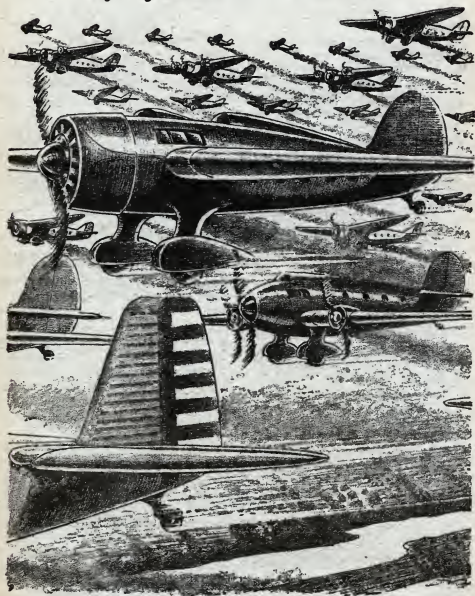
*The sky was black with
planes. They had our num-
bers; we couldn't even guess
at theirs!*

ASTOUNDING, 1937

SEVEN

PART ONE

A Thought Variant Epic
by JOHN TAINE



DOWN the long mahogany table Secretary Winters glanced, taking in the serious faces of the five men who had been hastily summoned to meet the President in secret conference. His own long, bony face, with its blue clean-shaven jaw and bushy black eyebrows, usually forbidding enough, was to-day sufficiently overcast to satisfy his bitterest enemy.

"Gloomy Winters," as his fellow cabinet members called the dour secretary of foreign affairs behind his back, was cordially liked by his associates, and as cordially hated by his foreign competitors, for his glum, uncompromising caution. No glib diplomat ever wormed more than a grudging "Fine day" out of the taciturn secretary of foreign affairs.

"We're all here," he rasped, as if he hated to admit even that much.

A look of mild surprise passed over the faces of the other men. The sandy-haired man with the pink cheeks and mutton-chop side whiskers at the foot of the long table spoke up:

"The President not coming?"

"No," Winters growled.

"Why not?" the other persisted.

"Doesn't want to."

The inquisitive one—Archibald Redding—secretary of commerce—subsided. Nothing was to be got out of Gloomy Winters on such a day as this. The lean man at Winters' left, whose white summer uniform and gold braid proclaimed the admiral, turned courteously to Redding.

"The President decided he needed a swim in the new pool," Admiral West explained. "Shouldn't mind a dip myself instead of sitting here stewing."

General Green looked up sharply at the suave admiral, but said nothing. As chief of staff of the army he frequently had to discipline himself to avoid speaking out his envy of the navy which was now getting all the appropriations and most of the publicity. The admiral's

playful tone irritated the precise general intensely. The tight collar of his uniform suddenly grew tighter, but he held his tongue. His turn would come presently, when they got down to business. Then he could make the facetious admiral long for a cake of ice to sit on. It remained for the meek little civilian with the shining bald head and the thick rimless glasses to pursue the inquiry.

"But I understood the President was to be here," he objected mildly. "Otherwise I shouldn't have come. There's plenty to keep me busy at the bureau," he added significantly.

Senator Atkinson, fairy godmother of the air defense, nodded his bushy white head. "Plenty!" he agreed. His blue eyes snapped, and his parrot beak of a nose seemed to grow sharper. "And you fellows had better do it in a hurry, Dr. Lawton, if you don't want to be blown out of your beds some moonless night. They've got our number, and you can't guess theirs."

While Gloomy Winters listened in abstracted boredom, Lawton, chief of the bureau of standards, began a fluttering defense of his own fruitless efforts and those of his baffled colleagues to tell the army and the navy what they most urgently wanted to know. Senator Atkinson sat grinning like a sardonic eagle while the agitated scientist talked himself out.

"It isn't fair," Lawton concluded somewhat lamely.

"What isn't fair?" Admiral West asked sympathetically.

"All you fellows jumping on the bureau when you can't——"

"What?" the admiral challenged when Lawton stopped abruptly.

"I'll answer for him," General Green snapped, glaring at West. "Until we stop falling down on our own jobs we have no call to criticize Dr. Lawton."

Admiral West nodded. "I agree." He smiled.

"What?" Senator Atkinson ejaculated in shocked surprise. "The navy agrees with the army? Come, come, gentlemen, this will never do. Where's your fighting spirit?" He turned to Lawton. "The trouble with all you fellows"—he included Green and West in a gesture—"is that you know nothing of politics. You particularly, Dr. Lawton. All you know, doctor, is science. So you get sore when somebody gives your own pet sacred cow an impersonal kick.

"Now take Redding, here," he continued, indicating the sandy-haired secretary of commerce. "He knows nothing of gadgets, but he does know a whale of a lot about human nature. The seamy side, too. That's why he's here. And that's why I'm here, too, if you want to know. Not because I'm supposed to know all about airplanes. I don't. I couldn't tell a propeller from a fuselage.

"But what I don't know about our friends with the finest air force in the world isn't worth knowing. Would I trust them with a nickel of mine? Have I bought any of their bonds? Not I. You might—I couldn't say. For all I know you may be one of these scientific fellows who thinks the world is just one great big happy family. That's how it is in scientific research, I'm told—Germans, French, English, Americans, Russians, Swedes, Japanese, Chinese, Hindus, and all the rest, boosting one another along and not caring a whoop who gets there first.

"But this is a political conference—primarily—Dr. Lawton. Your science, Admiral West's battleships, General Green's tanks, and my own planes, are all just so much stage scenery. If we can find out what it is that our friends are really up to, we probably shan't need the tanks or the battleships. Get it?"

Lawton nodded doubtfully, somewhat dazed by the senator's emphatic speech. Gloomy Winters expressed an acid approval.

"And that, gentlemen, is why the President has gone swimming."

"Ah!" the admiral exclaimed, his face lighting up. "With the extremely distinguished foreign visitor who arrived yesterday?"

Even Winters smiled. "Those people"—he was alluding to the distinguished visitor's great nation—"are as hard to keep out of the water as fish. Shall we begin? Admiral West, what have you got?"

The admiral opened his bulky brief case and selected a sheaf of light-blue papers.

"These are the final analyses," he began, "of the maneuvers on both coasts—Atlantic and Pacific. I had better read them in full."

WHILE the admiral proceeded in a colorless tone to reel off impersonal statistics concerning imaginary losses of the defending "Blue" fleets and the attacking "Black," the others followed with the closest attention. Even the civilian scientist Lawton got the humiliating truth behind the welter of confusing technicalities—the "Blues" had come off a bad second best.

Senator Atkinson summed up the report in a word. "Smeared," he grunted disgustedly.

Gloomy Winters nodded to General Green. "You're next."

The general had recovered his professional courtesy. Only in recapitulating did he allow himself the luxury of a dig at the navy.

"Of course," he explained, "the army could do nothing after the navy let that horde of high-speed bombers through."

"Why not build swifter attack and pursuit planes?" Lawton suggested timidly. "We can, you know."

Gloomy Winters favored the hopeful scientist with a sour glance. "Tell him, Green."

General Green searched his portfolio for the simple, conclusive answer.

Finding what he wanted on two sheets of pale-green foolscap, he proceeded to rap out the short sentences like a machine gun. London, it appeared, had been unable to bring down a single plane of the "attacking" swarm in its last "demonstration"—staged to strengthen public confidence in the adequacy of the Royal Air Force as a weapon of defense against Continental invasion.

The "enemy," only slightly aided by a thinnish, unpredicted fog, had eluded the defenders, dumped his bombs, and returned to his "base" without the loss of a plane. London, theoretically, was in ruins under a blanket of gas.

Having finished with the British disaster, General Green went on to the French. It might have been compiled from the British by simply substituting "Paris" for "London," except that the French attacking force had no fog or mist as an ally.

"The French and British experts agree," the general concluded, "that attack and pursuit planes of twice the highest speed attainable at present could not have kept the enemy off. Can we build planes three, four, or five times as speedy as those we have?"

"No," Lawton admitted.

Secretary Redding spoke up: "All this publicity about the new anti-aircraft guns is just publicity?"

"Call it lies," Senator Atkinson suggested softly.

"But why—" Lawton began, to be cut short by Gloomy Winters:

"Do you want our forces to die of fright in their beds before the fighting begins?"

Lawton had nothing to say.

General Green added a footnote to Redding's remark on publicity: "Speaking of publicity—to use Redding's word—the gas propaganda is part and parcel of the same stuff. We've got the civilian population pretty well trained now to believe that gas can do no real harm to

a city, its inhabitants, or its defenders in the field. More publicity.

"Admiral West will agree, I think, that gas is now one of the major weapons in attack. Personally, I believe the public should know this, instead of being misled to believe that high explosives and machine guns are the only weapons capable of doing much damage. However, I'm overruled."

Senator Atkinson nodded. "Rightly, general. We've simply got to make them think that gas is easier to face and less fatal than machine-gun bullets or shell splinters. Quite pleasant, in fact," he added with a sardonic smile. "Otherwise—" He shrugged his shoulders, leaving the unexpressed alternative to the imaginations of his collaborators.

"But you experts"—he indicated West and Green—"know a fact or two we're not telling the public. It is our job to face the facts. The new gases, including some of our own, are no harmless perfumes for a lady's boudoir. Some of them are one-hundred-per-cent effective. And as for our air defense, it isn't worth a damn at present and is not likely to be within our lifetime. The attack, in an extensive air raid, has it all its own way. We have nothing to stop them. Is that so?"

Green and West nodded.

"Not if our own maneuvers mean anything," West agreed. "And I suppose we can rely on the reports of our observers in London and Paris."

"Say spies," the senator suggested bluntly. "You might as well. We don't have to keep up appearances. This is no publicity test for the army and the navy. Well, Winters, what's next?"

Winters nodded to Redding. "Your report, please."

The secretary of commerce read steadily through the summarized masses of statistics covering the twelve months' period just closed, compiled in his own department and in the affiliated department of agriculture.

On its face, Redding's report was as favorable as the greediest glutton for prosperity could have wished. Since the lean year following the Great Drought, the farmers, packers, canners, and exporters, in all lines of foodstuffs, had rapidly recovered, until now all business, from agriculture and packing to sacks and tin cans, was so furiously prosperous that the overworked and highly paid laborers could barely keep up with their jobs. The business man's dream had come true—demand was fast overtaking supply, and the insatiable consumers across the water were cheerfully meeting the steeply rising prices with greater and more insistent demands. It was a report to make a secretary of commerce rub his hands in glee.

But Redding was not rubbing his palms together under the table as he read. Nor did General Green and Admiral West seem particularly pleased by the secretary's astonishing recital of peace and unbounded prosperity at last.

In closing, Redding briefly recapitulated the main steps in what the press was always jubilantly calling the Great Recovery. According to the newspaper economists, the dream of the sanguine 1920's had at last come true; the business cycle was abolished and depressions were a nightmare of the past. Prosperity had come to stay. There would never be another crash so long as the nation was a nation.

The Great Recovery had come treading on the heels of the Great Drought, crowding it out of the picture almost overnight. The incalculable tonnage of fertile soil that had been stripped from vast tracts in the great corn and wheat belts, to be blown far out over the Atlantic Ocean during the Drought, would never be missed. Science had come to the rescue.

The infertile subsoil exposed by the winds had been lifted into fertility by a thin—almost negligible—sifting of a strange, new synthetic "dust," as fine as

lycopodium powder, from hundreds of airplanes pressed into service from the commercial companies or lent by the army and navy for the duration of the emergency—the emergency being starvation, or at best very short rations indeed, facing the entire population.

GOVERNMENT experts had at first been skeptical when approached by agents from an officiously friendly power. These diplomatic go-betweens divulged their purpose with the greatest frankness. Their own country, they declared, was facing bankruptcy. There was no disputing this; it was notorious the world over. To stave off bankruptcy and the revolution which must follow inevitably, their own government now sought a reciprocal trade agreement.

This, Secretary Redding emphasized, was the crux of the matter, and Gloomy Winters nodded. In the secretary's opinion, the trade treaty should never have been signed.

Senator Atkinson dissented, quite violently. "What the devil would you have done?" he demanded. "Let our people starve?"

Redding ignored the question. Glancing now and then at the mild and somewhat bewildered Lawton, whom he seemed to be subtly accusing of incompetence in his scientific work, the business-like secretary of commerce continued:

"This, gentlemen, is what we actually did. It is too late now to undo any of it. When their agents finally convinced the soil experts at the department of agriculture that the new, secret foreign fertilizers were as phenomenally powerful as was claimed, we signed the treaty. Our experts reported that an invisible dust filmed over the surface of anything less barren than granite converted the stubborn, dead, and useless soil into a black muck richer than the richest loam. How or why this should be so they were unable to discover, and Dr. Lawton's

bureau has so far been no more successful."

Lawton murmured something, but Redding paid no attention. The time for excuses had long since gone by.

"Their next step," Redding continued, "was to lend us a full corps—I use the word intentionally—of their own experts to 'dust' our soil. And while they were about it, they did a thorough job. Our experiments at the department of agriculture had proved conclusively, to the satisfaction of every one concerned, that a 'dusting' of already fertile soil would treble or quadruple its productivity.

"Even the California oranges and the Florida grapefruit were not neglected. You know the result. The following year crops of all kinds broke all records. Our own consumers could not have disposed of a third of the stuff. The succeeding year it was still better—or worse. It depends on how you look at it. And you have heard rumors at least of what happened in Russia and Canada. I can now state that the rumors are facts. Wherever the dust was tried, the story was the same as ours. What will happen to world markets if all our competitors go in for dusting on the scale we do, I try not to anticipate."

"But surely," Lawton interrupted, "it would be all to the good? Why shouldn't every country raise all it wants and let foreign trade go hang? With this new dust we could raise all we need for ourselves off a twentieth of the land now under cultivation."

"That's what you think," Senator Atkinson cut in acidly. "All a great big happy family, eh? What about the raw materials we haven't got ourselves, and which industry must have to keep going? Our friends are going to give them away, I suppose? No; we've got to have stuff to export; and all this corn and wheat, beef and pork, that we can't eat ourselves, is just what they haven't got in sufficient quantity to feed a tenth

of their people properly where we get the stuff we must have. Do you begin to see what Redding is getting at? When Canada and Russia begin dusting wholesale, as we have done, where shall we be? See it, doctor?"

Lawton nodded. "I'm not as dense as all that. Cutthroat competition for foreign markets again is what you mean, I suppose. And on top of that," he added, with a defiant glance at Green and West, "the usual wars to capture the markets. We're a sensible lot, I must say."

"We are human beings," Gloomy Winters stated with a show of great precision. "That's the exact, scientific statement, Dr. Lawton. Let it go at that. Well, Redding? What has commerce got to say about it all?"

"Only this," the secretary replied: "According to the terms of our treaty with them, we send them all our surplus in return for enough dust to keep our land at maximum productivity, and they pay us the balance—already huge—in bonds to be redeemed by their government in the next ten to eighty years. They now owe us billions. How many I shall not say, or some of you might walk right out of here and dump your holdings. That would be bad for public confidence. Who has bought those bonds? In the last analysis the producers who have parted with their enormous surpluses. And will they ever collect? Not if my name is Archibald Redding. Our own people will be left holding the sack."

"But I don't see——" Lawton began, when Atkinson cut him short.

"You wouldn't. You have altogether too much faith in human nature, doctor. When our treaty with them expires—it has five years to go, hasn't it, Winters?—when it expires, I say, we shall see a sudden rise in the price of dust. I shouldn't be surprised to see it go to ten thousand dollars an ounce. You men tell us an application of the dust is good

only for one real crop. According to what they think they have discovered, three years at the most will see the last of any beneficial effect a single application may have. Figure it out for yourself."

"That is what I have been trying to do," Redding remarked quietly. "So far as I can see, the problem has no answer. But even at that it is easier than the other."

"What's that?" Winters demanded sharply.

BEFORE replying, Redding paid his respects to the army and navy by a couple of curt nods to Green and West. "Perhaps some one can tell me," he drawled, "what the devil our friends across the way are going to do with all that food we have given them in exchange for their dust and their bonds? They have enough canned meat and cereals alone piled up now to gorge their entire population with the best on the market for a solid ten years. I'd like to have your suggestions."

Winters laughed shortly. "Anything else you'd like?"

Lawton fidgeted uneasily for a moment and then came out with his own stammering solution.

"It sounds fantastic, I know," he apologized, "but it makes sense. When the treaty runs out, and our land slips back to where it was just after the Drought, they will sell us back our stuff at their own price and redeem their bonds that way."

"Sure?" the senator quizzed. "I should think they'd more likely send it all back as a donation to the Salvation Army to hand out to our bread lines. By the way, doctor, you scientific fellows don't believe in perpetual motion any longer, do you?"

Lawton ignored the gibe. "I said my theory is reasonable and I meant it. What will they make out of the deal? Is that what's worrying you? Why,

they will have kept their people fed and prosperous till all danger of a revolution has blown over. They will be over their hump."

"I wish I could get over mine," Gloomy Winters remarked. "West, what do you say?"

"I'm in the same boat as Redding," the admiral admitted. "Pulling a different oar, if you like, but still in the same boat. Our latest brilliant failure to keep 'enemy' planes from blowing our battleships to hell, and our coast cities after them, is only one of half a dozen in the past two years. Ever since they began selling us that infernal dust of theirs, it has been one damned war scare after another.

"Last month I thought we were in it surely this time. We were ready—as ready as we could be. The fleet was concentrated—playing the 'war game' officially—just where it would come in handiest in case of trouble. Their fleet, also officially just exercising, was likewise in position. A position, I need scarcely recall, that made us rather jumpy.

"Luckily the press played ball, and the civilians slept as usual. And, as General Green knows, their army was going through the most extensive peacetime maneuvers in the history of their nation. Then it all blew over, just as it has done ever since they began selling us their damned dust.

"Their fleet dispersed and their huge army went back to the fields and the factories. But the President—all of us—were expecting war within six hours at exactly this time thirty days ago. If they're trying to keep us jittery and up on our toes they win. What about it, Green?"

"They win," the general agreed. "They've got some new sort of alloy or plate metal on their land cruisers—they are all of that, huge brutes with eight six-inch guns apiece that can ramble over rough country at eighty

miles an hour—that our shells couldn't even dent. How about it, Lawton?"

Lawton nodded. "It's new."

"One of your spies shipped the sample out, didn't he?" Atkinson inquired lazily.

"The best observer we have," Green replied a trifle stiffly. "He also reported on their field tests. That's how I know our shells couldn't scratch one of their tanks."

"Has it occurred to you, general," Atkinson inquired, "that our slick friends arranged all that just for your 'observer' to see? Why, I shouldn't be surprised to hear some day that they slipped the sample Lawton has been fooling with for a year into your observer's pocket."

"You don't know what you are talking about," Green retorted angrily. "Our man is one of the shrewdest observers in the world. Any one who knows his record admits that. Apparently you never even heard of him."

"Easy, general! I was just feeling out my theory."

"Let's have it, then," Winters snapped. "I need a drink."

ATKINSON'S theory made little impression on the army and navy. "It's simply this," he said: "If war comes, it will start without a declaration."

"I could have told you that years ago," the admiral remarked rather contemptuously. "So could Green."

"So you don't think much of my little theory?" Atkinson returned with ominous good humor. "Then let me elaborate a bit. All these mobilizations of their army and navy that have been keeping you fellows so jittery for the past three years don't mean a thing. They're just so much camouflage to hide their real preparations. When they do start fighting, it will be in a way you fellows have never dreamed of."

"Your battleships, West, and your tanks and planes. Green, won't cut any

figure at all. You will never get within a thousand miles—or a hundred years—of the war. You will be out of it before it starts. In fact you are out of it now. Because—take it from me—the war has started already.

"I'm willing to bet my last dollar the war began the day they sold us the first ounce of that damned dust of theirs. How they are fighting, or where we shall be when it's all over, I haven't any idea. But I feel it in my bones that the war is on. And Lawton, here, with all his highly trained and expensive scientists, can't tell us a single blessed thing about what's going on."

Before West or Green could reply, Gloomy Winters cut in.

"Senator Atkinson is right," he declared with gloomy emphasis as usual for him. "I've felt the same way for months myself. Well, unless the President has better luck in his new pool than we seem to be having here, we shall be cleaned out. I can almost see the débâcle coming." He turned in considerable irritation on the inoffensive Lawton. "What's science good for, anyway, if it can't help us out of a mess like this?"

Lawton gasped. Then he had an inspiration. He saw the simple, obvious truth: "Why, to get us into a mess like this, I suppose."

"Trying to be funny?" Winters growled.

"Not at all. Isn't it pretty obvious that better scientists than ours somewhere across the water are responsible for all this?"

"So it is merely our misfortune, and nobody's fault in particular, to be scientifically and technically incompetent compared with our competitors?" Winters suggested. "Is that it?"

"Exactly!" Lawton agreed. "We do our best. It just happens to be not good enough."

Winters sighed. "Can't you dig up

something better than what you have—
younger men?"

"We are combing the country, day and
night, and have been for the past three
years."

"But no luck?"

"None."

"Then we'll have to put our trust in
—I don't know what. Anybody got
anything else? Redding?"

"Nothing of importance. Just a
suggestion for you to pass on to the
proper department, and a historical item
I thought might interest every one here.
First, the suggestion. The secret serv-
ice has simply got to plant a spy in
their dust factories. Let them scrutinize
every passport issued and try to find
some prospective traveler with brains in
his head. I agree with Atkinson that
the war is on. My own figures alone
almost prove it beyond argument.

"Second, the little bit of history."
He held up a telegram. "This is from
John Jarvis, of Jarvis & Sons, head of
the oldest fertilizer-manufacturing con-
cern in this country. Founded in 1776.
For over half a century practically a
monopoly. They have hung on, giving
their stuff away, almost, ever since the
dust came in. John Jarvis thought it
might interest the national chamber of
commerce to know that they closed up
this morning at ten thirty. They are
bankrupt."

"A shot near home," Winters re-
marked, pushing back his chair. "Gen-
tlemen, we stand adjourned, to meet
again on call from the President, should
anything requiring our attention develop.
Any one join me in a long mint julep?"

The vote was unanimous.

II.

JUST as Gloomy Winters stood up to
lead his crowd into the bar, a young
man some hundreds of miles away also
stood up, rather nervously, not to walk
out for a cool drink, but to receive the

first substantial honor of his dawning
career. John Jarvis, Jr.—"Jay," for
short, to his friends—was about to re-
ceive his Ph. D. degree with the highest
honors, and the coveted Williard Gibbs
memorial prize, for an outstanding con-
tribution to physical chemistry, at one
swoop.

The prize—open to contestants from
any part of the American continent and
awarded on the recommendation of a
thoroughly hard-boiled committee of the
National Research Council—had been
awarded to Jay for the "significant
advance" made in his doctoral disser-
tation.

The dissertation filled exactly two
pages in the journal which had accepted
it for publication, and its unassuming
title was "An Extension of the Periodic
Law." The "Periodic Law" referred to
was Mendeléeff's, of 1868, which
brought order into the comparative chaos
of the properties of the chemical ele-
ments, and which predicted new ele-
ments discovered later by chemists.

The "Extension" carried the law into
the rich unexplored region between
physics and chemistry which Men-
deléeff would not have believed existed
if he had been told and which modern
explorations into the constitution of
matter unexpectedly stumbled across.

Jay maintained—perhaps justly—that
he also had merely stumbled. There
was so much lying about loose between
physics and chemistry, he said, that even
the most cautious explorer must stumble
over something of value sooner or later.
Anyhow, this was Jay's alibi for run-
ning off with the prize. It consisted
of one thousand dollars in cash and a
gold medal.

But there was a string attached. Be-
fore the lucky winner could pocket the
prize, he must explain, in three hundred
words or less, to all who cared to listen,
exactly what he had done to win the
prize. Jay's ordeal had been set to

coincide with the award of his degree at the public commencement exercises.

As Jay faced the crowd and let the dean of the graduate school sling the doctor's gaudy hood over his head, he wondered what the devil he was going to say. In less than a minute he would have to speak his piece of three hundred words or less to an audience of about two thousand, most of whom confused chemistry with what goes on in the corner drug store, and physics with the stuff doctors used to make them take out of brown bottles.

His mind was a blank, so far as science might have occupied it. Jay was wondering what on earth was up at home. His father had been looking forward for a month to seeing the prize awarded and hearing the speech of acceptance—or explanation—and was to have arrived early that morning for the commencement exercises.

Just as Jay started for the hall, a messenger thrust a telegram into his hand. It was from his father.

Sorry can't come. Important business conference. Congratulations! Good luck with your speech!

The fatal second had come. Jay found himself speaking in a clear, even voice. Before he realized that it was all over he had finished. To his amazement he noticed that the audience was roaring with laughter. Horrified, he tried to recall what he had said as he walked from the platform to his seat.

It all came back to him, and he sat down with a sigh of relief. He had simply reeled off the short mathematical formula which summed up his extension of the periodic law. The audience evidently had taken the performance as a joke. Even the dean was laughing. Jay had set a new fashion in speeches, even short ones. His effort was probably the shortest formal public utterance in the history of America.

Freeing himself at last from crowds

of well-wishers, including his friend and teacher, "Fatty" Perkins, Jay hurried back to his rooms, to find his exotic companion of three happy years, the dignified, reserved, but yet friendly little Count Tori, waiting in the study.

Tori had been sitting when Jay entered. He now rose slowly and came toward his friend, his face gravely sympathetic, and a folded newspaper in his left hand.

"It is best that I should tell you," he said, laying his right hand on Jay's shoulder and looking up steadily into his friend's eyes. He spoke precise, careful English, with only a trace of the distinctive accent that even the expatriates of his people never lose entirely.

"What is it?" Jay asked, his face going white. "From home?"

"Yes." Tori unfolded the paper. The banner headline told the rest: JARVIS FAILS. "I am sorry," Tori continued, "that my people have brought this on your old and honorable house."

Jay slumped into a chair. "I've been expecting it. Your people are not to blame. Business is business. This has been on the way for three years. I saw it coming when I started working for my degree. Now it has come. We hung on as long as we could."

TORI walked to the bay window and stood thoughtfully looking out, his slim, nervous hands clasped behind his back. Sensing at last that Jay had recovered from the stunning brutality of the first shock he turned slowly round.

"What will you do?"

"Go home as fast as I can, of course."

"Of course. And then?"

"I don't know."

"But there must be a brilliant scientific career for you," Tori suggested softly. "Your country is prosperous, and it can give you work to do."

"Perhaps. But I couldn't do it."

"Why not?"

"There is no disgrace in a failure like ours. But," Jay burst out savagely, "millions of people in this country will think there is. And I'll have to face the music and shout it down. No. The concert isn't worth the price of admission."

"You can't throw away a start like yours," Tori protested. "That would only give the slanderers something real to say."

"I've made no start worth considering. But for you I should never even have begun to start. What happened to-day was a farce."

"But for me?" Tori repeated in surprise. "What do you mean?"

"You know. If you hadn't held back your own work and given mine the right of way, I shouldn't have had a chance at the Gibbs prize. Your stuff is fundamental. Mine isn't. Why don't you publish what you've found?"

"Why should I? Do I have to make a reputation?"

"I suppose not," Jay admitted bitterly. "Your people look at that sort of thing differently from us. With us it is all personal ambition and a scramble for what isn't worth while having—as you realize when you get a jolt like this. You seem to care nothing for yourself. All you have goes for your people, whether your name is ever mentioned or not."

Tori interrupted him. "What you say about your work is not true. I speak now as a student of science, not as your friend. Your work is fundamental. Mine is trivial. That is why I have not published it. If my work was like yours, I should publish it—for the honor of my people, as you say. But it is not good."

Jay looked up, scanning Tori's expressionless face doubtfully. "You believe what you say. But that's just another proof that you belong to your people."

"How so?" Tori demanded, a puzzled look in his eyes.

"Your national inferiority complex."

Tori considered this explanation thoughtfully. The problem did not seem to concern him personally; it was either a scientific statement of fact or nonsense, and he was interested only in deciding which. At last he convinced himself that Jay was mistaken.

"My trouble," he said slowly, "has always been the exact opposite of my people's. I have been inclined to overestimate my scientific abilities."

"Well, as we can't seem to agree, let's skip it. While we are talking straight, I may as well go the limit and get something else off my chest. It has bothered me ever since I met you three years ago. We're not likely to see one another again after to-day, so I'll spill it now."

"It concerns me?"

"Both of us."

Tori's face betrayed nothing. If he had been expecting Jay's reckless revelation, he gave no sign but, like a seasoned poker player, kept his emotions to himself.

"It has to do with our world monopoly?" he suggested softly.

"You guessed it," Jay returned. "The very day the department of agriculture issued its first bulletin saying their experiments had checked the claims made by your agents for the new dust, I knew we were through. It could only be a matter of months, or at the most a few years, until our firm should be crowded to the wall with its hands in the air."

"Yes?" Tori encouraged gently when Jay hesitated.

"All right. I'll get it over. Do you know why I took up physical chemistry?"

"You started, if I remember correctly," Tori reminded him, "in the chemistry of soils."

"That didn't last long. Old Hildebrandt here knows everything there is to be known of soil chemistry. He shoved me through it all in six months. There was nothing to it. I'm not being high-hat about old Hildebrandt's stuff,"

Jay hurried on, noting the look of mild disapproval on Tori's impassive features. "Your people don't criticize their elders. Ours do. That's why we have gone ahead."

"Till recently," Tori reminded him.

"You win. Till recently. Anyhow, I thought I saw that old Hildebrandt's classic brand of chemistry couldn't get me very far on the road I was trying to take."

"So you built a new road?"

"More or less. You know where I was hoping to arrive."

Tori did not deny Jay's subtle accusation. Instead, he contented himself with a blunt summary of Jay's efforts.

"YOU HAVE not arrived," he said confidently. "The secret of our fertilizing dust is still as much of a secret to you as when you started."

"You have known all along what I was looking for?"

"Was it so hard to guess?"

"I suppose not, given my family history and the particular Cain your dust was raising with my prospects. You never said anything."

"Why should I have said anything?" Tori asked in mild surprise. "Industrial research is not the private possession of our great physicists and chemists."

"No," Jay agreed; "but you must have felt rather queer at times looking on while I—the only man here who would have anything to do with you—was trying my damndest to scuttle your ship of state."

"I understood. You were within your rights. If you had not tried to work for your people, as our scientists work for theirs, I should have had a low opinion of you. Please let me finish. You do not admit it to yourself, but you are as jealous for your country's honor as I am for mine. Only you—like all your race—think it priggish to put your true

motives into words, as we do. Personal ambition means nothing to you."

"That's where you're dead wrong. It means a lot. Do you suppose I like to see my father a bankrupt and myself kicked into the street just as I'm starting on my way?"

Tori dismissed Jay's self-analysis with a curt shake of the head. "As you said, let us skip it. We cannot agree. Do you know why I respect you?"

Jay laughed. "That's the sort of question no one of my race could ask to save his life."

Tori ignored Jay's acute discomfort. "I have respected you because you are the only man I have met in this great university who has not a trace of race prejudice."

"Not a bit. That's a fact. Black or white, red or yellow, they all look alike to me if they have brains. And some of your fellows seem to have considerably more than some of ours. Otherwise I shouldn't be in the jam I'm in now."

"You will get out."

"How? Tell me, and I'll do it."

"Join our research staff."

Jay stared at him in blank astonishment. "You mean that?"

"Yes. For two years I have followed your work. It is fundamental."

"But, hell, man! Don't you see what you are doing? You deliberately invite me aboard your ship to sink it?"

Tori smiled. "You will never see the engine room. As I have tried to make you realize, your work is fundamental. It touches the basic science from which the industrial advances of the next fifty years will spring. I am not asking you to join our commercial scientific division. You will be attached to the brigade of pure science, to work on your own problems in your own way. You may publish your researches when, where, and how you please, although we should be honored if you would use the 'Transactions of our Academy of Sciences.'

"My hope would be," he continued seriously, "that the atmosphere of our research institutes would influence your pure science and color it to the peculiar genius of our people. But we shall make no effort to coerce you. I think we can promise you greater intellectual freedom than you could expect in this country.

"Remember, you are a very young man. If you start your career here, you will be dominated by the interests of older men till you are forty. Then your freshness will be stale, and you may delude yourself into believing that an administrative position is more honorable and more important for science itself than an inconspicuous part in the laboratory."

Tori elaborated his caustic prophecy with sarcastic accuracy. "Your name will appear frequently in the newspapers, and your fellow citizens will be told—and believe—that you are the leading scientist of the age. You will speak at banquets and before luncheon clubs. You will fall in love with your own pompous platitudes, and you will begin to believe them.

"When you are fifty, you will receive a prize and a gold medal for your great work in reconciling science and bigotry. And in the meantime the young men, whom you think you are directing, will be calling you a stuffed shirt and an old dug-out behind your back.

"You see," Tori smiled, "I have picked up your slang while observing the customs of your country. The young men will be right. Possibly—once in a while—the rich food at some tedious banquet will upset your digestion, and you will lie awake nearly all night. Then you will agree with your young men. Come with us, and you will have no sleepless nights."

"Let me think it over," Jay paced slowly back and forth, trying to foresee the possibilities. "As the girls are

always saying, this is too sudden. I can't take it in."

"When will you decide?"

"Make it the day after to-morrow. I shall have to talk things over with my father first. You see, I can't very well run out on him at a time like this."

"I see." Tori nodded gravely. "But the business is bankrupt."

"That's the hell of it. I haven't an idea what has been saved from the wreck. If my people haven't private means enough to live on decently, it will be up to my brothers and me."

"You could send them part of your salary," Tori suggested. "We would pay you well."

"I suppose I could."

"When and where shall I see you?"

"The day after to-morrow? I would ask you to come and stay with us if things weren't in such a mess. As it is, I shall have to make it somewhere else. Suppose you meet me in the waiting room of the Union Station at Chicago, the day after to-morrow, at ten thirty in the morning. The fast train from here gets in then. We can go somewhere and talk it out. I'm taking the eight forty-five out this evening."

TORI AGREED. Wishing his friend good luck—or at least better luck—he left. Jay began the melancholy task of packing the photographs and few personal reminders of his three years as a graduate student that had been left out till the last moment.

He had barely finished and was just sitting down for a last smoke in the already dismal room when the bell rang. Opening the door, he was confronted by a ruddy-faced, jovial man of about fifty, expensively if somewhat loudly dressed in a flashy summer outfit. Jay sized his caller up as a liquor agent.

"Sorry," he said, before the man could introduce himself, "but I don't want any. I'm just leaving. Besides, I'm stony broke."

The other laughed a jolly, fat, friendly laugh. "Stony broke, eh? We can soon mend that, young man."

"Afraid not. I never buy anything on credit."

The supposed whisky drummer almost cracked his cheeks beaming. "You don't know just how good your credit is, young man. Try stretching it a bit. May I come in?"

Jay sighed. "All right. But I tell you I'm broke."

Having made himself comfortable in the overstuffed chair which neither Jay nor any of his friends ever thought of sitting in, the visitor expanded. He seemed to enjoy his own whimsical geniality.

"Well, well!" he beamed. "What a record, what a record! The highest honors—*summa cum laude*—and the great Gibbs prize for an outstanding scientific advance on top of it all. Boy, oh, boy, what a record! And only twenty-three years old. Think of it! If you're not all swelled up with pride like a poisoned pup, you should be. What are you going to do with it all?"

"Capitalize it and sell shares to the public at a nickel par. I'll make my fortune."

"Capitalize, eh? Capital, capital!" The jovial old scout chuckled excessively over Jay's somewhat rude retort. "You'll do just that very thing. Make your fortune. I should say so. And how do I know? You're asking me? Then I'll tell you."

He leaned forward and wagged an impressively fat and pink forefinger in Jay's face. "You are going to join our staff—the dandiest, keenest, up-on-their-toedest little bunch of scientific co-operators in the world. Oh, don't dream I'm going off half cocked. We know all about you—all about you. But you may want to go into details." He fumbled in his pocketbook and produced his card with an arch flourish. "There! You now know who I am."

Jay read the card without enthusiasm: "Justus A. Wharton. Personnel Officer. United States Bureau of Standards. Washington, D. C."

Wharton waited patiently for an outburst of involuntary enthusiasm, but none came: Somewhat sobered, he next produced a lengthy telegram which, rather guilelessly, he handed Jay to read. It was signed Lawton, and it instructed Wharton to get into touch with John Jarvis, Jr., immediately, to offer him rank and salary schedule A Q 14, and to instruct him, on acceptance, to report within forty-eight hours to Lawton at the bureau for instructions and work.

The telegram also gave full details of Jay's academic record, including the Gibbs prize and the title of his dissertation on the extension of the periodic law. Jay wished most heartily that he had never heard of that silly prize. Was it to stick to him like a blue ribbon on a prize pig at a county fair all his life?

One of Lawton's scouts, in their day-and-night job of combing the country for younger and fresher brains to staff the bureau, had blundered across Jay's record. He could hardly have missed it; even the New York papers had carried a short story of Jay's juvenile triumphs. Jay handed back the telegram without comment.

"Well?" Wharton asked. "What about it? It's a go?"

"What does A Q 14 mean?"

Wharton elaborated. A Q 14 was merely the code for an extremely flattering contract, to save the expense of telegraphing the lengthy terms every time Lawton thought they were demanded.

"I guessed that. What are the terms?"

WHARTON whispered them, with difficulty restraining his forefinger from poking Jay in the ribs during the conspiracy. Jay's face was impassive.

"Who would be my chief?" he asked

when Wharton had at last relieved himself of his burden.

"That's the best of it. Dr. Lawton himself." Wharton sat back to study the effect of his revelation. Observing none on Jay's face, he leaned forward confidentially. "While I'm not promising anything," he whispered, "I wouldn't say that it was wholly beyond the bounds of possibility that a brilliant young man with a record like yours might look forward to succeeding Dr. Lawton some day as director—say, when you are about forty."

"A stuffed shirt?" Jay murmured, more to himself than to Wharton.

"Eh? What's that?"

"I beg your pardon. I was just thinking." Jay stood up. "Glad to have met you, Mr. Wharton. Sorry I'm busy, but I've got to get ready for the train."

"You accept, then?" Wharton beamed, pumping Jay's hand.

"Sorry, but I'm not interested."

Wharton became quite severe in a friendly, fatherly fashion.

"You say no, but you mean yes. I know you boys. Boys will be boys—I've been one myself. Why, when I started at the bureau, I was just your age, and I thought it wasn't good enough for me. Do you get that? Not good enough for me."

Jay did not join in Wharton's hearty laugh at his own youthful folly and swelled head.

"I didn't realize then," Wharton continued confidentially, "that the humblest private in our ranks carries a field marshal's baton in his knapsack. Take a peek into that invisible bag I see strapped to your back, young man. Is it yes?"

"No. Please tell Dr. Lawton I'm grateful for his generous offer, but I can't accept."

"Why not? Isn't it good enough?"

"I'm simply not interested. That's all, and it's final. I may be only a young squirt, but I do know what interests me and what doesn't."

Wharton shook his head sadly. Like many men of his age, he could not realize that some young men of twenty-three are as mature as some men of fifty. That Jay was making a serious mistake was obvious to his myopic vision, and the supposed fact disturbed his really kindly soul profoundly.

He was disturbed also on another, strictly private, ground. A second telegram from Lawton had instructed him sharply not to bungle the job and to nab Jay before some commercial concern could grab him off.

"You will reconsider?" he pleaded.

"Afraid not."

"But there is a chance? Where can I get in touch with you after you leave here?"

"At home—Chicago. But I have made up my mind."

Wharton scanned the serious young face before him. "I believe you have. May I ask who our successful competitor is?"

"There isn't any. I'm going abroad for a long trip next week."

"I see. All work and no play makes Jay a dull boy. So that's it." He sighed his relief. "Lawton will be glad to know we haven't fallen down on our job. You'll have time to think it over when you come back from abroad?"

"Sure!" said Jay. "Glad to have met you. Good-by."

III.

JAY'S interview with his father in the main office was less painful than he had anticipated. Like Jay, the elder Jarvis had foreseen that nothing could avert the crash. Nevertheless, he had hung on till the last possible moment, paying cash as he went, till the resources of the firm were exhausted and the expenditure of another dollar would have been the beginning of debts that could never be discharged.

The vast factories now stood gaunt and idle, a total loss. But Jarvis owed

nobody a cent. The family could still hold its head up. A modest private fortune in his wife's name, carefully accumulated since the day of their marriage in anticipation of unforeseen emergencies, would provide for them in reasonable comfort.

The children were all well-educated—Jay was the last—and were able to stand on their own feet. The two daughters were married; the three sons could make their own way, with a little help if necessary,

Jay assured his father that he needed no help. If nothing better turned up in a day or two he could reconsider and take the job at the bureau. He had said nothing as yet to his father of Tori's offer. There was no point in kicking up the dust till he was ready to start on the road he was going to take.

The important conference which had prevented Jarvis from seeing his son graduate was a last session with representatives of his employees. Ever since the firm had started going downhill the employees had taken their share of the loss. To keep the business alive they had proposed cuts for themselves without a hint from Jarvis. Their last offer to take a reduction had been refused. To have accepted would have meant going in debt to pay them anything.

"It was the hardest thing I ever had to do," Jarvis admitted. "I'm glad it's over."

"We may stage a comeback some day," Jay suggested hopefully. "Then we can take them on again."

"No chance, I fear," Jarvis replied with rueful conviction. "We're through. Fertilizers as we knew them will never come back."

"I hope not," Jay ejaculated with honest fervor. "The dust has no smell at all, good or bad. What I meant was this: Suppose some of our own fellows stumble onto the secret of making the dust. Then we can set up in business for ourselves."

"But you—and every other trained man I have consulted—say there is no chance of finding out how the stuff is made."

"Oh, I wouldn't be as pessimistic as that. Because we have failed for three years is no sign we shall for thirty, or even ten. Give us time."

"You have an idea?"

"Not exactly. Still, I think I'm on the right road to one."

"What has made you so hopeful all of a sudden?" his father asked doubtfully. "The last time we talked of this you were clear down in the dumps."

"I hadn't had a heart-to-heart talk with Count Tori then. You remember him, the slim little dark chap you met when you were East two years ago. Tori and I are bosom friends, as you might say. Really, I'm tremendously fond of him, and I think he has taken a shine to me. You see, I was the only man there who never noticed that he was a foreigner. I didn't have to be considerate; it simply never occurred to me that Tori was anything more or less than a fine fellow with real brains in his head."

"They gave me the icy for running around with him all the time. But I didn't give a damn. I was having too good a time. Tori has a mind like a dagger—goes through the ribs and gets at the heart of a difficulty. And on top of it all he is a swell guy."

"Just before I left to come home we had a solemn powwow. You would have cracked your jaw laughing to hear how solemn and sentimental we got. We gassed about our work like a couple of deans trying to blow up some poor flat tire of a freshman with their mouths. Out of it all I got one priceless fact: I'm on the track of that dust."

"Did Tori tell you so?"

Jay laughed. "What do you suppose? If he had told me I was getting warm, I should have felt like jumping out of

the window. He told me? Not on your life! But he made what I consider a silly blunder for a man of his intelligence. I can explain it only by assuming that he knows less of our mentality than we know of theirs.

"He swore by all he holds sacred that I'm on the wrong track. Not just like that, of course, but he was very friendly and confident about it. He might have been telling a kid that he's got the wrong answer in arithmetic. There was no arguing about it. There it was, and that was that. I simply didn't know what the problem was all about and never would. By the way, you won't spill any of this? Even to mother?"

"Not if you don't want me to. But watch your step."

"I'll be careful. If I ever find out anything—ten years from now, or twenty—I'll keep it under my own hat till the plant is built and ready to operate. Then they can take their dust and——"

"That's not exactly what I meant," Jarvis explained. "In a game like this you must think of your personal safety."

"I have thought of it. And I shall continue to be the nice, impractical boy I am, dabbling away in pure science." Jay's jaw set. "Pure science? What the hell! When I have to depend for my bread and butter, my meat and potatoes, my oranges and grapefruit, on the good will of a bunch of foreigners nobody trusts, I'll let pure science ride for a while."

"They've only got to cut off the supply of dust for a year or two to have us at their mercy. They will wait till our standard of living has risen out of sight. How long would it take us to readjust ourselves to short rations and hard work while we were trying to find our way back to things as they were before this crazy prosperity swamped the country? Can you picture our doing it peacefully? On top of semistarvation we should have one first-class bloody revolution."

JARVIS sighed. "I was talking to Redding—secretary of commerce—the other day, and he made practically the same prediction. I don't like the way things are going a bit. All these maneuvers of the fleet and the army that the papers are full of don't help my peace of mind any. And if there is to be a row, I don't want to see you in it. You are too young to remember the last. The next will make that one look like a Sunday-school picnic. Keep out of it."

"Don't worry. I'm not rushing off to enlist."

"But you have some plan?"

"Only vague. I'll tell you if it comes to anything. Whatever happens, I intend to go on with the work I have started—for a time, at least. Tori's hint was too obvious to be passed up. And whatever happens, you needn't stew. I know enough to keep out of some kinds of messes."

"I shouldn't be surprised if you do." His father chuckled. "All you need is a little experience with girls to make you spyproof."

"How do you know I haven't had it?" Jay asked coolly. "We don't tell the old folks everything we know nowadays."

"As to that," Jarvis observed grimly, "you had better not tell your mother. She's still old-fashioned."

"We'll have to teach her to smoke," Jay suggested lightly. "That will break the ice. Many a good girl has gone to the devil because she smoked her first cigarette. If there hadn't been a first, there wouldn't have been a second, and so on, ad infinitum, Q. E. D."

"Get out of here before I throw you out!" his father roared.

"Just as you say. I'll not be home for dinner. Oh, by the way, before I go, do you still have that sample of the dust? I'd like to take it along, if you don't mind."

Jarvis handed over the small cylindrical box containing the sample. Jay

removed the cover and stood staring down at the smooth grayish powder. He tapped the side of the box lightly with his finger. A beautiful pattern of waves rippled over the surface of the dust. Had he not known that it was dust, and not a liquid, he might have mistaken it for dirty water.

"Pretty finely divided," he muttered to himself. "Wonder how they do it?" He abstractedly replaced the lid and slipped the box into a trouser pocket. "Well, I'll be seeing you. So long!"

"So long! Keep out of devilment if you can."

THE following morning Jay met Tori at the Union Station.

"Come on across the street. There's a quiet little joint where we can talk undisturbed and have a drink if we feel like it."

Tori tried to read from his friend's face what decision he had come to. Probably he succeeded. As they sat down at the farthest table in the deserted beer parlor, Tori remarked that he had bought two steamer tickets.

"Then we needn't take long to settle the rest."

Jay told Tori of the bureau's offer. Tori was faintly amused at Jay's description of the effusive Mr. Wharton.

"If you had accepted," he observed gravely, "you might have been Mr. Wharton's successor—twenty years hence."

"Yes; I thought of that."

"You have decided to join us?"

"I decided the moment Wharton left."

Tori fingered his glass of beer, which he had not touched with his lips, as he was a total abstainer.

"You are not avaricious," he remarked.

"How so?"

"Terms have not yet been mentioned."

"You said I would be free to work as I chose. Is that still good?"

"Of course!" Tori drew a cablegram

from his pocket. "I shall translate." The salary offered by Tori's people was slightly more than four times Lawton's A Q 14. "If that is not enough, I believe I could get you more."

Jay waved the suggestion aside. "Too much. I'm not a hog, and I'm not worth a quarter of that."

"Your work will be worth many times what we can afford to pay you for it," Tori returned with a slight bow.

For a moment Jay was puzzled and slightly disturbed by Tori's grave formality. The man fingering the glass was not the graduate student he had known for three years at the university, but an older, graver man.

Jay laughed. "The farther you get from our old stamping ground the less Americanized you become. Three years of our great country seems to have made practically no impression on you."

"Practically none," Tori agreed. "I am already more than halfway home."

"Not going mystic on me, are you?"

Tori shook his head with a smile. For a moment he was once more the student Jay thought he had known. "No need to." Tori laughed. "Our boat sails five days from to-day."

"What?" Jay exclaimed. "That will give me only two days to pack and see to my passport. I doubt——"

"Your passport is ready. I attended to the formalities. Shall we go and get it?"

Jay rose in a daze. "How did you manage it?" he asked weakly. "It would have taken me days."

"Through the courtesy of your government. My rank, you know——" He did not finish.

"That explains it. Being a count has its advantages at times. Let's go and collect the passport. It will take some time for me to do my part. For one thing I'll have to be mugged."

"Mugged?" Tori repeated.

"Photographed."

"Oh, I saw to that. A suitable copy



Land-cruisers, with armor our shells can't even dent, that can ramble over rough country at eighty miles an hour, carrying six-inch guns!

was made from one you presented to me before your graduation."

"Well, I'll be damned! Come on; let's go. I must do my own packing, anyway."

THE PASSPORT safely tucked away in an inner pocket, Jay said he must hurry home. Would Tori care to come and meet Jay's father? Tori declined politely, saying he had business of his own. Jay did not doubt it. Before taking leave of Jay, Tori handed him a railway ticket.

"I shall be unable to take the same train as you," he explained. "But I shall meet you at the boat. In case of unavoidable accidents, I had perhaps better give you your steamer ticket, too."

Jay accepted it without a word.

"Good-by, till we meet again."

Tori lifted his hat and turned briskly away, leaving Jay in a daze. As he climbed into a cab he had a curious feeling that Tori must be about fifty years old. He had acted that age, anyway. That was the trouble with some of these foreigners; you could never size them up, or guess their ages, or find out anything worth knowing about how their minds worked. Jay came to the conclusion that he still had a lot to learn. Well, he would pick it up as fast as he could.

The resolve gave him an idea. Why not begin at once? He gave the driver a direction to one of the largest bookstores in the city. Before he was twenty-four hours older he would have mastered at least the alphabet—if it could be called that—of Tori's native tongue. Then he would go after the rest of it, tooth and toenail. The exercise might relieve the boredom of the long ocean voyage.

At home Jay's reception when he told his family what he had done was decidedly warm. At last his father got the rest of them cooled off a bit, and they set about the task of outfitting him

like a gentleman in what little time remained before he must pull out. His two married sisters and both of his brothers were at home, all having thought it their part to rush to the support of the family when the disaster struck.

Jay didn't want to be outfitted like a gentleman. By a masterly stroke of strategy he succeeded in getting his mother and his brothers and sisters embroiled in such a terrific argument over the proper outfit for a young man going where he was going, that he managed to slip off to his room to make his own simple preparations undisturbed. But he was not to be left in peace for long. There was a rap at the door.

"Come in!" he shouted.

His father entered. "Telephone call. Whoever it is, says it's important."

"Oh, all right."

Jay dashed down to the second landing and picked up the receiver. "Jay Jarvis speaking. You called me?"

"I should like to see you at once concerning a grave irregularity in the matter of a passport issued to you. This is Arthur Adams speaking. You will find me at the Crane Hotel."

"Tori's gone and done it," Jay muttered, hanging up the receiver. "I thought it was all too smooth."

"Where are you off to now?" his mother called after him as he slammed the front door.

But Jay was already in a taxi before she could open the door to catch his reply.

"That boy will drive me crazy!" she said.

AT THE HOTEL Jay was sent up immediately to Adams' suite. He found himself confronting a tall, wiry man of about sixty with a parrotlike beak of a nose and a tousled mop of white hair. "You're Jarvis?"

Jay nodded, and the other continued: "Then I guess you are the man we're after."

Jay's heart fluttered alarmingly. What had that fool Tori got him into? The next words confirmed his wild surmise that he had fallen foul of the Federal police.

"Let me introduce myself. My name isn't Adams. That's only to keep reporters away till we settle this—and after. I'm Senator Atkinson, chairman of the foreign-relations committee. Sit down and have a smoke. Care for a drink? I've been having one myself."

Jay accepted the highball and gulped down a good two thirds. "What's it all about?" he asked, as coolly as he could.

"That passport of yours."

"What's wrong with it?"

"Nothing. All perfectly regular."

"Then what—"

"I'm coming to it. We have your record from the day you entered prep school. Got it less than twenty-four hours ago. Then the committee thought I had better fly here for a personal interview. Let me put the meat of the matter first—we can tackle the dessert later. We want a man with some brains in his head to do a little harmless observing over where you are going. All he will be asked to do is to keep his eyes open and report what he sees to us."

"Who are 'us'?"

"Me, first. Through me, the President's cabinet. I can prove that." The senator produced a short note confirming what he had said. "Recognize the signature? The stationery is O. K., too?"

"It looks genuine, but I'm no expert."

"You'll do," the senator remarked approvingly. "Now, without swearing you to secrecy, or anything like that, I'm going to tell you a story and trust to your good sense to keep it to yourself. Not even your father or mother is to know. You can judge for yourself whether the main points are true."

The senator then proceeded to give an exact, detailed account of the conference which had taken place on the day of Jay's graduation. Even the telegram which Jarvis, Sr. had sent Secretary Redding, announcing the bankruptcy of the Jarvis firm, was included. Redding's suggestion that all passports be scrutinized had brought results sooner than they had dared hope.

In a caustic aside, Atkinson congratulated Jay for having turned down Lawton's generous offer of an assistantship to himself. Jay, he concluded, was just the observer they were looking for— young, alert, scientifically trained to notice what the ordinary highly trained observer would overlook completely; and last, the son of an old family that had been driven to the wall by our professed friends but prospective enemies. They could not have found a more suitable observer for the particular job in hand if they had ordered him made to specifications.

"That's the meat of it. Now for the dessert. The department concerned will pay you the top salary permitted by their scale for as long as you can contrive to stay on the job, with a substantial bonus for any information of particular value—say a hint as to what that new metal or alloy is they are using on their tanks. General Green is worried about it, and I don't blame him. If you find out how they make that infernal dust of theirs, Congress will vote you anything you want within reason."

"What if I get caught?"

"We'll get you out somehow."

"With the navy?" Jay suggested innocently.

The senator saw the point. After what he had told Jay of Admiral West's perplexities there was not much to be said in rebuttal of Jay's skepticism.

"But you have brains enough not to get yourself into any crude jam our diplomatic corps can't talk you out of. You won't go taking photographs of

forts and factories, or anything of that sort?"

"Hardly," Jay admitted. "Still, I haven't agreed to accept."

"You will, though?"

"Sorry, but it can't be done."

"Why not?" Atkinson demanded, his beak growing sharper.

"Because I'm already signed up."

"Signed up? How?"

Jay told the senator what had passed between Tori and himself that morning. When he finished Atkinson was speechless for a moment.

"You did that all by yourself? At your tender age? I guess you don't need a nurse or instructions from the likes of me."

"I did only what I was forced into doing."

"Who forced you? Tori?"

Jay made a wry face. "I'm beginning to suspect he did."

"But why? What's his object?"

"That's what I'd mortgage two years' pay right now to know."

Atkinson considered the problem in silence. Privately, he half feared he was about to see the last of Jay. Tori, from Jay's account, did not impress the senator as the sort of friend one would pick as a guide to living in a secretly hostile country.

"Watch your friend," he advised.

"Tori? Oh, he's all right."

"Mightn't it be safer to resign now and pay him a visit later with competent agents of our own hovering in the background while you went sight-seeing?"

"I would rather go about what I hope to do in my own way."

"Well, perhaps you are right. Going? But I suppose you are pretty busy. Have another drink?"

"No thanks."

"Then I'll drink to your success. Good luck!"

IV.

LEANING back comfortably in his Pullman seat, Jay sighed luxuriously. He had the car practically to himself, two old ladies at the farther end being his only fellow passengers.

"Phew! I'm glad that's over."

He was referring to the leave-takings, mostly solemn, partly tearful, with his anxious family. Exerting his youthful obstinacy he had firmly forbidden any of his family to come to the station to see him off. But it had been bad enough as it was.

He could not repress a delighted grin as he thought of his last act before boarding the train. He had tipped a special messenger a dollar to hurry out to the house with a farewell present for his mother—a sort of surprise package. Jay could almost see his mother's face when she opened the package—a carton of one hundred gold-tipped Turkish cigarettes and a long ivory-and-lapis-lazuli holder.

On a card inclosed with the gift he had written brief instructions: "Take two after meals and cheer up. Dr. Jay Jarvis." If his mother flung them into the wastebasket or pitched them out of the window, Jay felt confident that his sisters would salvage the wreckage. So his money had not been entirely wasted.

He opened his hand bag and extracted the formidable grammar of Tori's language which he had purchased. In ten minutes he was lost to the world, struggling desperately with the illogical intricacies of a bafflingly idiomatic speech. Why the devil, he wondered, couldn't these people say outright what they meant, instead of dressing everything up in metaphors that conveyed the opposite of what was intended?

Early the next morning the train cut across a corner of one of the great corn States, and Jay had an opportunity to observe the effect of the dust in large-scale farming. As he sat out on the

observation platform taking in the tossing green that flowed rapidly back toward the horizon on both sides of the track, he felt strangely oppressed.

Never before in the history of the world had there been a furious abundance like this. If the train were to stop suddenly, he imagined, he would hear the steady, rustling growth of the dark green masses as the voracious roots sucked the last drop of nutritive moisture from a deep black soil that was unnaturally rich. And yet, a short time before, this terrifying jungle of unripened food had not been even imagined.

The soil from which it sprang, in what seemed like an unwholesome, specious parody of abundant health, had been exhausted and barren for fifty years. The clamor of a foreign market, demanding food and yet more food, had brought the sterile stretch back into cultivation, and one application of the dust had made it as fertile and as prolific as a plague feeding upon its own offals.

Something that bluff, salty old Professor Hildebrandt had let slip in an unguarded moment came back to Jay's memory with sinister force. Old Hildebrandt was habitually such a rosy-souled optimist that any unconscious lapse into pessimism on his innocent part was remembered by his students long after they had forgotten all the cheerful things he tried to instill into them about soil chemistry and its manifold blessings for a hungry mankind. Jay recalled one such memorable slip as he tried to take in the meaning of the rank, oppressive abundance stifling the plain.

"We humans," old Hildebrandt had remarked, "are a queer lot. Keep us just a little hungrier than is quite comfortable, and we bust a gut to raise hogs and corn enough to glut us all. Then, when we've got too much, we bust our remaining gut to breed ourselves into semistarvation again. It is

what is called the fundamental law of bionomics, gentlemen.

"Malthus may be out of date, but we continue to feed and breed. The human race can breed itself hungry in two generations, even when completely smothered in food at the start of the race. If you will pardon a very bad pun, gentlemen, I sometimes picture the human race as a breeding contest. The fastest breeders win the race and carry it on beyond the winning post—starvation for half the winners. But let us get back to our soils and manures."

As Jay recalled his teacher's theory he remembered also the jubilant vital statistics of the Great Recovery. Twenty months after the first dusting the birth rate had skyrocketed. But even the enormous crop of new babies could not cope with the oceans of cow's milk inundating the lowlands, and most of it was evaporated and condensed for export to the sellers of the dust.

What they did with it all nobody seemed to know, as their birth rate, always high enough, it is true, had barely risen at all. Possibly they were prudently hoarding against the happy day when they could overrun their neighbors' more spacious territories, to provide more than standing room only for the full crop of babies which their industrious race was undoubtedly capable of producing at a few months' notice.

Jay was joined by a swarthy, stoutish man smoking a fat cigar the color of an unhealthy pickle. The newcomer was the sort that longs to confide in any hapless fellow passenger he can catch where jumping off is dangerous if not impossible. Jay liked him at the first glance and accepted the proffered cigar—mate to the pickle.

"I'm in ladies' underwear. What's your line?"

"Elements."

"What's that? I don't get it."

"Iron, copper, tin, aluminum, and such stuff."

"I get you. Working for the metal-trades combine?"

"More or less. Exporting just now."

The underwear specialist was impressed. "Say," he burst out, producing a telegram, "what do you say to that?"

In silent wonder Jay tried to grasp the cabalistic message. Was it cipher? For a moment he thought Senator Atkinson was trying to communicate with him in this roundabout, deadly mysterious way. "JAKE TRIPLETS RACHEL." What on earth could it mean? He handed back the message silently.

"Pretty good, eh?" the specialist challenged.

"I should say so," Jay admitted doubtfully.

"Rachel's pretty good, I admit, but I didn't think she had this in her. Last time it was only twins."

Jay kept a straight face. "After all it isn't so remarkable in times like these. It's just part of the general prosperity."

The specialist sucked at his cigar and let his eyes rove over the terrific green surge of unrestrained fecundity billowing up all about them. A bland content smoothed the rounded contours of his swarthy face, and he sighed with his whole stomach.

"Yes, I guess that's it," he agreed. "Prosperity has come to stay." To his simple eyes it was all as shiningly clear as the summer sun blazing down on the steaming crops.

THEY SAT smoking in silence for nearly an hour, till the green nightmare ended abruptly, and the train glided out onto a level expanse of barren brown gravelly soil stretching to the horizon.

"They're dusting this, too," the specialist observed, pointing to five specks against the blank blue sky. "See how straight the planes fly. I'll bet these fellows keep the same distance apart for hundreds of miles."

"If they keep it up," Jay remarked,

"they'll soon have corn enough to feed all the hogs on Mars."

"I shouldn't wonder," the specialist concurred absently.

In a few seconds he was fast asleep, and Jay sat staring idly. The motion of the train rocked him into a delightful trance between sleep and waking, in which he neither thought nor dreamed. His mind was busily at work, but he was totally unaware of what was going on inside his head.

As has often been noticed by brain workers, some of our best thinking is done for us. The soil must be prepared before the seed can sprout; but, given the right conditions, the seed will germinate and take root of itself. Jay's mind had been prepared—although he did not know it at the time—by his work on an extension of the periodic law. It now needed only a chance gust to waft some vagrant seed in the right direction to start the mysterious thing we call life or, in Jay's case, creative thought. His head nodded, and he dozed.

A curiously jumbled conversation, in which Rachel and Jake, triplets and rank green corn by the thousand square miles, Tori and Atkinson, dust and battleships, Lawton and the personnel officer Wharton, all seeming to join in and express their weirdly distorted opinions of Jay's work on the periodic law, floated through his head. Under it all the *clickety-clack, clickety-clack*, of steel on steel as the wheels hit the welded junctures of the rails, hammered out an absurdly logical refrain: "My name—is Jake; my name—is Jake; I sowed—the seed; I sowed—the seed."

By this time Jay was more than half awake. He woke fully, with a jolt, clearly conscious that his absurd conversations about triplets with the expansive Jake had indeed sowed the seed of a brilliant idea in the well-prepared soil of his mind. Why on earth had he not thought of it before? It seemed the most natural thing in the world to try.

Without disturbing the sleeping Jake, Jay got up and made his way to the writing desk in the club car. He reached for a telegram blank and hesitated. There was a lot to be said in his message, and he wondered whether the air mail would be fast enough to deliver his letter and a reply, addressed in care of the steamship company, before his boat sailed. Deciding that this was no time to save a few of his thousand dollars, he wrote out his message and addressed it to Senator Atkinson, Washington, D. C. Then he glanced at his watch and consulted the time-table. They were due at the next station in eight minutes. Not trusting the drowsy porter to hand in the message to the station operator, Jay walked out onto the platform and waited.

Most of the message was taken up in an urgent appeal to Atkinson to induce the proper authorities to devise some safe method of getting reports to him during his stay abroad. Jay had no idea who the proper authorities might be, but he felt reasonably confident that the senator would. Nor had he any suggestions as to a method of safe communication. In his message he stated that, in his opinion, his correspondence would be thoroughly scrutinized by experts who would leave no trace of their tamperings.

The rest of the message suggested that Senator Atkinson consult Lawton immediately and learn the names of the best men in the country to carry out certain experiments which Jay himself was not trained or competent to do. Having found these men, Atkinson—again through the "proper authorities," but a different set, naturally—was to prevail upon them to start the experiments going at once.

As soon as they got any definite results, they were to let the senator know, and he was to see that the results were promptly and accurately transmitted to Jay. As the results in question would

all be mere numbers, and certainly less than two thousand, they could easily be fitted into a code—provided some safe way of using a code could be devised.

The experiments which Jay suggested were entirely out of his line, but would be mere routine to a good biologist with an up-to-date training. Jay simply wanted to know what effect, if any, the dust had on fruit flies. If it did affect them, did it make them more or less prolific? In either case, were the offspring sports, or deformed, or were they normal? If the flies were affected, was it possible to screen off the effect of the dust? And, if so, what were the wavelength numbers, on his own—Jay's—periodic scale, corresponding to the screens?

The train stopped, and Jay hurried to the telegraph office. On the way back he saw Jake stretching his legs. Jake hailed him.

"Business rushing?"

"I'll say! Just sent off a rush order I forgot."

"That's bad. Once got myself fired for a mistake like that." Jake interrupted his reminiscences abruptly. "Oi, oi!" he croaked, "I forgot to wire Rachel the names." In a waddling run he made for the telegraph office as fast as his fat legs could take him.

"Better hurry," Jay called after him. "We've got only two minutes left. How about Shadrach, Meshach, and Abednego, if they're all boys?"

But Jake did not hear him. The porter shoved the exhausted father aboard just as the train began to gather speed, and that was the last Jay saw of him. Jake's sprint had upset his digestion, and he spent the rest of the journey in his parlor compartment.

Jay passed the time fairly painlessly over his grammar. He planned to surprise Tori by greeting him at the pier in his own language and hoped his self-instructed pronunciation would not turn

a neat compliment into an obscene jest or a deadly insult. It was a tricky language.

ARRIVED at his destination, Jay went directly to the pier. There was no sign of Tori. Jay tried the information desk. The clerk, a compatriot of Tori's, assured Jay that Tori would arrive in time. He then handed Jay a bulky telegram. Retiring to a secluded corner before opening it, Jay tore the envelope. As he did so he glanced back over his shoulder involuntarily. The clerk was watching him like a lynx.

"If there's any answer I shan't send it off here," he muttered. He thrust the message into his trouser pocket and strode into the street. It was still nearly an hour to boat time. Jay stepped into a cab. "Take me to the farthest telegraph office you can make and get back in time for the boat. Say fifty minutes for the whole trip."

As Jay had anticipated, the bulky message was from Senator Atkinson. Its contents were somewhat of a surprise. Jay gathered that he was not the only one trying to find out something about the dust. Atkinson first reported that he had consulted Lawton and others as to the three best men for the experiments proposed by Jay. The experts were unanimous in naming Davisson, MacMillan, and Spier. These names, the senator added, meant nothing to him, but Lawton had told him that Jay would have heard of the men. Jay had.

What followed was the unexpected item. These three biological experts had been carrying out experiments with the dust of the sort Jay wanted tried for the past nineteen months. They had reached certain conclusions, but did not care to give out anything until some of the crucial details could be checked by an exhaustive set of control experiments. These were now in progress and would be finished in about two weeks.

The results so far were startling, but

they could not be considered conclusive. It would not be possible at the present time to furnish Jay with the numbers on his own scale for which he asked, but they hoped to secure what he wanted when the control experiments were completed.

Atkinson then went into the matter of communicating with Jay at considerable length. Through Admiral West, he had got in touch with the code department of the navy, and through them with the international secret service—foreign-service spy system. All of these experts agreed that it would be extremely difficult, if not impossible, to communicate with Jay, where he was likely to be working, in any spyproof way.

For the present they had no suggestions, but had set their best men on the problem. Should they reach a workable solution Jay would first hear of it when he received a message from them which he would recognize. If they succeeded in getting this through, they could then devise a means whereby Jay could send out messages. In the meantime he was to count on nothing and to take no unnecessary risks.

The cab drew up at a telegraph office.

"Will this do? The next one is about eight minutes farther on. We can just make it and get back in time."

"This is O. K. I want to sit a few minutes. Give me five minutes' notice before we must start back."

To the costly tune of a busily ticking meter, Jay sat and considered his problem, trying desperately to get a grip on it. How could Davisson, MacMillan, and Spier communicate with him, and how could he get word back to them or to Senator Atkinson should it be necessary?

He thought so hard that his mind became a blank. Vague, inconsequential snatches of conversations drifted through his inattentive memory, and disjointed fragments of unrelated scenes passed unnoticed before his eyes.

Gradually most of these faded into the background, and Tori dominated the dreamlike stage.

What was it that Tori had said about Jay's work? It was "fundamental." No; that wasn't what he wanted; it was something else. Unaware that he had done so, Jay let his head fall back on the cushions and closed his eyes.

Tori's image and his voice came up sharply clear. Jay could hear everything now, and he saw Tori as clearly as he had seen him that last afternoon in his rooms. What was he saying? This was it; he must get this.

"You may publish your researches when, where, and how you please, although we should be honored if you would use the *Transactions of our Academy of Sciences*."

"Eureka!" Jay shouted, startling the driver, just as the latter was about to tell him he had only five minutes more to sit. "Wait for me."

He dashed into the office and grabbed a pad. Then he did the fastest job of writing he had ever done. The clerk was just beginning to count up the words when the taxi driver stuck his head in at the door.

"All right!" Jay nodded. "I'm coming." He slammed down two twenty-dollar bills. "If it's more than that they will pay at the other end." He followed the nervous driver and hopped into the cab. "Step on it. I can't afford to miss that boat."

JAY'S scheme was so simple that he wondered at his own slowness for not having thought of it at once. What he wanted from the biologists was a mere number, certainly less than two thousand, of a screen or filter, as measured on his own scale, if the biologists discovered that a screen would cut off the effect—if any—of the dust on the fruit flies.

As Atkinson had hinted pretty plainly, it would be difficult if not impossible to

get any secret communication to Jay, and if the desired information was not conveyed in absolute secrecy, "the enemy" would know at once that Jay was spying.

Jay's scheme was spyproof. The biologists were to publish the results of their experiments in the biological journal which they used habitually and which made its way regularly once a month into every scientific library and biological laboratory in the world.

But to publish the truth in a form that any expert would recognize immediately, while not throwing suspicion on Jay, perhaps, would be a blunder of another kind, and quite as bad a one. For it would tell the enemy that American scientists were at least stumbling about in the immediate neighborhood of their secret. Then Jay would be strictly watched as a mere matter of elementary common sense.

To get around this, Jay proposed that the biologists substitute "gamma rays," or "electrons" for "dust" in their published reports. The wave lengths, or intensities, or both, of these were to be recorded in the customary international units. In the first tabulated list of measurements, the eleventh, twelfth, eighteenth, and twentieth, were to be doctored; the last digit in each of these measurements was to be one of the numbers in the screen number which Jay wanted on his own scale.

For example, if the biologists found that the effect of the dust was "screened" at 1452 on Jay's scale, the eleventh number on their fake list of measurements was to end in 1, the twelfth in 4, the eighteenth in 5, and the twentieth in 2. If no screening effect was detected, then the designated measurements were all to end in zero, so that "0000" would spell "no effect."

The faked measurements were to be concocted so as to seem entirely plausible to a casual inspection. There was already a vast literature of such experi-

ments and tabulated measurements, and one set more was not likely to excite either suspicion or curiosity.

Only when some Ph. D. candidate began checking the work would its scientifically worthless character be exposed. The worst that could happen would be a sudden drop in the scientific stock of Messrs. Davisson, MacMillan, and Spier, but they would have to stand the loss for the good of their fellow citizens.

To make it plain that they were indeed communicating with Jay, the biologists were to "sign" their communications by the number 7938. The digits 7, 9, 3, 8 were to be the next to the last in the eleventh, twelfth, eighteenth, and twentieth of the recorded measurements.

As for Jay's end of it, he would use the "Transactions of the Academy of Sciences," as Tori himself had suggested. He intended to continue work on his revision of the periodic law. His figures would be published in terms of his own scale. If he succeeded in finding out what was the active principle in the dust, he would publish the digits giving its scale number as the fifth, seventh, ninth, and thirteenth digits in his second table, but with this difference—the indicated digits of the scale num-

ber must be divided, beginning with the first, by 5, 8, 8, 6 respectively, and only the remainder of these divisions were to be kept.

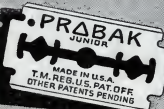
Thus, if the number furnished by the direct reading of the four indicated terminal digits was 6896, the correct number would be 1010; to 2978 would correspond 2172, and so on. To prevent wild-goose chases, Jay was to indicate when he was transmitting the required scale number by "signing off" with zero as the terminal digit of the second, fourth, tenth, and fifteenth numbers in his second table.

As the "Transactions" were received regularly once a month by every scientific library in the world, there was no danger that Jay's communication would be overlooked. After that it would be up to the men in the physical and chemical laboratories to do the rest. With a hint like the one Jay hoped to broadcast, they would deserve to be wiped out if they failed to duplicate the dust in any desired quantity.

The driver got Jay back to the pier four minutes ahead of time. He need not have hurried. The boat was held twenty minutes for Count Tori, whose plane had been delayed by adverse winds.

To be continued.

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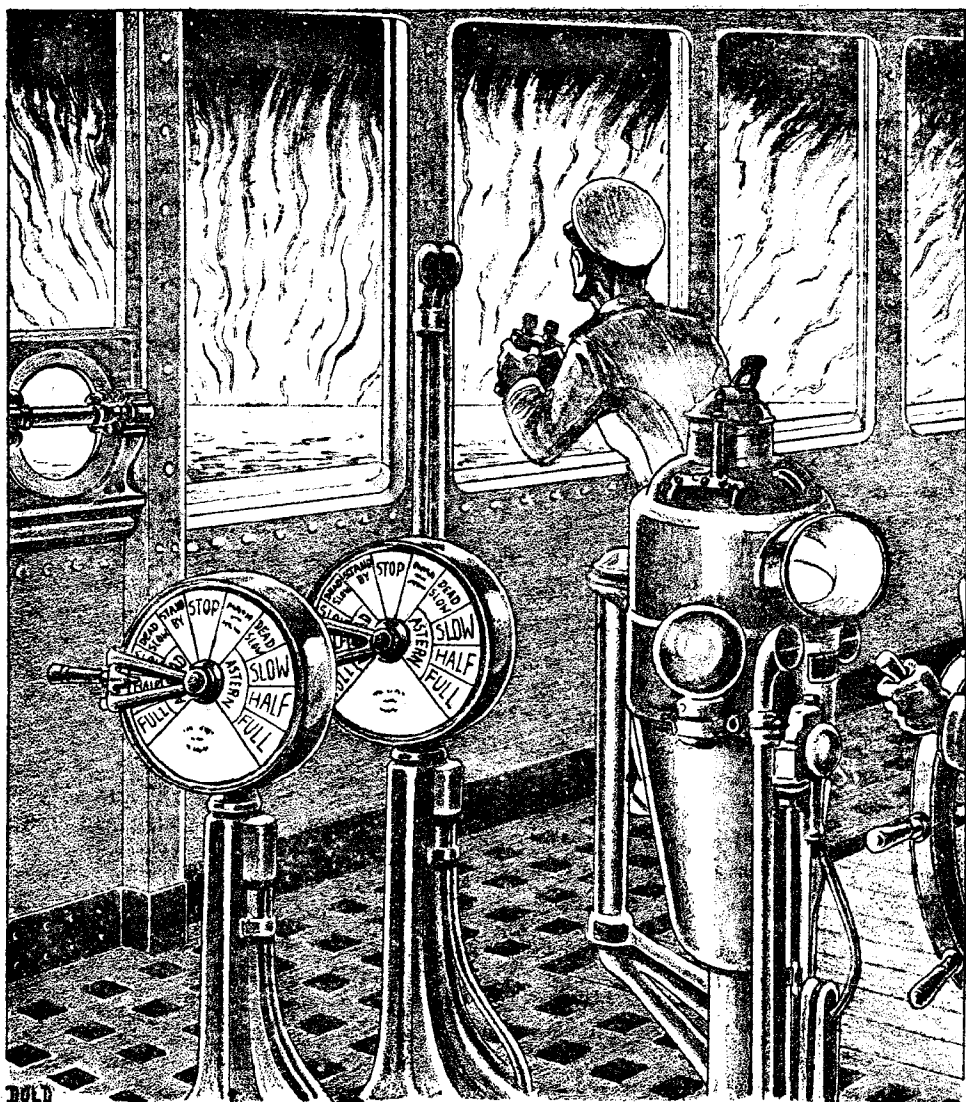
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TWELVE EIGHTY-

*Part Two of an epoch-making
serial in superscience fiction*

by JOHN TAINE



SEVEN

Patches of brilliant orange appeared with startling distinctness in the midst of dark-green expanses, and blotches of angry red alternated with violent blues, dull mauves and sultry purples.

UP TO NOW:

The President's emergency committee, including Secretary Winters, Redding, Admiral West, General Green, Senator Atkinson and Dr. Lawton, tries to discover what a certain foreign

Power is doing to the United States. After the Great Drought, in which the agricultural States were devastated by heat and wind, enemy agents convinced the Department of Agriculture that their secret fertilizing "dust," sprayed over

the dead soil by airplanes, would restore fertility.

To avert starvation and revolution, the United States signed a trade treaty, getting sufficient dust in exchange for its food surpluses shipped to the enemy. Government experts had been unable to determine the chemical nature of the dust which had quadrupled fertility. Army secret-service agents reported also that the enemy was using an unknown metal in its land tanks. Mobilizations and fleet maneuvers of the enemy have alarmed the government. Atkinson says the war will not be fought by armies and navies; he believes the enemy is fighting us with the dust.

Lawton's men, combing the country for young talent, unearth Jay Jarvis, heir to the defunct fertilizer monopoly of the United States. Jay, age 23, has just graduated with highest honors in physical chemistry. His university friend, Count Tori, of the enemy, has been doing advanced work—unsuccessfully—in modern chemistry. Tori guesses that Jay is trying to discover the secret of the dust, and offers him a position on the enemy research staff, of which he is commander-in-chief. Jay has attracted Lawton's notice by his Gibbs' Prize paper on an extension of Mendeléeff's periodic law of the chemical elements.

Jay accepts Tori's offer. Before sailing he makes arrangements through Atkinson for communicating while in Tori's country with the United States secret service, by sending out code reports concealed in published tables of scientific research, and for receiving answers from American scientists through the like in a biometric—biologic—journal. Jay wishes to know the results of American experiments on fruit flies with the emanations—if any—from the dust.

V.

AT THE gangplank Jay waited. The officers knew that he was traveling with Count Tori, so they let him hang around. They were all men of Tori's race, as the liner was one of the great fleet of luxurious floating hotels subsidized by their government for the lucrative tourist trade.

Like everything else since the beginning of the Great Prosperity, globe-trotting had experienced a tremendous boom, and the steamships of all countries were sold out months in advance of their sailings.

Jay watched the chattering, gayly dressed crowd of women hanging over the railing of the upper deck and wondered how many of them knew that there was a war on and that they were aboard an enemy transport. Probably none, he concluded. Like Jake, they were too busy flinging the cash to bother about the credit.

How would they all get home again, Jay wondered, if their "dust bonds" should suddenly be depreciated to about zero while they were blithely touring the enemy's territory? They couldn't walk, and flying was out of the question. Perhaps they would stay where they happened to find themselves and, like millions of their dead and forgotten sisters all through military history, become the mothers of a new race.

As none of them showed any inclination to dash back down the gangplank or to jump overboard, Jay decided that they all really were as ignorant as Jake and not merely acting a courageous part to keep up their spirits.

A limousine whirled up with a flourish and stopped. Two officers hastened forward to open the doors. Little Tori, dressed in a frock coat and top hat like an ambassador, stepped out. The obsequious officers all but prostrated themselves. Turning back to the cab,

Tori helped a strikingly beautiful girl of his own race to alight.

Jay's first thought was that Tori had just been married and had not had time to change his clothes before starting for the boat. This was contradicted by the girl's outfit. She was dressed in a spick-and-span American-college-girls' sport costume. Although she was a good six inches taller than Tori, being in fact a very tall woman for her race, there was an indefinable resemblance between her and Tori. Before he could speculate further on her identity, Tori had introduced them.

"Jay, this is my sister, Nara."

Tori pronounced it Nah-rah, and Jay seemed to remember having seen the word in his grammar as the name of some flower. Nara, with her vermilion lips—artistically touched up, of course—her olive and old-ivory skin, and her dark, lustrous eyes, was more exotically beautiful in Jay's opinion than any tropical flower he had ever seen in a hothouse. She held out her slim, gloved hand.

"How do you do, Mr. Jarvis? My brother has told me lots about you and how good you have been to him."

Her English accent was much better than Tori's, although his was very good indeed, and her manner was exactly like that of any well-bred, sophisticated American girl who has traveled much in Europe. Jay instantly sized her up as being the "better man" of the two in every way. She had learned something that Tori would never master. The expression about her eyes and mouth showed that she had been blessed with a gift few of her people share, a saving sense of humor.

Tori, as Jay knew to his own sorrow, was physically, mentally, and morally incapable of understanding a joke or seeing the ludicrous side of anything. Six tiny, almost invisible wrinkles in the strategic places proclaimed Nara as a girl who knew how to laugh.

Jay was just about to say that Tori might have told Nara a lot about him, but that her brother had never even hinted to him of Nara's existence, when he thought better of it. Tori would only be offended. Jay contented himself with an innocent comment:

"I hope your brother didn't tell you the truth."

Nara saw the point and smiled. "Perhaps he didn't. It was all very flattering."

Their hand luggage was carried up the gangplank, and the officer on the bridge began giving his orders through a megaphone. The plank was hauled up, hawsers were thrown off, and the engines began to throb. A din of incoherent farewell messages seemed to quicken the huge vessel into barely perceptible motion, and they had started. Promising to look him up in about half an hour, Tori and his sister hastened off to their staterooms.

Jay's quarters gave him a shock that was not wholly pleasant. Even in prosperous times such as the world was then enjoying, the suite—Jay supposed that was what it was called—would have been luxurious for a multimillionaire.

"What are they trying to do to me?" he muttered to himself as he surveyed the extravagantly furnished sitting room. "Do they take me for the Prince of Wales? What's the idea?"

He tried a door on the left and stopped in astonishment at the threshold when he saw the room beyond. It was a fully equipped laboratory, with crowded bookshelves lining one wall, ready for immediate occupancy.

A hasty inspection of the apparatus and the titles of the books and journals confirmed his guess. He was to be the occupant, and his employers evidently expected him to begin work at once. The books and apparatus were precisely those which three years of almost incessant, grueling work had made as familiar to him as his own hands. Well,

he was ready whenever they gave the word. Why not? They were paying him well enough.

Jay peeled off his coat and vest and reached for the work smock hanging behind the door. Tori should find him busy when he arrived to pay his little call. Jay found the latest number of his favorite technical journal on the long table across the end of the room and settled down to scan the articles in search of anything new in his specialty. There was a timid rap on the door which Jay had not closed.

"Come in!" he called without turning his head.

LIGHT footsteps pattered over the cork floor, and Jay looked up to see a boy, who looked about seventeen, standing deferentially at his side.

"Hello! Who are you? What can I do for you?"

"I am your assistant, Dr. Jarvis," the boy announced with a most engaging smile which showed all his fine teeth. "I am Seventeen."

"Just what I guessed," Jay remarked with satisfaction. "What's your name?"

"Seventeen."

"No, no! Not your age. Your name."

"Seventeen," the boy repeated, favoring Jay with his most entrancing smile.

Jay scratched his nose. "If you don't understand English any better than that, a hell of a lot of use you'll be to me."

The boy's solemn reply almost knocked Jay off his chair.

"I am paid, Dr. Jarvis, to be a hell of a lot of use to you."

"Say, young fellow, where did you pick up English? There's a sort of singsong about your brand, as if you were chanting a hymn."

"I learned English at the missionary college in my native province."

"College? Then how old are you, for Pete's sake?"

"Thirty-two."

"I missed it by only fifteen years—about forty-seven per cent. What is this nonsense about your name being Sweet Seventeen?"

"Not Sweet Seventeen," the boy corrected with the gravity of a plaster image; "just Seventeen. That is my number in the scientific brigade to which I am attached."

"Sounds rather inhuman to me. Also a bit too dramatic. Theatricals are all right in the theater. In a workshop like this they only get us all goose-stepping around as if we thought we were big savants. I shall call you Sam for short. What can you do?"

"Mathematics. All the usual developments of the quantum theory—wave mechanics, including the relativistic form, matrix algebra, the applications of substitution groups, Lie's theory, and so on."

"You must be pretty good. What else can you do?"

Without batting an eye, Sam completed the tale of his impressive accomplishments. Jay noted without surprise that Sam seemed to find nothing incongruous in the list.

"Wash bottles," he said.

"Just the man I need. Count Tori must know me better than I know myself. But just at present I don't need anything in quantum mechanics or bottle washing. Do you speak your own language as well as you do mine?"

"Better," Sam declared.

"Then you can teach me."

"But ours is a very difficult language, Dr. Jarvis."

"I've guessed as much. We shall get up at five, and put in three hours before breakfast. Then we can knock off another three hours after dinner—say from eight to eleven. If you need a nap you can catch one in the afternoon. I'll have plenty of calculations in a day or two to fill in the rest of your time."

Sam's smile faded. "I do not know how to teach."

"Oh, you won't have to teach me much. All I want of your language is enough to know if some girl is insulting me. It's an art, I'm told, among the ladies of your country. Come on; I'll show you how to teach a language."

Jay got up and laid the journal in his hand on a bench. "I get up out of my chair," he said, "and I lay this journal on that bench." He handed Sam the journal. "Now you do it. Sit down, get up, put the journal where I did, and tell me everything you are doing as you do it—in your own language, as idiomatic as you can make it. If I don't follow, I'll ask. And as I repeat after you, catch me up when I don't say it right. Don't stop with what I did, but go on doing any fool thing that comes into your head and keep telling me what you are doing."

Poor Sam was horribly embarrassed, but he could not refuse. Only when Jay started murdering the language did Sam begin to take an interest in his antics and warm to the job of setting Jay straight. As Jay presently discovered that he got on much better if he imitated all of Sam's antics while he was stuttering to describe them, the pair made a highly diverting spectacle when Tori and his sister arrived to pay their call.

They had let themselves in when repeated knocks and rings brought no response and were now standing in the door of the laboratory enjoying the performance. Tori managed to control his face; it was too much for Nara. Her shriek of laughter ended the lesson. Sam scuttled from the room, leaving Jay to explain.

Tori protested that it was not necessary for Jay to learn the language. Most of the men with whom he would be associated could make themselves understood perfectly in English, and those who lacked English spoke German,

which Jay had learned as part of his scientific training. Jay laughed it off. With a glance at Nara, he declared that his object in trying to pick up a smattering was purely social.

NARA was frankly modern and cosmopolitan. Pretending to take Jay for a gay young blade, she remarked that English would be sufficient for the sort of social contacts Jay no doubt had in mind, as English and American sailors had taught the girls all that was really necessary.

Jay hotly denied the innuendo. Had he been alone with Nara he might have continued the conversation in a different tone. But he had caught the shadow of extreme distaste that flitted across Tori's face while his sister was speaking, and he thought it only politic to crack down on her rather hard.

Nara was not deceived by Jay's tone, if the mischievous, almost sly glance she stole at her sedate brother meant anything. Nevertheless, she thought it tactful to divert the talk into cooler channels, and they discussed the prospects of the voyage.

Tori nodded his grave approval when Jay declared his intention of putting six hours a day on his scientific work. Jay hoped to have at least a preliminary report of something pretty fair ready by the time the boat docked.

"By the way," he asked, "does that offer of publication in the 'Transactions of the Academy of Sciences' cover preliminary reports?"

"Of course," Tori assured him. "If they are short enough, they are printed with the abstracts of forthcoming papers at the end of an issue."

Jay asked Tori how he would pass the time, as the count cared little for games and perhaps less for mixing.

"Affairs of State, as one might say," Tori confided with an enigmatic smile. "Every hour takes me that much nearer home and work. I shall spend most

of my time not far from the wireless room, I imagine."

"And I," Nara admitted, "shall spend most of mine in the ballroom. The rest will go in sleeping off one party and getting ready for the next. Without a little innocent flirtation now and then, long ocean voyages are insufferable."

Again Jay caught that shadow of distaste in Tori's face. Evidently he did not entirely approve of his sophisticated sister. Jay suspected her of tormenting her sober-minded brother deliberately. They were elusively alike in many ways, and yet singularly unlike in temperament.

Nara suddenly remembered that she must consult her maid about what gown to wear at dinner that evening. It was a serious business this, she declared, of choosing the gown for her first appearance in the saloon. One mistake—say silver and blue instead of scarlet and black—and the voyage would be ruined. The American women would run off with all the prizes. Blowing her brother a kiss—a trick she had picked up watching sentimental English plays—she slipped out and left them together.

Tori's brooding face was both sad and angry. Jay studied him in silence. Once or twice Tori seemed on the point of speaking, but reconsidered and said nothing.

"Anything up?" Jay asked sympathetically.

Tori sighed heavily. "As we shall probably see a lot of one another, I may as well tell you now. Sooner or later you would hear it from some one else. Nara is only my half sister. We had the same mother."

"I noticed that she is rather taller than you."

"Yes. Her father was a very tall man. He was an ensign in the American navy when Nara was born."

"Oh!"

"Now he is an admiral."

For the first time that he could remember, Jay's ready tongue failed him. It flashed across his mind that Tori might not unreasonably harbor a violent dislike for Americans, and he seemed to hear Senator Atkinson cautioning him: "Watch your friend." He kept perfectly still, wondering whether Tori would share any further confidences. He did.

"I saw him the other day."

"The admiral?"

"Yes. He did not recognize me, of course, as I was only a little boy—four or five—when he visited our country. I found him very intelligent. We talked of world peace and the League of Nations. Our elder statesmen had asked me to interview him before returning home."

TORI spoke impersonally, as if he were discussing a scientific problem. There was no irony in his allusions to the admiral's intelligence and world peace. Jay gathered courage to ask a plain question:

"Did your sister see the admiral?"

"Of course! She always drops in to see him on her way to or from Europe—when he is ashore. This time he told her she was very beautiful. Perhaps she is. I cannot say."

"She would attract attention in any crowd."

"And she is always in the center of a crowd."

Jay decided to plunge and get at the facts: "You don't seem to think much of your sister."

"How could I? She is not truly of our people." He gave Jay a straight look. "She will marry an American or an Englishman. She has no use for our own men. Still, I am very fond of Nara."

"By the way," Jay inquired coolly, "since we are having a pretty straight talk about your affairs, does the admiral

acknowledge your sister as his daughter?"

"Why should he? What could he gained? His own family would only suffer, and Nara would not be helped. As no member of his family, except himself, seems to care for our part of the world, they are not likely to learn the truth."

Tori smiled to himself. "Once there was an amusing scene. Nara had called to see her father at his office on her way home from school in England. She intended to surprise him, so she had not written—through a trustworthy third person, of course—as usual. The admiral was surprised. While he and Nara were talking, his youngest daughter walked in unannounced. The girl took a great fancy to my sister and begged her to visit the family for a few days. Nara explained that she had to get home at once to see to her affairs."

"Quite awkward for the admiral, I should say." Jay studied Tori's face before putting his next question: "Why do you disapprove of your sister? Nothing that has happened is her fault."

"Of course not," Tori agreed emphatically. "Our people think almost nothing of such temporary unions. Nara's mother was a widow when Nara was born. Your people," he went on, with a touch of disdain, "attach altogether too much importance to that side of life. We consider it natural and think no more about it. Why be morbid about the facts of nature?"

"All a matter of geography. At least that used to be the popular theory. I'm like you. The customs of a country are its own affair. But if you are so philosophical about that part of it, why can't you accept your sister for what she is and let her live as her heredity urges her to live?"

Tori made a sour grimace. "Because I can't. That is all."

"Her social life sets your teeth on edge?"

"Not at all! That is of no importance. And," he continued with bitter emphasis, "it is of even less importance to her than it is to me. She rather despises it, I believe."

"Then what's the matter?"

Tori's eyes flashed and his nostrils trembled. Jay had never before seen such a display of suppressed emotion from the habitually self-possessed little man.

"I hate her ambitions!"

"What are they?" Jay demanded calmly.

"She is a leader in the movement toward internationalism. Think of it! My sister, with the blood of one of the oldest and most patriotic aristocracies of the world in her veins, using all her talents—she is gifted—to destroy the very thing that has preserved our people as a nation for centuries. She would destroy it all by diluting our national character with foreign ideals alien to the genius of our people. If her ambitions and those of her friends in America and Europe triumph, we shall cease to exist as a nation."

Jay fancied he detected the professional orator and budding statesman behind Tori's phrases, but for all that he was forced to admit that the little man seemed genuinely moved, and, therefore, probably speaking at least part of the truth.

"What can one lone girl do against the traditions of a great nation like yours?"

"Do? What has she done? When you learn enough of our language to read the newspapers in the vernacular—the red rags read by the proletariat—you will see her name on every page. Do you know where she has been for the past eighteen months?"

Jay shook his head. "I've been too busy at other things to pay much attention to what is going on."

"She has been touring Europe as the

official delegate of the Youth Congress of our country to the conventions of similar congresses of deluded boys and girls, from Moscow to London, and from Stockholm to Rome, preaching the illusory dogmas of pacifism and internationalism."

Tori was breathless with disgust and indignation.

"What's wrong with that?" Jay demanded. "Isn't peace more sensible than war? And how the devil do you expect your country—or any other—to exist? By eating its own smoke? You'll soon starve to death that way and——"

Tori curtly interrupted: "Do you believe it is possible to convert the nations of the world to internationalism and their peoples to pacifism?"

"If I did not," Jay retorted, "I should hire some one as charming as your sister is, and as persuasive as she must be according to your account, to do exactly what she is doing."

Tori gave him a searching glance, and Jay wished he had not let his logic run away with his caution.

"You believe Nara is no better than a subtle sort of spy or *agente provocateuse* to lull our competitors into dreams of a false security? That she has no integrity?"

"Not at all," Jay replied. "For two reasons: First, I know nothing of your sister except what you have told me; and second, I am still young enough and green enough to believe that it is possible to make the human race use its common sense and give up war and other brands of damn foolishness."

"You've known me for three years. Did I ever strike you as the sort of guy who would join every mushy movement that comes along and go flocking to inspirational talk-fests? I base my theory on what seems to be a scientific fact—we may all be half crazy, but most of us are not incurable."

"I see little evidence of it," Tori re-

marked dispassionately. "Do you think we shall ever have another world war?"

"Another? No."

Again Tori seemed to be reading his mind, and Jay silently cursed his own outspokenness. Did Tori guess that Jay fully expected, or at least hoped, that the invisible war then going on would be the last? He must learn to control his convictions and not let Tori or his friends goad him into another argument. Tori got up to go.

"Well, whatever may be true, we need not get excited. These questions will not be settled by you or me, or in our generation. In fact, I doubt whether they will ever be settled. I have my work to do, and you have yours. That is the most we can say. By the way, if you want anything, either for your work or your personal comfort, please let me know."

"Thanks, Tori, I shall."

"You will dine with Nara and me?"

"My tongue has been hanging out for an invitation for the last two hours."

Tori bowed one of his stiff, ceremonial little jerks and departed.

WHILE he dressed for dinner, Jay speculated just how much of Tori's broadmindedness in the awkward matter of his sister's parentage was window dressing and how much whole cloth. Jay rather suspected Tori of being less platonically toward the admiral than he pretended. In fact, he was inclined to size up the whole episode of Tori's brotherly frankness as a rather transparent trick to delude him—Jay—into believing that Tori had nothing but the sincerest admiration for all Americans or, if not exactly that, then merely a passive indifference, when Jay should hear from gossipy third persons the romantic but not uncommon story of Nara's parentage.

Jay could have kicked the admiral—or rather the ensign—for a thoughtless imbecile to get his whole country into

a mess over the sowing of his private wild oats. Then he reflected that the ensign could not possibly have foreseen that the little boy Tori of four or five had the makings in him of an extremely dangerous enemy.

"It's easy enough for Senator Atkinson to warn me to watch Tori," he muttered. "But who the devil is going to watch me while I'm doing it? Tori seems to have eyes in the back of his head."

The obsequiously smiling Sam—or "Seventeen"—appeared.

"Do you need any assistance, Dr. Jarvis?"

"No. Get to blazes out of here and don't show up again till five to-morrow morning to give me my lesson. I hate being waited on."

VI.

ALL but the last thirty-six hours of the voyage lay behind them. To give the bored tourists a thrill, the floating hotel was proceeding at half speed through the dangerous channel between two of the "dust" islands. These had recently been purchased from the decadent powers which had owned them for nearly four centuries.

Far in the hazy distance loomed the densely forested mountain ranges whose swift streams provided the necessary energy to operate the electrical plants of the dust industry; and precipitous cliffs of volcanic rock, hemming the narrow valleys gashed from the mountains to the sea, furnished an abundant supply of the basic raw material.

This much of the process for manufacturing the dust being no secret, the directors of the tourist trade were generously permitted to give their patrons a full and unobstructed view of the operations—from the water only, of course. Landing was prohibited. And to make sure that no slip should occur,

two heavily armed cruisers escorted the steamer through the channel.

The tourists for the most part soon tired of the spectacle of basalt cliffs cascading down in shattered rubble as high explosives did their work. A few, more inquisitive than the dancing, tennis-playing, drinking, bridge-playing, and flirting majority, showed a mild interest in the proceedings.

What did the workers do next to all that broken rock when they had it? The polite stewards and deck officers replied that they did not know; the further details of the manufacture of the fertilizing dust were matters for the technical workers and government scientists alone. Did they always have to use volcanic rock? The officers smiled. No; as the tourists should see for themselves as they passed other islands, any kind of rock would do. Even sand was being used in prodigious quantities.

Then why, engineers demanded, did not the manufacturers use supplies nearer home? Surely sand and rock were not scarcities? The answer to this question was obvious, the officers politely pointed out. The islands actually being used were practically worthless for agriculture, and indeed scores of the smaller ones had not been inhabited for over a century. To have scooped up or blasted the basic materials nearer home would have ruined rich agricultural land, densely populated, or have interfered with the fishing industry by irreparably damaging the beaches, bays, and channels.

"We shall pass one of the experimental farms in about an hour," an officer promised. "Then you may see where they test the dust before shipment."

A rubicund tourist in plus-fours and a yachting cap yawned. He turned to the platinum blonde at his side. "Let's find the others and get in some bridge before dinner." They strolled lazily away, missing the rest of the officer's promises.

"To-night we pass the largest establishment in this sector where they convert the rock into dust. If you stay up till eleven, you will see it from the deck. If there is no fog," he added.

One by one his audience drifted away to the bar or the bridge tables, and the officer found himself alone. A fellow officer sauntered over from the rail and joined him. They exchanged a few remarks in their own language and parted, laughing mirthlessly, to go about their duties.

FORTY MINUTES later Jay emerged from his quarters to get a mouthful of salt air. He had been hard at work since eight o'clock the preceding evening, and his eyes lay like cinders on his brain. Hoping to finish his preliminary report before landing, he had skipped his language lesson with Sam, putting all his effort on his science.

Sam, at the moment, was lying on his back with his mouth open, snoring off the effects of a protracted debauch of mathematical calculations. As Jay had promised, he soon found plenty for his assistant to do. What Sam lacked in a sense of humor he more than made up in technical proficiency.

To try him out at first, Jay had given him a rather routine piece of drudgery to do, which Sam raced through like a streak in about a fifth of the time Jay had anticipated. Somewhat startled, Jay turned him loose on a real problem in the perturbation theory which he did not feel like tackling himself. It was the complete and successful solution of this complicated puzzle which had exhausted poor Sam.

Although Jay had another tough brute ready and waiting for Sam's patient skill, he considerably let his assistant have his nap out.

Tori had evidently spied Jay from the wireless room. He now emerged and joined his friend by the rail.

"You look tired," he remarked, laying a hand on Jay's arm. "Why don't you go and lie down? There is no desperate hurry in fundamental science like yours. Industry will not catch up with you for fifty years—or more."

"But some bright boy in Germany or England—to say nothing of the good old U. S. A.—may beat me to what I'm trying to do next week."

"Would that matter?" Tori asked, with just the faintest inflection of scorn.

"Not if I were as impersonal and as unselfishly unambitious as you fellows are. But, as I told you once before, I'm still uncivilized enough to prize my personal scientific reputation. It means something to me whether I get the credit for my work. By the way," he asked as if by an afterthought, "when does the next issue of the 'Transactions of the Academy' go to press?"

Tori considered for a moment. "I am not sure," he began doubtfully, "but I think the last copy for the next issue went to press yesterday. If not, it must have been the day before. Yes," he added decisively; "it must have been yesterday. I remember the publication schedule now."

"Then I shall have to wait four weeks before getting my preliminary report into print. Darn it all! I shall as likely as not be scooped."

Tori reassured him. "If you will give the operator your report, he can wireless it directly to the printers and catch the presses in time."

Jay looked depressed. "The report is not quite ready. Sam will have to check over some of the details with me before I dare to shoot."

"How long would it take?" Tori asked.

"A couple of days at the least. Four or five at the outside."

"I am afraid we could not hold the presses that long. You see, the 'Transactions' must be off the presses in time to catch the next mail steamer."

"Of course! I guess I shall have to let it go. My stuff may not be so important as I think it is. Didn't you get that way over your own work? Just after you finished a particular job, you thought you had the world by the tail. Then, when you had sobered up a bit, you found yourself squeezing a dead fish?"

"I know the sensation," Tori admitted ruefully. "Only I seldom confused my fish tails with the world's. I knew what they were the moment I got my hands on them. As I told you, my scientific work is trivial beside yours."

Tori became friendly and sympathetic. "If your personal reputation really does mean as much to you as you try to think it does, I hope nobody anticipates your latest. Now you had better go and take a nap. You will want to see the manufacturing plant when we pass it to-night—at about eleven. It is worth seeing."

Jay nodded and turned toward his quarters. He had gone but a few steps when Tori called him back.

"Oh, I quite forgot what I came out to tell you. The operator gave me a message for you." He fumbled in his pocket and found a bulky green-and-white envelope.

Jay recognized the offering as a radiogram.

"I hope it is not bad news from home," Tori remarked as Jay tore the envelope.

"Not likely," Jay surmised. "My family is too hard up to squander money on a young newspaper like this."

Fully conscious that Tori was watching him through narrowed lids, Jay slowly read the unnecessarily detailed message through twice. His second reading strengthened the impression left by the first—the code experts of the navy imagined they had solved their problem and were now communicating with him.

Not only had they devised a way of getting any results the biologists Davison, MacMillan, and Spier might find through to Jay the very hour the results were obtained, but they had also invented an equally simple way for Jay to get his own discoveries to the proper quarter within an hour or two of making them. At least they evidently thought they had done all this.

THAT THE naval experts had inspired the radiogram was pretty obvious from its nature. Boiled down, the message was simply an appeal to Jay from the editor of the journal which had printed his two-page, prize-winning Ph. D. dissertation to continue publishing his work in the same journal.

The editorial staff recognized, of course, that Jay's employers would have the right to publish the work in its full, completed form, as rapidly as Jay could get it out from month to month, but, for the honor of American science, the editor begged Jay to wireless him at least a summary of the results and tables of numerical data for publication in the American journal. The editor would promise not to print anything until receiving word from Jay that the "Transactions" published by Jay's employers were already off the press. If necessary, he would hold Jay's articles till any issue of the "Transactions" containing them had reached American libraries.

But, to repeat, the honor of American science demanded that Jay consider what was due to his fellow workers in America and, conversely, Jay's fellow workers should not let Jay cut loose from America entirely. All in all the whole matter was put on a very lofty plane.

To make sure that no misprints in the all-important numerical data crept in, the editor would have Jay's communications monotyped the day they arrived, and would wireless the proofs—the outcome of the monotyping—di-

rectly from the first printed sheet pulled from the machine and not from Jay's radiogram.

Atkinson had said Jay would recognize any message, should the naval-code experts succeed in getting one through. They had slipped one into Jay's hand right under the enemy's nose. Not only that, they had lifted Jay's simple code device from the slow pages of scientific periodicals, transforming it into a regular wireless service as expeditious as the fastest commercial or military wireless service in the world. They added—through the editor, of course—that arrangements would be made whereby Jay could pay the costs at his end by credits to be taken up in America once a month by some representative of Jay's employers.

Jay presumed that the biologists would use the code he had given them on the wireless "proofs" of his own numerical data. If they used, instead of Jay's code, another, one or two trials would soon reveal the fact, as he had—fortunately—provided "signatures" for both himself and the biologists. He felt that he could carry on quite a conversation, if necessary, without rousing the suspicion of even the shrewdest enemy spy.

The naval experts had done a good job. They seemed to have thought of everything, including the matter of finances. Jay felt like taking his hat off—he did not have one on at the time—to the intelligence department of the navy. He was to realize in a moment that they had thought of everything but the one thing of first-rate importance. They had overlooked the simple fact that Jay and Tori were on the same boat at the same time. Their oversight was a blunder of the first magnitude—or so it seemed to Jay at the moment when Tori handed back the radiogram after carefully reading it—or pretending to read it. Jay expected a perfunctory approval.

"I am afraid it is impossible," Tori regretted.

"But wasn't I to be allowed to publish my work how, when, and where I chose?" Jay reminded him.

"Of course. But this amounts to giving the Americans precedence over ourselves?"

"How so?"

"They would be in possession of your results before our own men saw them in our 'Transactions.' It would be a slight to our academy."

"Then why couldn't I publish in the American journal exclusively, and not use your 'Transactions' at all?"

"That would be unobjectionable."

"Thanks; I think I shall."

"We shall be glad to send your communications by wireless, as the editor suggests. And we insist upon paying all costs ourselves."

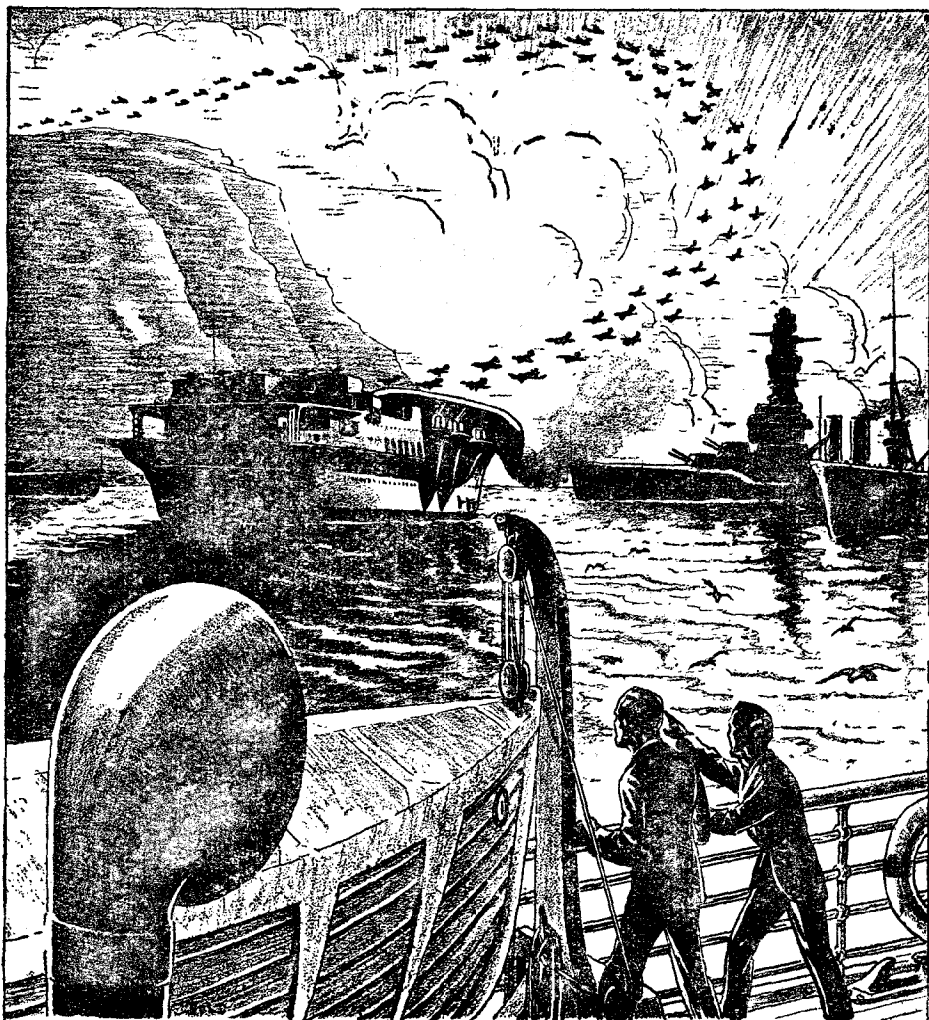
"But that wouldn't be fair," Jay protested.

"It would be the only fair thing," Tori disagreed firmly. "As you have agreed to work in our laboratories, it is no more than right that we relieve you of the burden of publishing your work and seeing it through the press. Please say no more about it."

"Thanks, Tori. You treat me far too generously. And just to show you that I'm not the selfish, overambitious pig you must think me, I shall publish all my stuff in your 'Transactions' exclusively."

"I knew you would!" Tori smiled. "Because I know you better than you know yourself, Jay."

"You flatter me." He laughed, convinced that Tori had studied the radiogram carefully before delivering it. If Tori did not suspect Jay of having a code up his sleeve, he had played his game with the subconscious mastery of genius. All the tricks were Tori's, and Jay wondered whether even his laboriously fabricated scheme for using the "Transactions" as a medium for secret



A compact swarm suddenly appeared over the mountain range. Within fifteen minutes the last of the planes had landed on the deck of the carrier.

messages was any longer as spyproof as he had fondly imagined it to be.

"Well, I'll put in another hour or two before taking a nap. Hello! Why all the battleships?"

FOUR SQUAT, ugly gray brutes came into view as the steamer rounded a headland. A fifth monster, with the vast flat deck of an airplane carrier brooding over its bellying hull, sat in the waters of the channel a mile or

so inshore from the sentinel battleships. Altogether the five did not make a very pretty picture.

Tori quietly answered Jay's question: "To repel attack."

"Attack on what?"

"The carrier."

"I don't see any prospect of an attack. What's it all about, anyway?"

Tori explained briefly. The carrier transported the dusting planes, already expertly "charged," from the great cen-

tral experimental laboratories. Improvements in the dust were being constantly sought by the scientists in the central laboratories. Before putting a particular improvement on the market, it was thoroughly tested out on the experimental farm the steamer was then passing.

To prevent theft or interference by unfriendly or hostile nations, the plane carrier was convoyed by four Class-A battleships to and from the farm. Should the battleships get the worst of an engagement, they would turn their guns on the carrier and sink it before they themselves were sunk.

In the experimental stage of possible improvements, Tori explained, it would be comparatively easy for foreign experts to discover the secret of the dust; the perfected, commercial forms on the market alone could be safely sent abroad. Hence the battleships.

"We shall pass one of the factories where our latest improved dust is being manufactured for shipment this season, at about eleven to-night. If you are still up, it may interest you to see it in passing."

"I shall tell Sam to rout me out. Here come the planes."

A compact swarm suddenly appeared over a distant mountain range. Within fifteen minutes, to the gaping wonder of the tourists, the last of the planes had landed on the deck of the carrier.

"Come up to the bridge," Tori said, "and I'll see if I can show you something of the experimental farm."

On the bridge a polite officer instructed Jay where to look through the powerful binoculars. At last Jay found what Tori wished him to see, a broad table-land at the base of the mountains sloping gently toward the channel.

"That is only one field," Tori explained. "They dusted that one about six months ago. The planes that just came in have been dusting behind the range, on an open plateau."

"Quite a field," Jay remarked, studying the curiously patterned surface of the table-land through the glasses. "There must be several hundred square miles of it."

Tori offered no remark as Jay continued to explore the sinister pattern with his eyes. Without the glasses the table-land appeared merely as a broad slope of uniform greenish-blue. Seen in detail through the powerful binoculars, the table-land shone out as a mosaic of many colors.

Patches of brilliant orange appeared with startling distinctness in the midst of dark-green expanses which, somehow, were strangely reminiscent of the rank cornfields Jay had viewed with Jake from the train; and blotches of angry red, like the decay of certain kinds of poisonous fungi, alternated with violent blues, dull mauves, and sultry purples, like the corruption of a mass of decomposing fish.

Many of these patches were many square miles in extent; others glowed in greater intensity over an acre or two. A few isolated spots of clear lemon-yellow were probably not more than fifty or a hundred square yards in extent.

Jay handed back the glasses. Once more the softening influences of distance and atmosphere smoothed out the evil mosaic in a uniform greenish-blue.

"That was one of our failures," Tori remarked.

Jay silently wondered which particular color recorded the failure. Was it the green of rank vegetation or the sultry red of slow decay?

"It looked like a bad case of mange or something worse to me," he remarked. "Have you had many failures with the dust?"

"Not with the dust itself. The improvements cause us all the difficulties."

"Then why bother with them? Isn't the dust good enough as it is?"

"Temporarily, yes. We are striving

for a dust whose effect will be permanent—or practically permanent.”

“Instead of one application every year or two, one application about once a century?”

“That is the goal we have set ourselves,” Tori answered with grave solemnity. “Perfection, or the closest approximation to it that is humanly possible, is our ideal. In this as in other fields of our national endeavor, we are urged on by the spirit of the craftsman. The painstaking genius of our people is satisfied with nothing less than perfection in the minutest details. Commercial success is secondary.”

“That’s all very well,” Jay objected, “but while you are puttering over details that can only be seen with a magnifying glass, you’ll produce a total effect like a chromo that nobody will buy. What are you going to do when the whole blooming world has dusted itself for a century or two and isn’t buying any more of your stuff?”

“Then the world will enter its new golden age.”

“Like hell it will! Some smart guy will come along and corner all the potatoes, or corn, or oranges, or wheat, and we shall be hungrier than ever.” He pointed to the battleships. “Going to dust those, too, and make twenty sprout where only one sprouted before?”

Tori’s reply was lost. Nara appeared on the bridge, trailed by half a dozen men, ranging from about twenty-eight to eighty-two, to arrange the details of the party she planned for that evening with her brother. Lightly dismissing her admirers, she drew Jay and Tori aside.

“Suppose just we three come up here this evening after dinner and watch the glow?”

“The glow?” Jay repeated.

“Oh, I’ve given it away. But it is really very beautiful, and you must take it in quietly, away from that awful chattering mob of nonentities.”

“Tired of them so soon?” Tori asked, with half a sneer.

Nara ignored her brother’s slur. She addressed Jay.

“You will come, won’t you?”

“Won’t the captain have something to say about our making free of his bridge?”

“He’s a good sort. I’ll speak to him—he always lets me do as I please. You’ll come?”

“Sure!”

Tori expressed his regret—to Jay—that he would be unable to join them. The wireless room would claim all of his attention.

VII.

WITH SAM’S solicitous assistance, Jay had prepared a delightful surprise for Nara. He sprung it on her just as they were about to climb up to the bridge. Speaking with meticulous deliberation, Jay paid her a flowery compliment in her mother’s language. Nara gasped and gave him a startled look. Then she leaned against the wall and abandoned herself to unrestrained laughter.

“Good Heaven,” Jay exclaimed, “what did I say?”

“Never mind,” she returned. “You spell what you meant to say with an ‘n’ instead of an ‘r.’ Thanks, just the same. Now I’ll give you one.”

She reeled off a rapid phrase, not a single word of which Jay understood, and tripped lightly up the stairs. Following slowly, Jay resolved to stick to English in his future conversations with her until Sam pronounced him letter perfect.

Poor Sam had tried to dissuade him from the rash project, but Jay, with his youthful self-confidence, told him to shut up; he knew what he wanted to say. He wished he could remember the sound of what Nara had just said, but it had already slipped out of his mind.

Two comfortable chairs had been placed for them in the darkest corner of the bridge. As they settled down, the officer on duty did not even turn his head, although he must have heard them coming up the stairs. All through their long exchange of confidences, the man maintained the same rigid courtesy, never once giving the slightest hint that he was aware of their presence. But they found it only natural to lower their voices and talk in a subdued undertone. Jay was thankful more than once that the wireless room and a Spartan sense of duty had deprived them of the pleasure of Tori's company.

From flirtatious badinage their talk gradually drifted—under Nara's adroit piloting—into less personal channels. Jay was not asleep. The alluring girl at his side had caused many a man twice or three times Jay's age to lose what head he had. But Jay felt that he could not afford to lose his own till his work was done.

Was she pumping him, presumably at her brother's suggestion, or was she nothing more than what she seemed to be—a somewhat bewildered girl trying to understand one of the riddles of her life? Jay met her frank confidences with equal frankness. Truth, he had heard, was the surest of all ruses for confounding the untruthful. So Jay told Nara what he imagined was the truth and let her make of it whatever she chose.

"Do you understand my brother?" she whispered.

"Perfectly! I did not until the last day we were together at the university—when he offered me this job. Before that I had not seen what he really is."

"What is he?" she breathed.

"A fanatic."

"A fanatic? Aren't you rather hard on him?"

"I don't think so. Of course, an American like me can never get at the inside of any man of your race. But,

barring that, I think it is pretty plain that your brother has a fixed idea on everything pertaining to the honor and greatness of your country."

"It isn't my country."

"I beg your pardon. Of course not! Only I didn't know how you would feel about it, so I put it that way."

"I have no country," she continued. "Socially, if I cared about such things, I should be an outcast. It is so!" she exclaimed hastily, as Jay started to express a polite dissent. "But I don't care about them. Didn't St. Paul advise us to be all things to all men? At least I seem to remember something of the sort in my early lessons at one of your missionary schools where they taught me English. It sounded like good advice to me, and that is exactly what I try to do."

"You don't look like a cynic," Jay remarked skeptically. "Do you expect me to believe that?"

"You don't understand. Being neither one thing nor the other nationally, I care nothing about national honor or race pride, or any of those poor futile things my brother prizes. I never even see them because I see all around them. It is enough for me that I am a human being—one of nearly two thousand millions."

"So that is why you pull for internationalism. Now, don't get sore if I ask a very personal question, because I don't mean it personally at all. Isn't all your running around organizing peace and international-good-will societies just part of your general campaign of devilment to get even with your brother for riding you all the time?"

Nara considered. "No," she replied. "It cannot be that, because my brother was my greatest friend till I began to grow up and act for myself. He was always patient with my wild ideas. It is only in the last three or four years that he has grown to dislike me. When

he saw that he could not change my opinions and make me a reactionary like himself—he comes from one of the three oldest families of his country—he was hurt.

“He could not believe at first that the medieval traditions of his people and his own narrow nationalism meant nothing to me. When he saw that he could not influence my feelings, he began to persecute me. Not brutally, of course, but in countless petty, humiliating ways. The only revenge that I have ever taken—my devilment, I suppose you would call it—has been to see that a string of Americans and Europeans is always traipsing after me.”

“They traipse,” Jay agreed; “if the specimens on this boat are a fair sample. If I weren’t so confounded busy working for your brother, I should have joined the string myself.”

“You would be different,” she said as softly as if she had sighed.

“Don’t kid me.”

“I know.” And as if to prove her knowledge, her hand stole into Jay’s.

JAY felt like a perfect fool. What should he do? If he told her—not in words, of course—to keep her hands to herself, she would rag the life out of him for being his mother’s good little boy. And if he did what she evidently expected of him, she would know that she could kid him whenever she chose.

“Now I know you’re kidding me,” he said coolly.

Nara laughed, but did not withdraw her hand, and Jay let the matter ride. After a sufficient interval Nara resumed the conversation:

“Why did you help my brother at the university?”

“Partly out of spite. Partly because he and I got on well together.”

Nara’s hand registered her surprise. “Out of spite? But why?”

“All the fellows in my crowd were so damned snobbish and two-hundred-

per-cent patriotic that they gave me a pain. Your brother and I were thrown with them eighteen hours a day. The whole bunch of us had to live in the graduate-science dormitory the first year. We all took several courses together. They wouldn’t speak to your brother when they met him in the halls or ran into him in the lounge.

“Their families weren’t so old as your brother’s, but you would have thought their mothers and fathers had been born on the poop of Noah’s Ark. Your brother’s skin was the wrong color. At meals they were all deaf. They never heard when your brother asked them to pass the salt, or the bread, or the water. It got under my skin. My own family—I’m not bragging—was as old as any of theirs. And until this crazy dust began smothering us we were stinking rich—pardon my language, but that is the good American for what we were. Don’t you see what a temptation it was? I fell, and then I found out what a swell guy your brother is.”

“Was, you mean.”

“I suppose you are right. Still, I like him as well as I ever did—when he isn’t chargin’ about on his own high nationalistic horse. Then I want to kick him.”

“Some day you will be a good internationalist,” she promised. “Just like me. Shall I convert you?”

“Go ahead and try.”

“It won’t be difficult. Your snobbish friends at the university did all the hard work for me. They ripened you, and now I have only to shake the tree. But before I do, I shall tell you why you accepted my brother’s offer to join his scientific staff.”

“I didn’t know it was his,” Jay interrupted. “From what he said, I inferred that he was just using his pull as a count to get me taken on.”

“My brother is the administrative head of the scientific division of the dust industry.”

"He never told me that."

"Perhaps it was not necessary."

"Perhaps not," Jay admitted doubtfully. "If he holds such a responsible position, what was he doing fooling around for three years as a graduate student in an American university?"

"I am coming to that presently. First, I shall tell you why you joined my brother's scientific staff." She paused, and Jay waited, tensely expectant. "For revenge," she said, withdrawing her hand from his.

Jay laughed shortly. "You may be beautiful, and you may be a wiz at organizing the world for peace and good will, but, take it from me, you are as crazy as a bat."

"You know I am not."

"Then where do you get this crazy idea about revenge?"

"Isn't it obvious? Your old and rich family has been ruined by the industry which my brother helps to direct."

"Well, what of it? Isn't business merely business? Neither my father nor I bear any grudge against a successful competitor who happens to have more brains than we can muster. Revenge? Rot! How would I take it?"

"By learning the secret of the dust."

JAY WENT COLD. They were onto him, and Tori had set his beautiful sister to trap him.

"Your imagination works faster than mine. Didn't your brother ever tell you how impractical my work is? I'm in pure science—millions of miles from industry or any other practical application. Just before your brother offered me a job he rubbed it in how worthless—from the dollars-and-cents angle—my work really is. Why," Jay laughed, "he even said it was fundamental."

"That is just what he told me," Nara returned quietly. "I have found out all I could about you from him."

"Why?" Jay demanded bluntly.

"Because I like you."

Jay confidently expected to feel her warm, firm hand stealing into his own again. He was disappointed. He did not take the initiative, but coolly folded his arms.

"Is that your line with all the Americans you string along?"

"No. They prefer something they imagine is more subtle."

"You are far too subtle for me, young lady. Let's talk about something else. You haven't told me how your brother came to be hanging about an American graduate school for three years."

"You saw those battleships we passed this afternoon?"

"Of course! They were ugly enough."

"Hideous, brutal, monstrous!" she burst out passionately. "How I hate them and everything behind them!"

"You seem to mean it. But what have they got to do with your brother's passion for graduate work?"

"Everything! They are symbol of what he believes in. I saw you and him on the bridge this afternoon. You were looking through the glasses at one of the experimental fields. What did you think of its appearance?"

"Not much. As I told your brother, it looked to me like a bad case of mange."

"And did he tell you it was one of his failures?"

"Not exactly. As I recall what he said, it was not his special failure, but one of the failures of the scientific staff."

"My brother directs the staff," Nara reminded him. "All its failures he takes upon himself. It was a failure like that one that drove him to America."

"They fired him?"

"Of course not! Only one man has the power to discharge my brother. He went to America because he considered it his duty to go—he is always doing

something he dislikes because he considers it his duty. The scientific staff failed because they could not quite make a fundamental discovery they had felt confident of making when they started manufacturing the dust for export.

"My brother has told me your opinion of his work. At one of his national universities he had made a brilliant record. They thought he was the man to discover what the staff had to know in order to proceed with their program. For nearly two years my brother worked like a slave to make the fundamental discovery. He failed. Thinking over what he had done, he convinced himself that he lacked the scientific ability ever to succeed. So he went to America."

"Why? I don't see the connection."

"Don't you? He went to America to persuade you to make the fundamental discovery for him."

Jay greeted this disclosure with a roar of laughter which startled the officer on the bridge and momentarily caused him to forget his wooden discretion.

"Now I know you're kidding me. Why, I hadn't even thought of going into physical chemistry when your brother arrived at the university. Old Hildebrandt was stuffing me with the chemistry of soils, because that was what I thought then was to be my work for life. You'll have to do better than that, Nara."

SHE WAS patient—or else extremely clever; Jay could not decide which at the moment.

"I hardly expected you to take what I said literally. My brother had never heard of you. Although," she added thoughtfully, "he knew that your father was making a game but losing fight against the dust monopoly. No; my brother went to your university because his former professor told him it was the best place in the world for him to find what he was looking for."

"And what was that?" Jay demanded facetiously. "The lost chord?"

"I am not kidding you," she retorted with a touch of impatience. "My brother was advised to approach one of the professors and offer him his own price to join my brother's scientific staff. You know who I mean. He supervised your dissertation, I have been told."

"Fatty Perkins? Your brother asked Fatty to throw up his job and go out in the wilderness to break rock? What did Fatty say?"

Nara laughed softly. "Professor Perkins told my brother to go chase himself to hell. He said the United States was good enough for him, even if he was slowly starving to death."

"Just like Fatty. That part sounds like history. Fatty was always grouching because he thought they didn't pay enough. So your brother got turned down! What did he do next?"

"Professor Perkins apologized for his rudeness and begged my brother to make himself at home in the laboratory. So he began working again, hoping to make the discovery his staff needed. Professor Perkins helped him—my brother is deeply grateful, even if he failed again. Then he discovered you."

"Did they give him the Nobel prize?" Jay inquired innocently.

"Please be serious," she begged. "We may not have another chance to talk things out quietly and sensibly."

"All right. Your brother discovered me. What next?"

"He cabled home all about you, and was authorized—by the highest authority—to engage you at any cost."

"Gosh, if I had only known! But go on."

"You were a better man than Perkins, my brother said, and you were working toward the fundamental discovery demanded by the staff. In a year or two, or possibly less, he predicted your work would give them what they wanted."

"When was this?"

"About a year ago."

"Have I found what they want?"

"No. But you will. At least that is what my brother has told his master."

"Shall I know when I find it?"

"I think you will," she answered quietly. "You know what you are doing, and why."

"Don't flatter me, Nara. Right now I'm up a tree and caught in the fork."

"Let me help you down," she begged softly. "I am your friend."

"All right. Here goes: First, how do you know all this you have been telling me? Did your brother tell you?"

"He tell me? I would be the last person on earth he would discuss his policies with. He hates everything I stand for. Sometimes I think he hates me, too."

"You're wrong there, Nara. You are still his kid sister, even if he does hate your ambitions. In fact, he told me so himself. But you haven't answered my question. Who told you all that fairy tale?"

"It was no fairy tale. It was told me by our own agents."

"Your own agents? Who are they?"

"If the other side—the side that owns the battleships and stirs up hatred and strife between nations—has its spies, why shouldn't my side have spies, too? Not all those who work in the laboratories and the stone pits are on the other side. Many of them, especially in the higher positions on the scientific staff, are on our side. Some of them even think my brother a fanatic, as you do. I try to think he is just a little boy who hasn't grown up yet, playing with pasteboard armor and a wooden sword. His mind is in the Middle Ages.

"And that makes it terrible, because he has the power to play with death and destruction the men in armor never dreamed of. Even his master is sometimes afraid of him. But he dare not reprove him, or hold him in check, be-

cause the continued prosperity of the nation depends upon a continuance of the dust monopoly. If that is broken, so is the nation."

"But what has the dust monopoly to do with war? I don't see it."

"Nor do I. All I have to go on is what our friends on the scientific staff hint."

"And what is that?"

"Indescribable disaster."

"When?"

"Whenever some one puts the fundamental discovery the nationalistic members of the scientific staff are looking for into their hands."

"What if I should do it? Accidentally, of course, because I haven't an idea what it's all about."

"You must not," she whispered.

"ALL RIGHT. For the sake of the argument, let us grant that I stumble across what they want. Suppose I do this and realize what I've got. Then I suppress it. What good would that do? In a week, or a month, or at most ten years, some other man would re-discover what I had tried to bury.

"Haven't your friends on the scientific staff told you how science is made? Scientific workers are not magicians, each with his own secret bag of tricks. They are like any other modern workers. All use the same tools and all work with the same material. The only distinction between competent workers is that some are quicker and more expert than others—except of course an occasional sport like Mendeléeff or Mendel or Einstein who steps right out ahead of the crowd.

"But even the sports have no special magic. Give the rest time enough and the right urge—commercial or other—and sooner or later they would stumble along pretty much the same road the real explorers discovered."

He broke off abruptly. "Excuse me for lecturing."

"What you say is awful."

"Thought so myself," he muttered.

"No; but I'm serious. If there is no way of suppressing a discovery that might be used by fanatics—like my brother—to wreck the world, what are we to do?"

"Let nature take its course, I suppose."

"We must not! Give us ten years more to work, and we shall have started the reign of reason and common sense."

"With the sort of thing you are doing? I'm no pessimist, but I doubt it. There's an alternative, however. If your brother's scientific staff is just on the point of making some particularly devilish invention to put the tanks, the machine guns, and the battleships on the scrap heap along with the gas bombs and the flasks of plague bacteria, you might try to steal it. Then tell the world what it is, so that all the nations can start fair. If they vote unanimously to commit suicide they might as well."

"You will not suppress what you find?"

"My chances of finding anything of practical importance are too slim to be worth bothering about. And if what you say isn't all just a wild nightmare, I am more likely to be suppressed than any discovery I may be unlucky enough to make. After I have made it, of course—if I do."

Nara did not contradict him, and Jay sat silently wondering whether he was as crazy as she appeared to be.

Nara got up and opened one of the

sliding windows. For some minutes she stood quite still, looking up at the broad band of the Milky Way across the unfathomable blue-black ablaze with stars. She turned and beckoned to him, and he joined her at the open window. The boat appeared to be headed straight for a towering black cliff.

"When we round this little island we shall see it," she whispered.

"What?"

"The glow."

"Oh, I remember."

Almost at the zenith above the black mass of the island Jay detected a faint phosphorescent glow. As he watched, it seemed to flicker and fold, like the pulsing rhythm of a distant and extremely faint aurora.

"What do you think of it?" she whispered.

"If I were inclined to be mystical I would call it both beautiful and evil."

"Wait till you see it all."

The boat slowly rounded the island, and the distant spectacle came into view. Fifty miles away, slightly to their left, transparent yellow flames, through which the stars shone dimly, billowed up mile after mile into the black sky. They seemed to rise directly from the surface of the water.

"You can't see the island from this distance at night," she said, "and in the daytime the glow is invisible. Do you see the stars through it?"

"Plainly. What causes the flames?"

"They don't know. That is one of the things they hope you will discover."

To be continued.

Next month Jay makes a startling discovery concerning the radiations emanating from the dust. On this discovery hinges the success or failure of future experimentation. Don't miss it!

Twelve Eighty-Seven

Part Three of a great serial

by John Taine

UP TO NOW:

Jay Jarvis, at the age of 23, having made a fundamental extension of Mendeléeff's periodic law in chemistry, is about to sail for the enemy's country with his university friend Count Tori, commander in chief of the enemy's scientific staff, to join that staff. He hopes to discover the secret of the enemy's fertilizing "dust" which had quadrupled the fertility of the United States' agriculture, but which the President's emergency committee suspects of being a new war weapon.

At the boat Jay meets Tori's half sister Nara, who is half American, her father having been an ensign in the American navy. Nara is a young woman of great charm and high ability. She is an ardent pacifist and internationalist, thoroughly out of sympathy with Tori's ambitions of world supremacy for his race. Now she is going home with her brother, after having organized and directed an extensive "youth movement" in Europe for international peace.

Tori confides to Jay that he likes his "sister" but hates her ideals. It comes out that the ensign who was Nara's father is now Admiral West of the President's committee. West admires his foreign daughter tremendously. She has never met West's American wife nor his children. Before sailing, Nara sees her father, who tells her to get well acquainted with Jay, thinking the latter could help her in her work for peace.

On the boat both Jay and Nara become fast friends. Nara declares her willingness to help Jay—up to a certain

point—but she does not offer to betray her brother's scientific secrets, because she is ignorant of them. According to her, Tori's staff is hopelessly stuck for want of a fundamental discovery they had hoped to make regarding the fertilizing dust. They expect Jay to make the discovery, and they put him to work at once in a laboratory on the boat. Jay's assistant, "Sam," one of the enemy, is an expert mathematician. Jay takes him for an obvious spy.

The day before they reach Tori's scientific island, Tori shows Jay that he suspects him of trying to communicate with the U. S. Secret Service, and Jay decides to abandon his supposedly spy-proof methods. The last night aboard he and Nara see a sky-filling glow from one of the dust factories on a barren island. Nara tells Jay they hope he will "extinguish the glow."

VIII.

THE NIGHT was stiflingly hot. Senator Atkinson and Secretary Redding were absorbed in the intricacies of a jigsaw puzzle. Two empty siphons and three depleted bottles of grape juice in an ice pail marked the senator's efforts to keep cool; Redding just sat and suffered under the glare of an electric light. The senator glanced up at the clock.

"Twelve thirty. What's keeping them? The conference was called for ten."

"Perhaps the President is in the pool again. Hold on! I'm getting it." He



"What makes the greenhouses glow like that?" Jay asked. "The dust," Nara replied, and there was something ominous in the statement.

gingerly fitted a small triangular piece into the center of the puzzle. "Oh, shucks!" With a gesture of disgust he swept the puzzle into its box. "Washington crossing the Delaware."

"On a night like this?" the senator objected. "What has happened to the others?"

"Search me." Redding shrugged his shoulders. "Gloomy said he would be ready in half an hour, and that's over three hours ago."

The buzzer rang. Atkinson answered the telephone.

"What's that?" he snapped. "Russia, too? When did the note come?" He listened for a few seconds, then hung up. "Gloomy is coming right over from the White House."

"The President coming?"

"He's in the pool. Pumping the Russian ambassador dry."

"Seems to have got plenty out of him already. West will be a few minutes late. Something has turned up at the intelligence department. We are not to wait for him. Green probably won't be here."

"What's the matter with him?" Redding asked in surprise. "Heat?"

"Gloomy didn't say. It sounds bad to me."

Five minutes later Gloomy Winters entered alone, stuffing his collar and necktie into his pocket as he closed the door.

"What's that?" he demanded, spying the ice pail. "Grape juice? Are you mad?" He opened the door and shouted into the hallway. "Boy! Bring us something cool and substantial and plenty of it. You know my brand." He melted into a chair and refused to go on till the arrival of the refreshments.

"Good thing West isn't here," he began, after a refreshing drink. "I'll take up his case first."

"What do you mean?" Redding

asked in surprise. "What has West been doing?"

"Making a damned fool of himself," Winters replied disgustedly. "Never saw the President so angry. Did he give West a dressing down? There's not a whole square inch of skin left on him. Then the Russian ambassador turned up with his comforting little note and the President slipped into the tank to cool off."

"Ever since then I've been trying to find out whether the army has any more political sense than the navy. Green should be able to tell us when he turns up. But first we've got to think up some way of muzzling West and keeping him from gossiping like an old woman."

While Redding and the senator listened in silent amazement, Winters relieved himself in short, jerky bursts of disgust at the story of West's incredible indiscretion. The admiral, it appeared, had proudly confided to the President what he considered his brilliant scheme for penetrating the enemy's defenses. When Count Tori called on West to convey the compliments of the elder statesmen of his courteous nation to the friendly American admiral, and to talk over the prospects of world peace and the good work of the League of Nations, he had taken along his sister to meet the distinguished American sailor.

The admiral admitted that he had been captivated by the girl's exotic beauty and her brilliant mind. Her grasp of world politics was both wider and firmer than that of her brother, and her cosmopolitan outlook took in a broader view of world affairs than was possibly to the count's narrow, intensely nationalistic outlook. In short, as Gloomy Winters put it, the admiral had fallen hard for the girl and bumped his head in falling.

Tori's sister, seeming to find a kindred intelligence in the admiral, had seemed reluctant to leave. The ad-

miral suggested that Count Tori leave his sister in his—the admiral's—hands while the count went about his urgent business. Tori graciously assented, remarking that his beloved sister could not possibly be in better hands. The admiral took her out to lunch.

Finding the girl an ardent pacifist and internationalist, the admiral saw in her an ideal ally for young Jarvis who, he had learned from Count Tori, would most probably accept a position on the scientific staff of which the count was the director. The admiral saw his chance. Although Jarvis had not yet been offered the position—much less accepted it—this was no time to leave any likely stone unturned.

Drawing on his prophetic imagination, and remembering Redding's "historical item"—the telegram from the elder Jarvis announcing the bankruptcy of the former fertilizer monopoly—the admiral astutely turned the stone. With incredible stupidity—according to Gloomy Winters—West had suggested to Tori's sister that she get acquainted with young Jarvis, should the latter accept her brother's generous and flattering offer, and talk as frankly with him as she had done with the admiral. She would find in him a kindred spirit, the admiral declared. The girl promised to be on the lookout for the young man and assured the admiral that she would be entirely frank with him.

ALL THIS had been detailed by the confiding admiral himself to the President just before the Russian ambassador arrived. It was then that the President blew up. Gloomy Winters added that until then he hadn't guessed that the President had it in him. What he said to West, and the shameful things he said of West's intelligence, would have made the Statue of Liberty blush. West's obstinate insistence that he would swear the girl was to be trusted, that she was a sincere pacifist

and a confirmed internationalist—worth more than a whole fleet of battleships to the United States—only made the President worse.

"Don't you see?" the admiral shouted. "We needn't fire a shot. We shall sink them from the inside. That girl is more valuable to us than forty million Communists sabotaging the enemy's dust factories."

As the President, already suffering from the heat, showed alarming symptoms of apoplexy at this outburst of the admiral's, Gloomy had hustled him off to the pool. The admiral followed, still shouting.

"Wait till we get an answer from Jarvis to the wireless from our intelligence department," he roared. "Then you will see."

"See what?" Atkinson asked sarcastically, interrupting Gloomy's despairing account of the torrid interview.

"Guess what. Can you figure it? I can't. That innocent baby, West, really believed that the girl would offer to do young Jarvis' spying for him and find out all we want to know. Not as raw as that, of course. But she was to give him the pass-keys, and he would only have to unlock the doors. All as simple as that. He could use her as a go-between. Her rank, as Tori's sister, admits her anywhere.

"If she couldn't pry the necessary information out of her brother, she could go higher—or as high—in half a dozen directions. Some one would be bound to talk, and she could report to Jarvis. Then he and she could cook up some safe way of getting the information to us. Can you beat it?

"I shouldn't be surprised to hear any day now that young Jarvis has died of appendicitis. They will be well within their international rights if they shoot him as a spy. So the internationalism of West's girl friend will function, right enough, but not the way he planned."

Atkinson made an informal motion.

"We've got to shut him up before he begins broadcasting again. I move we recommend to the President that he, as West's superior officer ex officio, order West to hold his tongue."

"I second that," Redding spoke up.

"Too late," Gloomy demurred. "The cat's out. She's had kittens while our backs were turned. That reply to the intelligence department's wireless that West was shouting for came just after the President got the Russian ambassador into the pool. I'll read it to you. It seems the boy has arrived."

"When?" Atkinson asked.

"This morning—or last night. Figure it out for yourself. You know the difference in time between here and there. I never could remember whether you add or subtract, or what it does to the date line if you do. Anyhow, it's too damned hot for arithmetic. Jarvis is there. That's all that matters to us. Listen to what he says."

Winters fished a radiogram from his pocket and slowly read it aloud. It was from Jay, and it was addressed to the editor who had begged Jay to favor him with at least a full abstract of any discoveries he might make—including the all-important numerical tables.

According to an agreement with the intelligence department, the editor had telephoned the message in full to the secret-service officer in charge the moment it arrived. This was the message:

REGRET I CANNOT COMPLY
WITH YOUR REQUEST AS I AM
ALREADY PLEDGED TO MY EM-
PLOYERS TO PUBLISH FIRST IN
THEIR JOURNALS AND THEY
CONSIDER IT IMPRACTICAL AND
INEXPEDIENT FOR ME TO AT-
TEMPT TO WIRELESS YOU MY
NUMERICAL TABLES STOP I
AGREE

JARVIS

"Plain enough," Atkinson remarked.

"He is telling the intelligence department of the navy to mind its own business. His own plan is much simpler and safer, and he is going to stick to it."

"Is that all you make of it?" Gloomy snorted. "You optimists always see the bright side of everything."

"I'm no optimist," the senator retorted. "Young Jarvis is exactly where he was before the so-called intelligence department began messing things up. We shall be getting messages from him before the month is out. Want to bet?"

WINTERS did not take him up. Turning to Redding, he asked what the secretary of commerce made of Jay's refusal to cooperate with the naval experts.

"I'm no authority on codes," Redding began diffidently. "But my common sense tells me that young Jarvis has been trapped—or thinks he has—by that message the intelligence department sent him. For one thing, it was far too long and too detailed. I told you my objections when we discussed it before putting it on the air. Was it creditable that any editor of any scientific journal would have all that money to squander on negotiating with one of his authors? On the very face of it the supposition was absurd. Whoever took that message off the air turned it over as a matter of course to some one who would be capable of elementary caution.

"I do not believe," he continued thoughtfully, "that young Jarvis has been compelled—as yet—to divulge his own scheme for communication with us. But I do most strongly believe that he will not be foolish enough to attempt putting his plan into action. The enemy is now aware that he is a suspicious character so far as they are concerned."

"Go on," Winters encouraged, when Redding hesitated diffidently. "You're not a rosy optimist." Seeing the sena-

tor's topknot beginning to bristle ominously, Winters hastily shoved a long, cool drink in his direction. "What were you going to say, Redding?"

"Only this: It is all speculation, of course, and it may lead to nothing, but I think we should bear it in mind in any future plans we may make. I am assuming that the enemy now knows, or strongly suspects, what Jarvis is attempting to do. And I am also assuming that their intelligence department is at least as competent as our own. What will they do?"

"The hint our department has given them is too strong to be ignored. They will act on it. How? By printing off a few separate copies of their 'Transactions' containing whatever Jarvis submits for publication. They will print what he submits, exactly as he submits it.

"Those are the copies he will see—strewn about the libraries and laboratories where he works. The others—those sent abroad—will not contain Jarvis' articles. Then they will set their best men onto Jarvis' work to see whether they can detect a code or anything else suspicious. Our whole scheme has fallen through.

"There is another possibility," Redding continued. "Jarvis himself, if he has as much intelligence as his record would seem to lead us to expect, may have had his suspicions aroused by our intelligence department's blunder, and he may put his employers off. Why should he attempt to publish anything if he suspects he is being watched as a possible spy?"

"I know nothing of scientific research, but from what I have picked up from Lawton and others at the bureau, it is quite the common thing for scientists to be too optimistic about their work. They are always going to get the job finished to-morrow, or next week; and then some unforeseen difficulty develops and holds them up for a year. Why

shouldn't Jarvis keep stalling like that till he can get away?"

"He will, if he has any sense," Winters remarked grimly. "Otherwise, we are not likely to see him again."

Atkinson sat brooding in silence, his drink untouched.

"I begin to believe you two are right," he said at last. "Even a blind man could read between the lines of that message of his. He is telling us that he is in a tight fix and asking us for Heaven's sake to lay off. And I got him into it. Damn the luck!"

"He's got brains," Redding remarked with quiet conviction. "If we can't pull him out, he can pull himself out."

"I hope so," Gloomy replied. "Green's outfit is seeing what they can do. Nothing, I expect."

The buzzer rang.

"That must be Green now. Redding, you're nearest the door. Let him in, will you?"

General Green waved the proffered drink aside. "Not now, thanks. Well, our experts checked Winters' opinion. Young Jarvis has been turned inside out by some spy of theirs, and he is telling us not to attempt to communicate with him."

"In any way?" Atkinson asked.

"Yes."

"Then his own scheme for getting the biological data he wanted is out, too?"

"For the present we advise against using even that."

Redding had a disquieting thought. "When does the current issue of the biological journal go into the foreign mails?"

Green actually went pale. "We overlooked that," he admitted. "We must find out at once. I shall see to it." He rose hurriedly to put through the necessary calls. "Don't wait for me. It may take an hour to raise them at this time of night."

DURING Green's absence, Admiral West arrived. He was still smarting from the sting of the President's rebuke, but he had not lost his fighting spirit. Although his own intelligence department agreed with Green's, he would not admit his error.

"You're sunk," Winters remarked disgustedly. "Why not see if you remember how to swim?"

"I prefer to walk," the admiral retorted. "And I don't need any of your wind-bladders to keep my head above water. That boy, I tell you"—he was referring to Jay—"is not communicating with us because he no longer needs our help. I have put something better than a code into his hands."

"That intelligent girl of yours, for instance?" Winters suggested.

For a moment the admiral went white and speechless, and they feared he was about to blow up in a real rage. Recovering, he spoke calmly:

"That girl, I tell you, gentlemen, has more intelligence and more real brains than the lot of us put together. And I will stake my life against a plugged nickel that she is loyal to her ideals. Even though her whole nation goes insane and starts out to conquer the world, she will stand where she does now, on the side of common sense and common decency.

"I have nothing to be ashamed of and nothing to retract. Nor shall I take back anything I have said, even to the President. As for communicating with young Jarvis, you will find that you can do so with ease and perfect safety, if and when it becomes necessary. 'That girl,' as you call her, will find a way. For the present, I agree, Jarvis' message is a clear warning to us not to attempt to communicate with him in any way."

"Too late, I fear."

They turned, startled, to see General Green standing by the door, which

Redding had forgotten to lock after admitting the admiral.

Green pulled up a chair and sat down. "The current issue of the biological journal was put in the foreign mails three days ago. The copies of interest to Jarvis were put aboard with the rest of the mail about two hours ago. There is an article by Davisson, MacMillan, and Spier in the issue. It is in Jarvis' code."

Redding sprang up. "Send a cutter after the mail steamer."

"Impossible—unless you want to declare war. It is an enemy ship."

Redding sat down. "That's that."

He glanced at the admiral, but said nothing. West made no comment. Gloomy took up the item of business for which the conference had been called in the first place.

"This is from the Canadian premier." He held up a telegram. "For our own information the premier states that Canada is entering on a full program of dusting this year. The first complete dusting of the agricultural provinces will be carried out at once, before any considerable snowfall can block the full and efficient action of the dust.

"The next will be in the spring, just after the snow melts. The premier informs us that the dusting of Manitoba was successfully completed to-day. The President asks us to discuss the probable effect of the complete dusting of agricultural Canada on our domestic and foreign markets."

Gloomy laid the telegram aside, and took up a sheet of yellow papers.

"This is my own memorandum of the President's conversation with the Russian ambassador. I jotted down these figures just before coming over here. They may not be exact, but they are substantially accurate, I believe. Russia also is entering on a full dusting program immediately. This, of course, includes Siberia. But it does not include the disputed territory of Manchuria.

That, for the next two years, at least, is to be left in the virgin state—undusted.

"The enemy—if I may call our friends the dust merchants that—positively refuse to sell any dust for use in Manchuria. They contend that the unsettled political condition of Manchuria demands that it lie fallow for the present. The President is trying to learn what, if any, significance the omission of Manchuria from the Russian dusting program may have for our own situation.

"The Russian ambassador, apparently, sees nothing suspicious in this singular omission. We are asked to discuss this—and the whole Russian program—in conjunction with the Canadian. If nobody wants to hear the ambassador's statistical forecasts of next year's Russian crops I'll skip them.

"The President would like to have any conclusion we may reach by eight o'clock this morning." Winters glanced at the clock. "It is now three forty-five. I do not believe we need spend much time discussing the situation. Redding, what do you suggest?"

"An immediate suspension of our own dusting program."

"For how long?"

"The duration of the war—to put it that way."

WINTERS turned to West. "How does that strike you?"

"I pass," the admiral replied. "General Green is likely to be concerned. The navy will be out of it."

Winters nodded to Green. "What about it?"

"Quite dangerous, I should say. Even if we had troops enough, I doubt the wisdom of using them against our own people. The riots—especially in the farming area—can be counted upon to start within an hour of any proclamation that no further dusting will be permitted."

"You have not voted," Winters reminded him.

"Very well," Green replied. "I vote with Redding."

"To suspend our dusting program?"

"Yes."

"You next, Atkinson. So far Redding and Green vote for suspension; West not voting."

"Although I am going to vote against them," the senator began, "I believe I understand why Green and Redding voted as they did. The exclusion of Manchuria from the Russian dusting program is something that I do not profess to understand. Nor, I believe, do Secretary Redding or General Green understand the meaning of this most singular—I would almost say sinister—exclusion.

"We all foresaw, in a vague sort of way, I suppose, that the enemy would sooner or later sell unlimited dust to Russia and Canada—our leading competitors for the foreign markets of our rapidly mounting surpluses. The enemy will obviously profit by the inevitable war of cutthroat competition. But this move on Manchuria was totally unforeseen. I can explain it to myself only by assuming that we have failed to grasp the enemy's strategy."

"That is why I voted as I did," Green cut in. "When you don't understand the enemy's strategy it is better to retreat in as good order as possible."

Redding nodded. "If we pull out now, instead of waiting to be forced out later when they shoot the dust up beyond any price we can pay, we shall be that much ahead of complete disaster. We must get back on our own feet while we have legs to stand on. Five years hence—when the treaty expires—we should be so deeply involved that a rapid readjustment of our standards of living would be impossible without revolution.

"Now we face nothing worse than serious riots. There will be a bad de-

pression, of course. But we can survive it, as we shall be a market for the Canadian and Russian surpluses. Five years—or less—from now, there may be no surpluses available from Canada or Russia or anywhere else. By that time we shall have got over the worst of it. I say with Green—retreat while we can."

Atkinson agreed. "Exactly what I would say if I thought I understood what the enemy's strategy is. But I don't, although I fear it is something none of us has suspected.

"General Green anticipates trouble, and Secretary Redding half hints at a panic. I believe we shall have both on our heads within twenty-four hours if we suspend our dusting program. I have seen panics and revolutions, and I don't want to see another of either.

"My vote, therefore, is against suspension. That makes it two for suspension, one against. Mr. Winters, it is up to you."

"I vote with Atkinson," Winters decided instantly. "And I so vote because I feel we have not yet exhausted our resources of defense. I personally should like to see final action deferred until we have reasonable assurance that young Jarvis has failed. Then I shall at once change my vote in favor of suspension.

"As things stand, the vote is a tie. It is up to the President to decide. Redding, will you get him on the telephone?"

"Will he be up?"

"He told me to call him as soon as we had voted."

Redding was halfway to the telephone when Admiral West stopped him.

"Wait!" he said. "The President has had a hard day. If it is in order, I should like to withdraw my refusal to vote. What Mr. Winters said has changed my mind. May I vote?"

Winters nodded. "Go ahead."

"I vote not to suspend our dusting program."

"Three to two against." Winters got up with a prodigious yawn and stretched himself. "Lord help the man who gets me out of bed before sundown."

Atkinson turned to the admiral. "What made you switch your vote?"

"I didn't switch. I merely voted."

"Well, what made you do that?"

"Your eloquence, senator. Something you said reminded me of that girl!"

"Bah!"

IX.

JAY'S refusal to "coöperate" with Admiral West's intelligence department was inspired indirectly by his talk with Nara. After seeing her to her stateroom, Jay returned to the bridge and sat down to think over what she had told him. The glow they had watched together was rapidly diminishing in the first hint of dawn, and, as it grew fainter, Jay quickly freed himself from Nara's romantic spell.

Had he said anything which could be used against him? Jay decided that he had been reasonably discreet. Still, Nara might gossip—innocently or maliciously. Jay had not yet made up his mind whether she was to be trusted with anything less secret than his name. He had told her nothing of importance, nor had he expressed any definite opinion on the rights or wrongs of the dust monopoly.

So far he had done pretty well. Then, with a nasty jolt, he recalled the incident of the radiogram from the editor. The effect of that would have to be undone. He hurried down to his own quarters to draft a suitable reply to be sent off at once.

Entering the laboratory, he found Sam dutifully waiting for him.

"Hello! I thought you were in bed."

"I was, Dr. Jarvis, but I have had

my sleep. Is there any work for me to do?"

"Nothing that I know of just now. Oh, you can wait a few minutes and take a message up to the wireless room for me. I want it to go out at once."

The reply to the editor was a matter of some delicacy to concoct, and Jay took his time. It must be a courteous refusal to publish in America and a sharp warning to the intelligence department not to attempt further communication with him. Three preliminary attempts to put what was necessary between the lines of the ostensible refusal were torn up and thrown into the wastebasket. The fourth seemed to be satisfactory, and Jay typed a copy for the wireless operator. It was this message which so upset West and the others.

"Here, Sam, take this up and ask the operator to send it out immediately. I'm going to bed. If I am not up, call me half an hour before we get into port."

He began emptying his pockets onto the table—a package of cigarettes, a lighter, and his watch. Yawning, he followed Sam into the sitting room.

"Hurry!"

Sam hustled, and Jay passed into his bedroom, slamming the heavy door after him. In forty seconds he was in his pajamas, ready for bed. But he did not climb in.

To reach his own sleeping quarters, Sam had to pass back through the sitting room. Jay waited till he heard the outer door of the sitting room open, when he cautiously turned the handle of his bedroom door. Giving Sam time enough to cross the sitting room, Jay opened the door a crack. He saw Sam sneaking into the laboratory.

Jay tiptoed across the sitting room and opened the laboratory door, which Sam had closed behind him. Sam—as Jay had expected—was busily fishing the scraps of Jay's discarded attempts out of the wastebasket. Jay let him

fish. When Sam had the lot in his hand, Jay walked in.

"I forgot my watch. Cleaning up before you turn in?"

"Yes, Dr. Jarvis." Sam smiled expansively. "I like to do my cleaning up at night."

"So do I. Good night, and don't forget about calling me."

Jay did not tell Sam that he had carefully prepared the discards for Tori's edification. By this simple trick he confirmed what he had suspected from the first: Sam was more than a first-rate mathematical hack; he was not half so engagingly green as he looked.

Their relations would continue precisely as before; but Jay felt relieved to know that Sam, after all, had more talent as a mathematician than as a spy. No competent spy would have blundered into so elementary a booby trap as that which had caught poor, simple Sam. Jay slept soundly till Sam called him.

The engines stopped just as Jay finished dressing.

"See that all my junk gets ashore," he called to Sam. "I'm going up on deck."

Nara greeted him near the gangplank. "You missed your breakfast, I'll bet."

"That's not all I missed. Last night I missed my watch."

"Oh, did you find it?"

"Sure! I mislaid it on purpose." He gave her a meaning look. "Sam helped me to find it."

Nara looked startled. "I see," she said. "Here comes my brother." She hailed him. "Poor Jay has had no breakfast."

"Neither have I," Tori admitted. For once he actually laughed. "Have you told him our plans?"

"I was leaving that to you."

Tori explained that he and Nara would be delighted if Jay would be their guest for as long as he cared to stay at

their house. "My house, I had perhaps better say, as Nara is there only when she is home, which is not often—with her trips to Europe and America, to say nothing of out-of-way parts of her own country."

Jay protested that he would put them to too much trouble; he could easily find comfortable quarters at a hotel, and, anyway, he would be in his laboratory most of the time.

Then he caught Nara's signal. She was fingering her wrist watch and looking him straight in the eyes. It might have been a mere coincidence, but he thought not. Should he chance the spies in Tori's household or try his luck with those at a hotel? Probably it was fifty-fifty, and Nara would be better company than anything he was likely to meet at a hotel.

Holding his breath for a moment, he let go a delicately poetical acceptance in Tori's own language. They were both delighted, for he really had got it off rather well.

"Sam has taught you a lot in so short a time!" Nara exclaimed, clapping her hands.

"He has," Jay agreed, and he saw that she understood. "I wouldn't give that boy up for his replica in platinum."

AS they walked down the gangplank, Tori explained that the boat was to continue its cruise, as only government officials connected with the dust industry were permitted to land on this particular island. For the first time Jay noticed that they three and Sam were the only ones getting off the boat. Scores of curious tourists hung over the side, eying him enviously.

They all knew who Count Tori was; most of the men had tried to get a dance with his beautiful sister. Now they evidently mistook Jay for some one of extraordinary importance—traveling incognito. Jay grinned up at them and ironically lifted his hat in farewell.

"Well," said Nara, "'we are here,' as Pershing remarked to Lafayette. Let me telephone out to the house so they will have breakfast ready when we get there."

She hurried off to the tiny waiting room at the far end of the pier. Tori and Jay followed slowly, and Sam dashed after Nara, evidently to do some telephoning of his own. In the excitement of getting ashore, Jay had not properly taken in all of Tori's remarks. One came back to him now.

"Why did they let me land? I'm not a government official."

"But you are connected through your fundamental science with the dust industry," Tori explained.

It was the first time Tori had come out with his real object in engaging Jay. Jay did not exactly like his employer's frankness. It made him feel like a slave. The little man suddenly stiffened and became pompously formal.

"And I now have the honor to inform you that my master, graciously confirming my recommendation, has conferred upon you the rank of commander in the scientific division."

Jay was overcome. What was the correct thing to do on such an occasion? Embrace the donor? Shake hands? Salute? Being unable to decide, he nodded his head and mumbled something that meant nothing at all.

Tori seemed satisfied and continued his remarks. Although everything was phrased in the politest language, Tori let Jay infer that he was now virtually a prisoner and that Tori was his jailer.

The long and the short of what Tori decently veiled in the equivocations of diplomatic verbiage was simply this: Jay was on the island now and he would get off when it should please Tori to let him go. All those engaged in scientific work on the island were in the same fix. In work such as they were engaged, Tori explained, secrecy was essential, and one of the safest ways

of insuring secrecy was to remove all possible temptations to chatter before outsiders.

The island was in no sense a jail or a penal colony; indeed it was one of the most beautiful and most salubrious spots on earth. Nor were the workers being detained against their will. Not one of them, Tori declared, would dream of stepping aboard any boat sent specially to take him off. One and all were intensely happy to be there and to be doing their work in perfect freedom, for they knew that they were working for the highest possible good, namely, the good of their country.

Tori permitted himself to express the hope in passing that Jay would become so enamored of the life that he would apply for citizenship in the great nation which Jay's fellow workers were serving so loyally, so unselfishly, and so gladly.

To set Jay's mind at ease, Tori assured him that he, being an American citizen, would of course be permitted to leave whenever he chose. But, Tori added, he did not anticipate that Jay would want to leave for quite a time.

Jay agreed. He felt sure the place and the work would suit him perfectly. While Tori was talking, Jay had been interestedly scanning the ocean. No land was visible on the horizon, but six huge battleships, fuming slowly by, relieved the monotony of the cheerless gray expanse.

"On patrol?"

Tori nodded. "We cannot take the risk of a sudden raid on our laboratories by agents of an unfriendly competitor."

In the far distance Jay made out a long procession of about two hundred ships swiftly plowing north.

"The fleet?"

"Not exactly. That is the first flying squadron of the dust transport."

"Bound for the United States, I suppose?"

AST-7

"No; Canada. I ordered the consignment for the last of the autumn dusting forward yesterday. The snows have already begun to fall in the more northerly sections."

"I didn't know Canada was going in for dusting on a large scale."

"Total. Russia also."

"Business must be booming."

"It is," Tori agreed. "And it will break all records when your fellow workers take their next step forward. By the way, will your preliminary report be ready for communication to our physics club? It holds its weekly meeting to-morrow afternoon at four."

"I doubt it. Several unexpected snags have stopped me in midstream."

"There is no hurry. Take your time. Yours is fundamental work, and if you try to hurry you will only become nervous and be unable to go on."

Nara joined them. "Breakfast will be ready when we get there."

"Fine!" said Jay. "How did you manage to get ashore?"

"What do you mean?"

"According to your brother, only government officials connected with the dust industry are allowed to land here. What's your official job?"

"Being the one exception." She laughed.

"Yes," Tori spoke up with an unpleasant inflection; "she talked the highest authorities into letting her come here—when she is not too busy elsewhere—to take care of me. She said my health needed her sisterly supervision."

"It does," Nara insisted quietly. "For one thing you work far too hard unless I am around to distract you."

Tori was about to vent some pettish reply, when Nara caused a diversion by flagging the family chauffeur.

"Here's the car."

THEY hurried in and were rapidly whisked away from the shore toward the heavily timbered mountains. Pres-

ently they began to climb, and soon they were whirling along a well-paved road by the side of a foaming mountain torrent.

Jay, absorbed in his own speculations, paid but scant attention to the excited exclamations of his companions as they recognized familiar landmarks. For once Tori seemed to have forgotten the burdens of imperialism on his self-important shoulders. Somewhat to his surprise, Jay discovered that the would-be empire builder could lose himself in unaffected ecstasy over the brilliant hues of the dwarf mountain maples.

The entire pass through which they sped had been skillfully landscaped to a more wonderful beauty than that of nature itself. Their speed slackened, and the car glided out onto a small plateau. Glancing back toward the ocean, Jay was startled to see the red and white of a square cross inclosed in a circle showing here and there through the treetops on the long slope toward the water.

"Hospitals?" he asked Tori.

"Hospitals and rest homes."

"But why the Red Cross trade-mark painted all over their roofs? This doesn't look like a military area."

"You forget the cruising range of modern bombers," Tori reminded him.

"But who——" Jay began.

"That is not for me to suspect. However, I need only remind you that one of the nations with whom we are on the friendliest terms at present has a large naval base about a thousand miles from this island. We trust to their friendship for us to note the red crosses and to observe the conventions of civilized warfare—should they be tempted to bomb our scientific establishments from the air."

"Civilized warfare!" Nara broke in contemptuously. "Those helpless casualties in the wards will be the first to be gassed." She turned on her brother

with something like exasperated fury. "Why don't you come to your senses and realize that you are living in the twentieth century and not the sixteenth?"

"If you really want to protect your casualties you will forget all your silly ideas of chivalry and have those red crosses painted over with green to-morrow. Camouflage the roofs, instead of making targets of them that even a drunken boy of seventeen on his first raid could not help hitting. I really believe you want your casualties cleared out of the way."

She stopped abruptly, almost panting with contempt for her smug brother. Her outburst—possibly because it had occurred before Jay—moved him to a show of anger, and he rapped out a staccato reprimand in his own language.

Nara only smiled contemptuously. Then, waiting till she had cooled off, she flung at him two short sentences, neither of which Jay could understand. Their tone, however, was plain enough. Tori was speechless. Recovering his self-control, he turned to Jay.

"I must apologize for our behavior. Please think nothing of it—neither of us would dream of breaking the sacred obligations of hospitality by making a guest uncomfortable. It was just one of our little brotherly-sisterly arguments."

"Sure!" said Jay. "I was always arguing with my sisters. We never meant anything by it. But you spoke of casualties. What put them on the sick list?"

"Overwork," Tori informed him curtly.

"Then I needn't worry." Jay laughed.

Nara had been following their conversation critically. She now picked up the speaking tube and gave the driver a sharp order. Tori eyed her coldly, but did not interfere. The car slackened speed and made a U turn. The red crosses came into view again, and



"Tuberculosis?" Jay whispered. Nara shook her head. "The staff calls it overwork. So don't overwork, Jay."

the car turned down a side road through the forest directly toward the hospitals.

"Perhaps Jay would prefer breakfast before visiting the hospitals," Tori suggested in his usual even voice.

"This is not to be a tour of inspection," Nara retorted. "He need see only what overwork does in its first stages. It may be enough to warn him not

to work too hard. Some other day he can see what happens to those who disregard the first warnings of common sense."

The car stopped before one of the larger buildings.

"A rest-cure home," Nara informed him. "Everything that is humanly possible has been done to give the place an air of peaceful quiet." She indi-

cated the trailing flowers in hanging baskets along the airy veranda. "Even the flowers have been carefully chosen—delicate blues and lavenders. The chairs would invite even the most energetic to sit down and rest or sleep. Notice the subdued harmony of the colors and the softness of the matting."

They climbed up the easy steps to the broad veranda.

"Now," she said, "see how perfectly the patients harmonize with the furniture." She called their attention to the landscaping in front of the building. "That, too, is part of the cure. The patients melt into it."

Jay looked at the listless men sitting or lying in easy cane chairs down the length of the cool, shady porch. The eyes of most were closed; a few gazed listlessly out over the soft contours of the shrubbery to the dark, emerald green of the stunted firs in the background.

"Tuberculosis?" Jay whispered.

Nara shook her head. "The staff calls it overwork." She glanced challengingly at her brother. "The men from the Central College of Medicine have no name for it. They say it is like pernicious anaemia in its first stages. These men are all in the first stage." She lowered her voice. "The man with white hair in the third chair from the end—on your left—is passing into the second stage. There is no cure."

Jay studied the face of the third man from the left. The man's eyes were closed, but he was not asleep, as he was carrying on a steady conversation in a husky monotone with the man on his right. At a first glance there was no marked difference between this patient and the others. On studying his face more closely, however, Jay noted that the skin had a peculiar transparent appearance, as if the flesh beneath was translucent yellow wax or tallow. Nara led them back to the car.

"Don't overwork," she said to Jay as he took his seat beside her.

Tori seemed slightly put out. He minimized what they had seen.

"There will be nothing like this when we learn how to take the next step forward. And it cannot be long delayed now."

JAY could not help wondering whether Tori was expecting him to take the next step. It was growing increasingly clear that the scientific division of the dust industry did not know exactly what it was doing.

Nara interjected an ironical comment: "There is no victory without casualties."

Tori, being insensitive to irony, eagerly seconded her: "No; and these men are as truly sacrificing their lives to their country as if they had fallen on the field of battle." He sighed profoundly. "They will be hard to replace. It is always the best and the bravest who fall."

Nara shot Tori a glance which he missed. She seemed about to speak, but changed her mind. Her brother was hopeless. As the car drew up in front of a concrete-and-steel bungalow almost completely covered with flowering vines, she gave her brother a parting shot.

"After all," she said, "I believe you are right in having the red cross painted on the hospital roofs."

"Of course," Tori agreed eagerly. He thought Nara had recovered her common sense.

Her next remark undeceived him.

"Yes," she said. "It would be much better for those men to be gassed or blown to bits than to sit there dreading the second stage and then having to go through with it." She darted into the house. "You show Jay to his rooms. I'll only be a minute."

If Jay had expected to find Tori and his sister living in something charm-

ingly native, he was soon disillusioned. The long, rambling house was modern and scientific to the last detail. Only the solitary picture—a small masterpiece—on the wall of the sitting room made him aware that he was in a foreign country.

The massive thickness of the walls and the huge arched girders of the ceilings instantly caught his curious attention. Although he had never seen the inside of a bombproof shelter, he imagined that such a place must be constructed like this singular dwelling house. Having washed up, he hastened to join his hosts in the breakfast room, which Tori had pointed out in passing.

Nara was deftly arranging three yellow irises in a slender vase on the table, gayly chatting with her brother as she did so. Their recent tiffs seemed to have been forgotten—possibly by a mutual agreement to behave in a civilized manner before their guest.

"You sit here," she directed Jay. "The maid will be here in a moment with the orange juice. You see," she said, laughing, "we shall have a real American breakfast as a housewarming. For lunch I have ordered something not quite so flat."

Jay ventured a rather delicate question as he took his seat: "Is there a red cross painted on the roof of this shack?"

Tori, as usual, took him seriously.

"No," he replied. "To mark this with the red cross would be in violation of the Geneva code, which permits the use of the cross only on hospitals."

Nara hastened to reassure their guest. "You needn't be alarmed. The house is bombproof and can be made gasproof in three minutes by closing the electrically operated steel doors. If there should ever be an air raid—which I'm sure there won't—I would much rather be under a steel-and-concrete shelter than trust my luck under a six-

teenth of an inch of white-and-red paint. Here's the orange juice."

"Nara is right about the improbability of a raid," Tori said. "But we should be guilty of criminal folly to neglect any precaution for any possible contingency, no matter how remote."

"You bet!" said Jay.

X.

THE FIRST three weeks of Jay's work on the island passed pleasantly enough. Tori and Nara appeared to have agreed on an armistice; certainly they had no more rows in Jay's presence, and they laid themselves out to make his stay in their bombproof bungalow comfortable. They never intruded on his privacy, but always seemed glad to see him at breakfast and dinner, or when he dropped into their sitting room on the way to his own quarters.

After the first week, Jay took his lunches at the clubhouse with the rest of the scientific staff; so he saw his hosts together only in the mornings and evenings. As Tori seemed to be overwhelmed with work, Nara and Jay frequently dined together alone.

On such occasions Nara talked without restraint of her work for internationalism and peace. She also was extremely busy, and Jay soon learned that Nara was no parlor pacifist expanding in a vacuum. And as he came to appreciate in some degree the wide scope and the intricate ramifications of the vast movements which she directed with all the skill of a seasoned strategist, his respect for her rose steadily.

From half-serious flirtations over the dinner table, their conversations gradually took on a more serious tone, and they discussed impersonal things—when Tori was absent. When her brother presided over the table, Nara never alluded to her work or to world politics. Possibly this was part of their

working agreement for keeping peace in the household, for poor Tori always grew restless and irritated when Jay inadvertently made some remark touching the field of Nara's interests.

Jay found himself gradually believing in her; she was what she professed to be and nothing else. And then, naturally enough, considering the nature of his own work, he wondered whether he could use her.

He rather despised himself for these practical speculations, but salved his conscience by remembering that all is fair in love and war. Jay was not in love, and Nara was too busy to encourage him in anything less serious.

At the lunches, Jay soon made friends among the scientific staff—after the ice had been broken by his own frankness about his work. At first they were inclined to treat him with formal courtesy. That phase soon passed, and Jay was accepted as one of them. Some of the older men even went out of their way to be friendly. More than once Jay suspected them of wishing to confide in him.

Something seemed to be troubling them, but they could never quite bring themselves to the point of speaking out what was in their minds. Possibly, he thought, they wished to warn him of impending danger. As Jay had already seen plenty in the laboratories to make his blood run cold when he speculated on the possibilities, their outspoken warning was not needed.

Contrasted with scientific workers of other nations, these sober seekers of factual truth were a queer lot. Deadly earnest in everything they did, they seldom smiled, and a laugh or a joke was beyond them. Unlike the men Jay had known—personally and by reputation—these scientists played no games. Cards or their equivalent were unknown in the clubhouse. A tennis court had not been even imagined. At lunch, instead of the usual joking and gossiping, these

men talked incessantly of their work and of what their fellow scientists the world over were doing. They seemed to have read all the current journals, and to have more than a talking knowledge of what was going on elsewhere.

Jay marveled that their digestions could stand the strain. It began to get on his nerves. One day his neighbor at the lunch table gravely asked Jay what he thought of a profound mathematical paper on spectrum analysis that had come to the physics library the day before. At the moment Jay was trying to get the meat out of a crab leg. He let out something halfway between a sob and a yell of despair and replied that he had not yet had time to look at the article and doubted whether he ever would. His neighbor went gravely on with his own shellfish and between mouthfuls insisted on giving Jay a detailed, critical review of the article in question.

"How do you do it?" Jay asked in wilted wonder.

"Do what?" the meek little reviewer asked.

"Put fish in and take mathematics out at the same time. My own stomach is all upset, and I've only been listening."

"But I do not take the mathematics out of my stomach," the man protested.

"Then where do you get all that stuff you've been throwing up?"

Probably the earnest little man did not quite follow the colloquial English. Anyhow, his reply was disconcertingly grave.

"From my soul," he said.

"Heaven have mercy on mine!" Jay muttered under his breath.

The next day he picked a less serious-looking companion. But it proved to be a false move. The new man spoke no English, but was fluent in a bizarre sort of pidgin German which he had acquired as a student in Berlin.

Jay's German was unequal to the ter-

rific strain of translating the hashed gutturals into sensible visual images, and all he got out of that lunch was a bowl of soup and a confused memory of leaky vacuum pumps battling valiantly against a barbarous horde of cracked condensers.

AT THE BEGINNING of the fourth week Jay began to sense the first stealthy advance of the overwhelming depression which was presently to haunt him like a waking nightmare. One day a kindly older man whom Jay had grown to like appeared to be in perfect health. The next, he crept into lunch, pale and listless. The following day he was absent. To Jay's inquiries the missing man's friends replied with a shrug and the curt explanation "overwork." Evidently it was the accepted formula, officially imposed. When Jay asked whether his friend would be back, they said that he would, as soon as he had "rested."

"Is it the first stage?" Jay asked.

His question was politely ignored. To a young man fully conscious that he was alive and healthy, the experience was profoundly disturbing. These fanatics—in his secret thoughts Jay rather brutally lumped them all under one head, although many obviously were there under compulsion—these devoted truth-seekers might be willing to lay down their lives for the continued prosperity of their country, without a murmur of protest, but Jay was not.

Unless he could get out of it with his health intact he would kick himself for a fool for having blundered into it in the cocksure assurance of youth. At the moment he would have gladly exchanged all his prospects of ever discovering the secret of the dust for a guarantee that he would never be compelled to take a "rest cure."

But there he was, and there he must stick till his wits could get him out of it. There was nothing to be done but

to grind at his job and forget about "overwork." But he made a secret vow not to look in a mirror again; he could shave by touch.

During the first week his fellow workers had left him to do exactly as he pleased. Then began a subtle pressure on him to hasten his work. They said nothing definite, but the casual allusions to the "fundamental" character of the dissertation which had made Jay notorious—if not exactly famous—gradually became more frequent. Then others dropped hints about their own inability to get over the last hurdle in their own work which the lack of one simple, fundamental fact prevented them from clearing.

Jay's extension of the periodic law, they declared, had almost helped them over the last obstacle, but not quite. Was he still working in the same general direction? Could they be of any assistance to him? Perhaps Seventeen—Sam, for short—was too slow for Jay? When were they to have the honor and the pleasure of listening to Jay's preliminary report, of which Count Tori had given them such glowing accounts?

Jay replied shortly that he couldn't say, as the whole investigation had gone sour on him. Privately he resolved to keep stalling them off till the last possible moment, when further stalling would only arouse their active hostility. Behind all this constant, gentle pressure, Jay imagined he detected the strong arm of his friend Tori. Well, let him keep on shoving a little longer; Jay was just beginning to feel at home. The final shove came sooner than he had anticipated. It nearly sent him sprawling on his face.

On the Tuesday morning of his fourth week on the island, Jay went early to his study in the main library building. Neither Tori nor Nara had appeared at breakfast; Tori was sleeping late after working all night, and

Nara had left very early to drive over for a visit to some old friends on the other side of the island. Consequently there was no temptation to linger over the last cup of coffee. Entering his combined laboratory and study, Jay found the industrious Sam already at work.

"Go and fetch me whatever new journals came in yesterday afternoon. I don't feel like working yet, and I'll just browse around a bit."

Sam returned in a few minutes with a small armful.

"The American mail arrived yesterday," he said, dumping the lot on Jay's desk. "There are some new French and German ones, too."

"Thanks, Sam." Jay ran his eyes over the pile, taking in the familiar backs of the periodicals. He glanced up at Sam. "Don't you ever take an hour off?"

"No, Commander Jarvis."

"Commander? Haven't I told you not to make a monkey out of me? I'll help you to remember by commanding you to go now and take a long walk. Don't come back till lunch time."

"Yes, comm—I mean Dr. Jarvis."

"Beat it, before I send you walking for a week."

Jay got up and locked the door after Sam. Then he dived into the pile and grabbed the biological review in which Davisson, MacMillan, and Spier were to have attempted to communicate with him. He devoutly hoped that they had tried nothing so risky. Had the intelligence department correctly interpreted his message to their "coöperating editor"? One glance at the back cover of the journal was enough.

"Sunk!"

THEN he grew angry, not with himself, but with the secret service for having been so stupid—as he mistakenly imagined—as to misinterpret his patently obvious request to them to lay off

him altogether. How could they have been so blind? Calming down, he searched the journal for some definite clue to its actual date of printing. He found what he wanted in the notations left by the printers at the foot of the inside back cover. By a little arithmetic he soon deduced that his message might well have been too late by a margin of a few hours.

"Gosh, I hope it was! If not, they keep on sending me bales of stuff for Tori to read."

He turned to the article by the three biologists. There it was. The title gave it away to Jay's guilty eyes; the three had followed his suggestions to the letter.

"After all this fuss I hope they have managed to get something of value through to me."

They had—or at least they thought they had. The code which Jay had given them was imprinted on his memory for life—he had never trusted it to paper after telegraphing it to Senator Atkinson from Chicago. He now turned to the first tabulated list of measurements in the faked paper. The eleventh, twelfth, eighteenth, and twentieth measurements had the digits 7,9,3,8 as the next to the last. This being the agreed "signature" 7938, Jay knew that the biologists were sending him the information he had requested. To get it, he had now only to read the eleventh, twelfth, eighteenth, and twentieth terminal digits. This gave the number 1280.

"Twelve eighty?" he repeated aloud incredulously. "Why, they're crazy! He hurled the journal across the room and jumped up, tipping over his chair with a crash. "Crazy as loons!"

Some one was rapping at the door.

"Come in!" he shouted, forgetting in his excitement that the door was locked. Seeing the handle turn he remembered. Striding to the door, he flung it open. "What do you want?"

Oh, excuse me, Tori, I thought it was that pest Sam come back again. Come in. I missed you at breakfast this morning."

Tori rubbed his hand across his forehead. "I worked all last night and I'm feeling rather off. You are overworking, too"—he missed the startled look on Jay's face—"and I thought we might clear our heads by taking a spin through the woods in an open car. What do you say if we drive over to the other side and pay Nara a surprise visit? We can get there in time for lunch with her friends. I know they will be delighted to meet you. Come on!"

"Fine!" said Jay. "Are you driving?"

"I don't feel up to it, so I brought the chauffeur."

"Better and better. I myself don't feel like driving this morning."

Tori started. He peered for a moment into Jay's face. "You are just tired and nervous—like me."

While they were talking, Jay was fully aware that Tori was observing the overturned chair and the disordered litter of journals on the desk. As they passed out, Tori's casual glance took in the biological journal where Jay had flung it. He said nothing, but Jay knew, as positively as if Tori himself had told him, that he owed this friendly call to the good offices of the pestiferous Sam.

That faithful spy, no doubt, had hurried over to report in full to Tori the moment Jay threw him out of the study—to get rid of him, as he fondly thought. Now Tori knew exactly what journal it was that Jay had wished to read in privacy, away from the prying attentions of the solicitous Sam.

Jay could have kicked himself for a careless fool, but it was too late now to do any good. He could only speculate on Tori's next move and trust that his own friends in America would send him no more messages. Otherwise, he

had a strong premonition that he might soon work himself into a "rest cure." Why the devil hadn't he picked up the telltale biological journal and put it with the others before opening the door? Oh, what a fool he had been! In this frame of mind he silently climbed into the back seat of the car with Tori and resigned himself to a pleasant drive through the crisp morning air.

Nara was indeed surprised to see them. Whether she was also delighted, Jay could not decide. Her friends were an elderly couple and their son, an assistant to one of the key men in the scientific division. The young man looked about Sam's age.

The family had the use of a small cottage on the seashore. They were enjoying a brief vacation. The son, it appeared, had not been feeling very well of late, and his chief considerably let him off to go fishing. He had been far out early that morning; his catch was to be the main course at lunch.

The old people were evidently of peasant or fisher stock. Both were now attached to the scientific division in humble capacities, the wife as a filing clerk and the husband as clerk in charge of one of the storerooms for chemical supplies.

When Tori and Jay arrived they heard sounds of animated talk issuing from the flimsy little cottage; after they appeared the talk dried up. The old folks were friendly enough. Their welcome to their unexpected visitors was as gravely courteous as the traditions of their race demanded, but it could not have been called effusive. Jay wondered whether he and Tori had interrupted one of the energetic Nara's conferences.

THE SON had a certain dogged look about the eyes, as if he was not entirely satisfied with his lot in life. His expression when he looked at Nara—without her knowledge—was one of ab-

solute devotion. It was the sort of look a private might give the commanding officer in whom he has implicit trust. There was not a hint of love or sentimentality in the young man's glances. Jay set him down as likely to be a cool, rather dangerous, customer in a scrap, and he wondered what the four had been discussing so spiritedly when he and Tori interrupted them.

Tori greeted the young man affectionately. Jay learned that his official name was "Five." Tori used no other.

"Well, Five, how is the fishing?"

The query was spoken in the vernacular. To his surprise and delight, Jay found that he followed the meaning perfectly, thanks to Sam's efficient instruction and his own attentiveness at the lunch table. Venturing a remark himself, he asked the young man in his own language whether he had caught any crabs.

Nara was listening. She clapped her hands. "Fine! I couldn't have done better myself."

She gave the young man a rapid instruction which Jay could not follow. Speaking very slowly and distinctly, the fisherman replied that he had caught exactly five crabs about an hour before Jay arrived, which was only right, as his name was Five. It was the first time Jay had ever heard one of these people attempt anything but a deadly serious statement of fact.

"Keep after him, Nara," he said, "and in time he will crack a real joke."

"You don't know these people as they really are. By themselves, doing the things they really like to do, and not strutting around with toy swords, they are as happy and jovial as any people on earth." Seeing that her observations had irritated her brother, she quickly changed the subject.

"Shall we take a stroll down to the beach before lunch?"

"I'm on," said Jay.

Tori and the others declined. The

parents said they would stay behind to put the lunch on the table, and Five evidently wished to talk with Tori. As they strolled off, Jay heard Tori congratulating Five that his indisposition was not serious enough to demand a real "rest cure."

"Who are they?" Jay asked when they were safely out of earshot.

"Just old friends," Nara replied lightly. "They go back to work tomorrow."

"Internationalists?"

Nara evaded the direct question. "They are not very keen for all that sort of thing," she said, indicating two of the battleship patrol steaming slowly by, far out to sea. "Nor is the son anxious to be forced to take a 'rest cure.'"

"I see. It must be very difficult to know whom to trust in your kind of work."

"It is, very! But what about your own work?"

"How do you mean?"

"You are finding it hard to know whom to trust."

"Oh, I don't know."

"Would you confide in me, for instance?" she asked.

"What have I to confide? Everything is going along smoothly. I'm doing the job I came here to do. That's all there is to it."

She gave him a searching look. "You are upset about something. Did anything happen this morning?"

"Nothing out of the usual."

"Then why are you so down?"

"I may as well tell you. Seeing those poor devils at the rest home the day I arrived gave me more of a jolt than I realized at the time. This morning your brother gave me an unintended jab that made me feel pretty sick for a minute or two."

"What did he say?"

"It was just a slip. He meant nothing by it. I'm sure."

"But what was it?" she persisted.

"Well, he said I looked overworked. You know what they mean by that around here."

She stopped abruptly. "Stand still. Turn your face away from the sun and let me see." She scrutinized his face closely. "You are all right," she said. "But keep away from the high-voltage buildings."

"I shall—as long as I can. Is that where most of them tire of their jobs?"

"There and in the biological buildings—the laboratories and the green-houses."

Jay was startled. "The biological buildings? I didn't know they were doing any biological work here."

"They are. A lot. Some of my friends on my brother's staff say it is the most important of all the work being done here."

"But I've seen no hint of it," Jay protested. "Of course the principal biological journals are lying about in the main library, but that means nothing. Any modern scientific library subscribes to all the main lines as a matter of course."

"Perhaps we can drive back past some of the laboratories this afternoon," Nara suggested. "Then you can see for yourself."

"What are they working on?" Jay demanded coolly.

Nara laughed. "Are we exchanging confidences?"

"Tell you in a moment. You first."

"Very well. I have been told—by our agents, of course, not by my brother—that the main work is bound up with tests of the improved dust they are making all the time on seeds and young plants."

"Is that all? Don't they experiment with flies at all?"

She regarded him quizzically. "It's your turn now. How is your work progressing?"

"Not so fast. My preliminary report seems further off than ever."

"Good boy!" she murmured. "I see I did make some impression on you that night on the bridge."

"No, honestly, Nara, I'm not stalling. I'm stuck."

She scanned his face critically. "I believe you," she said. "Can I help?"

JAY THOUGHT FAST. The code message, with its "1280," had completely upset his preconceived notions concerning the dust. After the first shock he realized that however unexpected the biologists' 1280 was, it was not impossible. To test a theory which was beginning to crystallize out of his doubts, he must perform the experiment of Davisson, MacMillan, and Spier, no matter how crudely, by himself.

Unskilled as he was in the proper technique, he yet felt that he could do a good-enough job to see whether they had missed the mark by anything of the order of 500. Although he had expected a number less than 2000—the theoretical limit of his scale—he had anticipated nothing like 1280.

"You could help me," he said.

"How? Tell me; and if it is possible, I'll do it."

"This may sound rather queer," He laughed. "But I hate to go singing small potatoes to your brother." Seeing that she missed the slang, he explained as formally as if he were lecturing. "It is simply this: I came here fully expecting to extend my work on the periodic law. Your brother is growing impatient—he says nothing, but I know how he feels. I can't blame him. He has been telling the staff for a month that I am ready to report. I have not reported."

"This morning, most unexpectedly, I learned something that has caused me to modify the assumptions on which I was working—radically. What I have

done will not be thrown away or wasted. But it must all be checked over again from a new angle. To do this, I shall need a sample of the latest improved dust. It must be the very latest form they have made—any other would be useless for my check. Can you get it for me? I could ask your brother, of course, but I should hate to have to admit that my work is not going as well as I hoped."

"Have you told me everything?" Nara asked quietly.

"No. But I am asking your help. You offered it, you know."

"Tell me just one thing more: Will it be necessary for you to work in the biological laboratories?"

"I don't know. Why?"

"They furnish most of the casualties."

"Then I'll keep out of them if I can."

"And the high-voltage rooms, too, if you can, where they generate the hardest X rays. I have warned you about them already."

"I know. Can you get me that sample of the dust? A mere pinch would do—less than half a teaspoonful. But it must be the latest."

Nara did not commit herself, and Jay could not make out whether she agreed. "It would be very difficult," she said.

They heard a faint shout behind them, and turned to see Tori hailing them. It was lunch time.

"You two must like exercise," he said when they joined him. "Not for me."

"It would do you good to take a walk with Nara once in a while," Jay remarked. "I feel all bucked up."

"You forget that she is my sister," Tori responded gloomily.

"Then take some other fellow's sister for a walk. It's what you need."

The lunch passed off quite gayly. Nara behaved herself and even let her brother lecture Five on the nobility of the work he was doing for the good of his country. After lunch Nara begged Five to show her his crab-fishing outfit. To see it, she had to accompany him to the little shack behind the cottage. When she returned she proposed that they—Tori, Jay, and herself—return together. She could drive, and let the chauffeur take her own car back. Tori readily agreed.

"I am going back the long way," she said. "It's going to be such a beautiful evening."

By this simple subterfuge, Jay was taken on a personally conducted tour by moonlight through the parks surrounding the miles of glass houses and the imposing biological laboratories. Poor Tori, exhausted by his sleepless night and weeks of hard work, slept most of the way. They did not rouse him to view the laboratories.

"Do you notice anything about those greenhouses?" Nara asked in a low tone as they sped by one of the experimental stations.

"What makes them glow like that, as if they were lighted up by sodium vapor?"

"The dust. The glow is the same kind as that we saw from the steamer. Have you found out yet what causes it?"

"No; and I'm not likely to."

To be continued.



Twelve Eighty-Seven

Part IV of an epic serial novel

by JOHN TAINE

UP TO NOW:

The "enemy" has been selling a strange new fertilizing "dust" of extraordinary potency to the United States in exchange for agricultural surpluses raised by the dust. American experts have been unable to discover the composition of the dust.

Young Jay Jarvis has joined the enemy research staff to carry on his extension of Mendeléef's periodic law, having been engaged by his university friend Count Tori, director of the enemy dust industry.

Jay has formed a sincere, if cautious, friendship with Tori's half-sister Nara, the daughter of Admiral West of the United States navy.

Hitherto only the United States has been sold the enemy dust; now the enemy is to sell to Russia and Canada, but not to Manchuria. This rouses the suspicion of the President's cabinet, who believe the enemy is waging a new kind of war on us with the dust whose effects, so far, have been wholly beneficial. They decide to suspend the dusting immediately, until Jay, whom they are backing, can discover its secret. He is now on Tori's scientific island. He and Tori are ostensibly good friends.

On arriving at the island, Nara insists on showing Jay the patients at one of the hospitals. These men are all former members of Tori's staff who are now suffering from a baffling and invariably fatal disease which they call "overwork."

The hospital roofs are painted with

the red cross, as in a war area. Nara says the patients had better be bombed than wait for death. Tori's "cottage" is bombproof and gasproof.

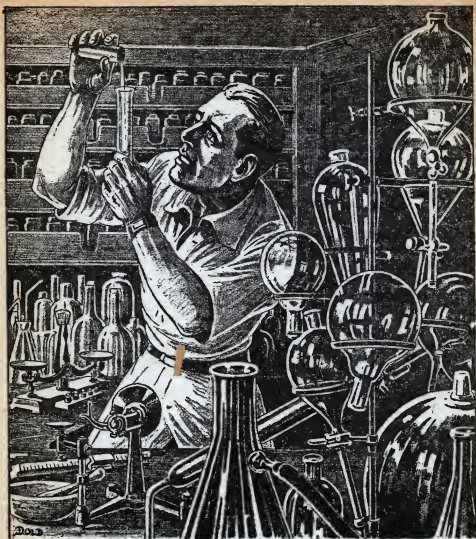
Jay lives with Tori and his pacifist, internationalist sister, Nara. All are very busy; Tori directing his scientific staff, Nara organizing her secret allies on the island, and Jay trying desperately to find a clue to the secret of the dust.

By a cipher in an American biological journal, the American geneticists have told him their discovery that 1280, on Jay's scale, is the number of the radiations emitted by the dust. This is totally unexpected by Jay, who had looked for a much smaller number. Tori catches Jay with the journal, says nothing, but shows that he suspects Jay of treachery. From Nara, Jay learns what he did not suspect—the most important and most dangerous work on the island is experiments on plants and flies.

XI.

THE NEXT DAY at lunch there was a terrific uproar. From the excited voices and the sharp, short gestures, Jay imagined that some terrible disaster must have overtaken the nation. Men he had never seen before—he learned later that they were key men from the biological laboratories—were haranguing tense groups of workers from the chemical and physical divisions, and one frantic exhorter was even standing on a chair the better to make his dire message carry.

Although he strained his attention to



*Quickly, and behind locked doors, Jay made his test.
He was careful to trust nothing to paper.*

catch what they were saying, Jay found the rapid speech in their own language too much for him. Presently he thought he detected something that sounded like "America" or "American." The word was repeated by other speakers, and Jay became aware that speculative, somewhat contemptuous, glances were being cast in his direction. It flashed through his mind that the United States

had declared war, though why he could not imagine.

The racket rose to a crescendo of contempt and indignation. Jay edged toward an exit. Just as he reached it, Tori entered. The word passed quickly that the "commander in chief" had arrived, and silence ensued. Jay noticed that Tori carried a copy of the biological journal with the coded message. It was

tightly rolled up, and Tori carried it not unlike a field marshal's baton.

"What's all the excitement about?" Jay asked, boldly taking the initiative.

Tori greeted him in his usual friendly fashion. "Nothing much, Jay. Three of your fellow countrymen have made fools of themselves. That is all." He unrolled the journal and opened it at the article by Davisson, MacMillan, and Spier. "One of our men in the experiment station read this yesterday morning as part of his regular routine of keeping abreast of the literature in his line. As you see, it deals with the effect of hard gamma rays on fruit flies and purports to be a study of the fluctuations of the fertility of the flies under varying exposures to the rays."

Jay nodded. "Something on the order of H. J. Muller's work, where he found he could make the flies produce freak offspring practically at will by dosing them with X rays?"

"In the same general direction, we ourselves have carried out thousands of such studies. And this"—Tori tapped the page—"is another investigation of the same sort by three of your leading geneticists."

"Have they found something new?"

An eager knot of researchers had gathered round them to hear Tori's remarks. Tori seemed to be enjoying himself.

"New? It is nonsense!"

"Then," said Jay, with an ill-advised attempt at levity, "it probably isn't new."

Tori trembled with rage, or excitement, or both. How dared reputable scientists publish such rubbish in a reputable scientific journal? Five minutes' perusal by an expert would suffice to show up the utter rubbish which these dishonest investigators were parading before the scientific public as the records of laborious experiments faithfully performed.

Jay had an inspiration. Waiting till

Tori ran himself out of steam, he played his first hesitant card.

"Is this what all the talk here has been about?"

"It is. Our workers take their science seriously."

"So I have noticed. And I take mine seriously, too, but not as an affair of life and death. However, that is a matter of national temperament, beyond arguing. When I came in and heard all the shouting, I thought war had been declared. Several of the speakers—I thought—mentioned America several times. That, and the shouting, threw me off."

Tori followed what Jay was saying with the closest attention. In spite of the concealed dynamite in the situation, Jay could not help registering a mental note that Tori at the moment looked exactly like a beady-eyed mouse concentrating on a difficult mathematical problem—if mice ever do concentrate on such things. He could only hope that Tori would fail to solve his problem.

THAT Tori suspected the truth—at least up to the point that the fake measurements probably concealed a message to Jay—seemed fairly certain after all that had happened. But that Tori or any cryptographer in his secret service would ever decipher the code seemed wildly improbable. Although he knew very little about such things, Jay still considered his code spyproof.

Probably, he thought, Tori's experts would exhaust their ingenuity searching the message for concealed scientific information of military value. As the message contained no such information, he felt reasonably secure.

Tori's suspicions would naturally be sharpened, and he might set half a dozen spies onto the suspect to assist the faithful Sam, but Jay felt that he could put up with it. His blunder could be turned into a brilliant success provided he

played his cards well. Not crediting the biologists' "1280," he must check it for himself as best he could; and his carelessness—or the intelligence department's—over the matter of the code had put the means for an expeditious check into his hands.

Tori seemed to resent Jay's allusions to the shouting of his fellow workers. Jay had meant them to annoy him.

"Your attitude," he said, "is all part of your code." Jay almost jumped, at the word, but Tori meant it another way. "You Americans consider it beneath you to get excited about things of the mind."

Jay felt relieved. "When we are among ourselves we take that pose, perhaps." The small crowd of listeners seemed deeply interested, and Jay continued: "But where there is no need to pretend, we drop the pose, and make as much of our own work—such as it is—as your people do of theirs."

Tori and some of the others looked politely skeptical. Jay decided it was time to convert them by a practical demonstration.

"As I am the only American here, I can afford to be natural. Why should I hide what Count Tori has always said I really feel?" he demanded of the crowd. "Just before he offered me the honor of a position on his scientific staff, he told me that I was as jealous for the honor of my country as he is for the honor of his. Why should I deny that he was right? There is no other American here to make me feel ridiculous."

The approving murmur which greeted this open confession encouraged Jay to proceed.

"To convince you that the honor of my country and the reputation of its scientists are as dear to me as are those of Count Tori to him, I shall ask him, as a special privilege, to be allowed to witness a repetition, by skilled geneticists, of this incomprehensible work of

my fellow countrymen, Messrs. Davisson, MacMillan, and Spier. Has any one attempted to duplicate their results?"

There were head-shakings and raisings of eyebrows.

One of the key men from the biological laboratories took it upon himself to answer: "Does not Commander Jarvis know that such experiments with fruit flies take several days?"

Jay apologized for his unpardonable ignorance. Physical chemistry, he regretted, had consumed the whole of his small stock of mental energy. But would the distinguished scientist who had just spoken tell them by what method he had proved the measurements of the American geneticists to be nonsensical rubbish?

"By looking at them," the biologist retorted.

Jay threw up his hands in a gesture of hopeless surrender. "If that is the spirit of science, I don't know what science is. In America they used to teach us that 'experiment answers all.' You gentlemen seem to have discovered a shorter kind of answer."

The debate precipitated by this shrewd thrust at the very foundation of their scientific integrity nearly brought the clubhouse down. One faction—talking German, mostly—insisted that no experiment was necessary to settle the question. Another group, shouting in English, held that the accepted theory of mutations in fruit flies under the influence of gamma rays was only a theory, after all; the American geneticists might have made a new discovery of fundamental importance, which it was the obvious business of Count Tori's scientific staff to investigate immediately.

A third faction, headed by Tori, talked in undertones among themselves in their own language. Jay let them fight it out among themselves, confident

that he should win. At last Tori clapped his hands sharply for silence.

"I should like to ask Commander Jarvis what he thinks would be the outcome of a repetition of the experiments."

If it was intended as a trap, Jay neatly side-stepped it.

"As I have said, I know only one kind of scientific truth—that which is reached by experiments that can be duplicated anywhere, at any time, by competent experts. So I cannot predict what will come out of a repetition of work about which I know nothing.

"But I can guess this much, from what I know of the care with which American scientific journals are edited: If this work proves to be as meaningless as some of you seem to think it is, then, I think, we shall find that the fault is the printers'. Dishonesty on the part of some compositor—a whole 'form' may have been dropped at the last moment, and the damage not reported as it should have been—would account for a great deal. So I do not know what to anticipate."

THE MAN who had exposed Jay's ignorance of genetics as applied to fruit flies, now very handsomely made a motion that Jay's first suggestion be adopted and that Jay be invited to view the experiment. After some scattering discussion, Tori put the question and the motion was carried unanimously. Jay thanked Tori, saying that he had expected no less from a corps of workers the least eminent of whom understood thoroughly the nature of science, and who were imbued with the essence of the scientific spirit.

He now felt that the key to the secret of the dust was practically in his hands. A few days in their biological laboratories, with ample opportunity to note technical peculiarities of the apparatus in use, would give him the hint he lacked toward a complete solution of his

problem. When he had solved it, it would be time enough to begin worrying how to get the solution to Senator Atkinson.

Jay left the clubhouse with the biological expert who made the motion to check the American experiments.

"You have had no time to look into genetics?" the expert asked politely.

"I'm sorry to have to admit it. Our American training must be much narrower than what your scientific workers get. They all seem to know something of every branch of science."

"Perhaps the men here are not a fair sample. They are quite highly selected from the best. The dust, you see, is an exacting taskmaster. With one hand it touches the innermost secrets of life, and with the other it reaches after the mysteries of unliving matter. Pardon me a moment; this man wishes to speak to me."

The man proved to be Jay's acquaintance of the previous day, the assistant Five. He exchanged a few words with the expert and turned away toward the entrance to the clubhouse. As he did so, he brushed awkwardly against Jay's side. Apologizing, he hurried away, without giving a sign that he had ever seen Jay before.

"The assistant of one of my colleagues," the expert courteously explained. "You are perhaps thinking of studying our language?"

In answer Jay replied in the language that he was doing his best. The expert congratulated him sincerely on the excellent progress he was making. A car drove up to claim the pleasant man, and Jay found himself alone. He reached into his coat pocket for his cigarette case, feeling hopefully for anything else that might have found its way into his pocket.

It was there—a paper package no larger than a short cigarette stub. Nara had succeeded in delivering half a teaspoonful of the dust to him. He lighted

a cigarette and hastened to his laboratory.

Sam, as usual, was plodding away at his interminable mathematics. Jay gave him a new job that would keep him out of the way for several hours.

"Go to the main library and get me all the data on the radioactivity of the elements in the rare-earth group."

Sam offered a mild protest.

"But Comm—Dr. Jarvis, there is very little material on that subject. I do not recall any papers dealing with the radioactivity of the rare earths. Are they not inactive?"

"Practically so," Jay admitted testily. "Did you think I was so green as not to know that? What's the matter with you fellows? Nobody around here seems to think I've been graduated from grammar school yet. It isn't the prehistoric stuff on spontaneous natural radioactivity that I want, but the recent work on induced, artificial activity. Get it?"

Sam was overcome with shame.

"I have been so busy keeping up with all this damned quantum mechanics"—it was the first time Jay had heard the industrious Sam swear—"that I have had no time to follow the experimental work."

"Why, Sam!" Jay ejaculated. "Didn't they tell you at the mission school it is naughty to cuss? But don't apologize. Hustle!"

Sam rose with alacrity, genuinely glad to escape from his endless calculations. This time Jay made no mistake. He turned the safety catch and then locked the door with the key. Slipping the key into his breast pocket, he set about his preparations for a little extremely elementary experimenting. Should Tori or any one else decide to pay him a friendly call, it would take him several seconds to locate the key, and he would not absent-mindedly throw the door open before he had time to conceal the evidence of his simple activities.

ALL Jay needed for the test he had in mind was a sensitive chemical balance and an accurately calibrated device for measuring small volumes of powders. Both were available in his combined study and laboratory.

The sample of dust which Nara had succeeded in sending him measured up a little more than half a cubic centimeter. He measured out exactly that amount and proceeded to weigh it with great accuracy on the chemical balance. A quick calculation on the slide rule gave him what he wanted—the specific gravity of the sample. He was careful to trust nothing to paper.

Next he took from a trousers pocket a small cylindrical box which had not been out of his pocket since the hour he left his father's office. This contained the sample of the commercial form of the fertilizing dust which he had obtained from his father. With equal precision he now determined the specific gravity of this dust.

The result confirmed a suspicion which he had entertained for some time: at least one form of the "improved dust" on which the biological division of the scientific staff was experimenting was not exactly the same as the commercial form used in the United States. The specific gravity of the improved form was definitely higher by at least two one hundredths of one per cent than that of the commercial form.

The obvious explanation of the discrepancy of course was that the improved form contained some denser ingredient than the commercial dust. In a sense, as Jay discovered later, this was true. But the sense in which it was true was trivial, and by itself could never have led to the secret of the dust. His next step, he hoped, would take him considerably further.

As he had just concluded his arrangements for getting into the biological laboratories, he felt for the first time

since arriving on the island that he was making real progress.

Neither Nara's sample of the improved dust nor his own of the commercial variety being of any further use to him, he poured both down the sink and turned on the taps. To make sure that the inquisitive Sam should find nothing to excite his curiosity, he also destroyed the paper which had contained Nara's sample and the cylindrical box by burning them in the flame of a gas torch. The ashes followed the dust down the drain.

Jay was fast mastering the psychological habits of Tori and his men. That Sam would have told Tori by this time that Commander Jarvis had locked himself in his study was almost as certain as twice two is four. Would Tori repeat his friendly visit of the previous morning? And if so, on what pretext? It rather amused Jay to speculate. To make everything appear natural, he peeled off his coat and sat down at his desk. Soon he was lost in his work. To heighten the effect, he had left the door locked.

The first tap on the door passed unnoticed. Jay heard the second. Grinning, he waited for the third. After some hesitation it came, a little more insistently than the second. Jay shoved back his chair with a scrape and got up to unlock the door, making as much fuss about it as he could. As he had expected, he found Tori smiling up at him.

"Sorry to disturb you, Jay," he began, innocently taking in the indubitable evidence of hard mental labor. "You were just in the middle of something?"

"That's all right. The rare earths stick out like a sore thumb on the new extension of the periodic law I'm working on. I just sent Sam over to the main library to comb the literature."

Tori seemed unaffectedly delighted. "You are on the track of another fundamental discovery. I know," he insisted,

brushing aside Jay's embarrassed protest. "There is the same gleam in your eyes there was before you made the other one."

"That's just the effect of yesterday's drive in the open."

Tori anxiously scanned his friend's face. "You feel all right to-day? Not tired?"

"Never felt better in my life."

"Then it will be safe enough, I expect. You will be there for only a few days."

"Where?"

"The genetics-experiment station. I just came to tell you that I have made the necessary arrangements for you to follow a repetition of the work of your fellow countrymen."

"Thanks, Tori. You don't know how much I appreciate it."

Tori's reply made Jay feel rather cheap. It was evident that the excessively nationalistic little man meant exactly what he said.

"I think I do, Jay," he returned quietly. "You remember how I have always said the honor of your country is the driving force behind your work, and not the personal, petty ambition which you like to throw over your true motives. Our people understand these things instinctively. Not all of yours do. Because you are one of the rare exceptions, I am deeply gratified to be able to help you." He hesitated, then went on somewhat soberly: "Although I share the convictions of our experts that the work of your countrymen is nonsense, I would rather have it otherwise. Do not take it too hard if the experiments prove our experts right."

"I shan't. But if they do, I shall certainly write a stiff letter to the editor. Whoever was responsible for that careless job of printing should be fired."

Tori regarded him with melancholy eye. "Perhaps it is best after all that we should keep our faith even when it is based on a delusion."

"But mine isn't!" Jay expostulated.

"I shall not argue with you." Tori smiled. "Au revoir. I shan't be home to dinner, but I shall see you in the morning before you start."

XII.

JAY dined alone. The maid who served him said that Nara had gone for a long drive by herself, but would be back about midnight.

The following morning he did not wake up till half past eight. Being half an hour late for the usual breakfast hour, he hurried through his dressing and hastened to the breakfast room. Before he reached it, he heard his hosts' voices raised in violent altercation. They were speaking in their own language, far too rapidly for Jay to follow. He tiptoed away, thinking to get out of the house unobserved. Just as he reached the front door, he heard Nara exclaim in English:

"I shall tell him myself!"

He heard a chair shoved back and rapid footsteps. She spied him.

"Oh, there you are! Is it true that you are going to work in one of the biological laboratories?"

"Yes; if your brother's offer still holds good."

"It does. Have you any idea of the danger?"

"There can't be anything very dangerous about experimenting with hard gamma rays on fruit flies. There must be scores of laboratories all over the world engaged in the same sort of work at this moment. Any danger from burns is negligible."

"What you say may all be true. I don't know. But I do know that the biological laboratories here keep our rest homes and hospitals well supplied with casualties. Why must you do it?"

"For the honor of his country." It was Tori, emerging from the breakfast room, who had spoken.

"Honor!" Nara flashed. "Are you never going to grow up and forget your silly medieval ideals of chivalry? This is the twentieth century."

Tori went white with fury. "You can use that tone to me in private, but not before a guest. If you do not control your tongue, I shall have you sent away."

"Try it!" she scoffed. "Your master himself may take a hand. Your assumption of authority is growing just a little bit too presumptuous."

Wishing he could escape or sink through the floor, Jay edged away.

Nara sharply called him back. "We must have this out. My brother talks of honor. Is a fantastic crusade to vindicate your fellow countrymen—he has told me your crazy plan—worth the risk of a lingering death? At your age?"

"But, really, Nara, you exaggerate the danger out of all reason. There simply isn't any worth considering."

"If you won't believe what I say you must see it with your own eyes. Come on."

"Where are you going?" Tori demanded.

"To Hospital Ten."

"I could forbid you," he said slowly. "On this island I am dictator. Our master has delegated his authority to me in all scientific matters."

"This is not a scientific matter," she retorted. "It concerns a human being."

Tori shrugged his shoulders. "I shall not exercise my authority. After all, you are my sister. Jay shall go with you if he wishes. Then, if he chooses, he may abandon what you—with your advanced modern views—call his 'fantastic crusade' to vindicate the honor of his nation."

He turned away.

"Cheer up, Tori!" Jay called after the retreating figure. "What you said yesterday was true. I haven't the slightest intention of changing my mind. I'm

just going with Nara to preserve diplomatic relations in the family." He smiled at Nara. "Bring on your dragon, fair lady. I'll bet it's only a garter snake."

"You shall see," she returned grimly. "I will do the driving. The chauffeur dislikes going where we must."

"All right. Suppose you pick me up after lunch? I promised to give Sam something to do this morning."

AFTER LUNCH Nara called for Jay at the club.

The first four or five miles passed in silence. Nara seemed rather ashamed of herself for the dressing-down she had given her brother before a guest.

Thinking the frost had lasted long enough, Jay broke the ice: "Thanks for that sample."

"Of what?"

"Dust, of course."

Nara was not in the mood to acknowledge any part in the transaction. "You don't trust me," she said.

"Well, to be quite plain, Nara, why should I?"

"You will trust me less when you hear what advice I have to give you."

"About keeping out of the biological laboratories?"

"No. You will have to decide that for yourself after we have visited the hospital."

"Then what is it?"

"I am not sure that I should give you any advice. You might only misinterpret my motives and think I am trying to spy on you—double-cross you, as the Americans say."

"After all, Nara, how can I tell that you are not double-crossing me?"

"I know of no possible way you could tell." Then she added, a trifle maliciously: "Unless you were to use your common sense. But I suppose you are too scientific to do anything so sensible."

Her reply nettled him. It also made

him think, not wisely, perhaps, but shrewdly.

"Between ourselves, wasn't that little show this morning staged for my benefit?"

"What do you mean?"

"Didn't your brother put you up to it? Not crudely, of course, but rather to convince me that you are not on his side?"

"So that you would confide in me?"

"Something of the sort."

"And then, I suppose, when I had picked your mind I was to present my brother with what I found?"

"Why not? If you and I were in America, and our positions were reversed, would you trust me?"

"Perhaps not."

"Then why do you expect me to trust you?"

"Didn't the sample of dust which the son of my old friends stole for you at great personal risk to himself suggest anything to you?"

"That's just it, Nara. It suggested a lot. For all I know it may have been a trap."

"If you are as wide awake as that, let me give you my advice now, before you go to sleep again. Don't attempt to communicate in any way with your biological friends in America."

Jay was startled, but he kept his head. "Sometimes you talk in riddles. What's it all about, anyway?"

"This road is rather narrow and too winding for talking while I'm driving."

"So you won't tell me?"

"In a moment. I am looking for a safe turn-out. There is one about a quarter of a mile farther on."

THEY rounded a sharp curve. About fifty yards ahead they saw one of the regular turn-outs, spaced every mile or so along the narrow mountain road. Nara slowed down and parked.

"This will do. A high bank on one side and a precipice on the other, with

a rushing torrent at the bottom. We are not likely to be overheard. Do you know where I was last night?"

"The maid said you had gone for a drive by yourself."

"Not quite. I sat here for three hours with a very dear friend. I picked him up at a lonely spot in the woods not far from the clubhouse, just after dusk, and offered to drive him home. He said he would rather talk to me than to his wife."

"Trying to make me jealous?"

"Hardly! My friend is seventy-two years old. Perhaps you saw him yesterday at the clubhouse."

"I do remember an old gentleman with thick white hair and tortoise-shell glasses. He was one of the crowd listening to me speechifying."

"Yes. He told me all about it, and he remarked how clever you seemed to think yourself."

"Nice of him."

"You can't realize how nice. That man is not only a great scientist, but one of the most skillful statesmen in the cabinet of my brother's master."

"He did look like my idea of one of the famous elder statesmen, now that I recall him," Jay remarked. "What else did he tell you?"

"A great deal that should interest you. For instance, all about the suspicions of my brother's secret-service agents—they are not his personal agents, of course, but the government's. Your assistant Seventeen—Sam, you call him—is one of them, but he does only routine work of an inferior grade in the direct spying. His knowledge of practical human nature is about zero."

"So I have guessed for some time. You remember I told you about catching him rooting around in my wastebasket. What do these hypothetical agents suspect—if anything?"

"I was coming to it. All that nonsense in the biological journal which

your American friends wrote conceals some sort of a code."

"Rubbish!"

"It may well be. But why were you so rash as to swallow the first bait my brother dangled in front of your nose?"

Her slightly mocking tone enraged Jay.

"Your brother dangled nothing before me!"

"You didn't even see it?" she mocked.

"Look before you eat, hereafter."

"I'm looking. Hard! Is that a hook in your hand? You must take me for a blind sucker."

"Sometimes I'm almost tempted to." She sighed impatiently. "I suppose I shall have to open your eyes for you. Why, oh, why did you threaten to write 'a stiff letter to the editor' if the biological experiments should come out the way my brother's experts say they must? Don't you see that was just what the secret service was trying to trap you into saying? You plan to send out a code message in your 'stiff letter,' for the editor to pass on to the United States secret service. And that message will contain the secret of the dust—when you find it."

Jay still kept his head. "If your brother's agents are so good at guessing, how is it they haven't guessed this imaginary code of mine?"

"Give them time," she replied softly. "They are patient and they are very expert."

"Almost too expert for their own good. Who has been filling you up with fairy tales this time? Leaving out your highly imaginative deductions, where do you pick up your supposed facts?"

"All that I have told you," she answered calmly, "came from my old friend—the man you saw. He has known me since I was a year old. He has known my brother longer. My brother relies on his realistic knowledge of human nature. That is why my

brother consulted him about you. In fact, my friend helped my brother to prepare the bait which you swallowed. That interview you had with my brother in your study yesterday afternoon was all arranged by my friend. Shall we drive on?"

"Wait a minute! How do I know that this friend of yours exists?"

"You saw him."

"Of course—if that's the man you have woven all this romance around. Sometimes I think you kid me just to keep your hand in for your next visit to America. But I'm not falling—yet. Tell me how I can check up on this friend of yours. Don't you see? You could have made your story out of whole cloth from what your brother told you. All you would have to know would be his account of what happened yesterday at lunch time, and what we said when he came to tell me that I could watch the biologists doing the experiments of those Americans over again. Given as much as that to work on I could spin a pretty fair yarn myself."

"I should think you could do even better," she said.

"What makes you think that? Trying to flatter me?"

"No. You are so stupidly suspicious sometimes—excuse me for saying so—that you would see a hundred cross purposes where there isn't one."

"ANYWAY, Nara, I admire your outspokenness. You hit straight from the shoulder. I've enjoyed this hugely. But why did you go to all this trouble?"

"Partly because I like you, as I told you on the boat. Partly because I think you have the stuff of a good internationalist in you, and I believe your help will be necessary to our side before we can win."

"Is that all?"

"Not quite. I do not want to see you shot."

"Shot? Who would shoot me?"

"Not my brother. He likes you too well, even if he did bring you here to steal your work. You see I can call a spade a spade when it makes things clearer. No; my brother would never order your execution. But his friends would. They would appeal directly to their master if necessary. And I think they would be sustained. The death sentence for spies is perfectly just—as justice goes in this world—and it has never been suspended. Your own government might protest, but it could do nothing. You will be shot if they catch you spying."

"Then I shan't be shot, because I am not spying."

Nara did not reply. Putting the car in gear, she got back on the narrow road and drove on.

"Is the lesson over?" Jay asked after a minute or two of silence.

"It hasn't started yet."

"Gosh! When does it begin?"

"In about an hour. At the hospital. If that makes no impression on you, I may take you for a long drive from there down to a beautiful little rocky bay. The moon will be full to-night."

"Fine! Nothing like a breath of sea air for clearing the head. I'm not so sure about the moonlight, though."

"Neither am I," she admitted, and Jay experienced a warm glow. Her next remark cooled him off. "Sometimes I think that may be what is the matter with you."

"Say! If either of us is loony, it isn't I."

For the rest of the drive to the hospital they forgot their worries and thoroughly enjoyed themselves as only young people can. They sobered abruptly when the first of the peaceful rest homes came into sight.

To avoid disturbing the patients, Nara crept by at a snail's pace. Jay could not avoid looking curiously at the long row of patients resting in their

cane chairs the length of the airy porch. One man, about the middle of the row, was sitting up, staring mournfully before him out at the dark-green pines on the hill. Jay thought he recognized him.

"Can you stop a minute? I think I know that man sitting up."

Nara stopped the car and Jay got out. He was not mistaken. The man he had recognized was indeed the gentle, older man whom Jay had grown to like at the clubhouse.

"How are you?" he asked, shaking hands.

The question was unnecessary. Already the flesh beneath the transparent skin of the face was the color and translucent texture of freshly-cut phosphorus.

"Rather tired," the man replied listlessly.

Jay hesitated before putting his next question: "Are you in pain?"

"The first stage is not painful. I shall avoid the second."

"You'll be back at work in a few days?"

The man shook his head. "We never go back. I would not if I could. I am glad it is all over."

"Didn't you like the work?"

"The work was interesting."

"Then why not take it up again?"

"I do not believe in its purpose. Sitting here dying, I see farther than I did when shut in by the four walls of my laboratory."

"Do you mind if I ask what the purpose of your work was? Please don't bother to answer if it tires you, or if you would rather not."

"World supremacy for our nation."

"So I have suspected myself. You no longer believe it possible?"

"We could achieve it for a generation, or possibly a century. Then the balance would be destroyed. The gain is not worth the cost."

Jay glanced along the line of dozing

men. "The cost in all these lives and the others that have gone the same way?"

"These are nothing. They are paying for their ideals. Most of them knew they would never come out alive, yet none regrets his sacrifice."

"You can't tell me what the cost would be?"

"I do not mind. Our own lives, as I said, are nothing. They have been given willingly. But the hundreds of millions who must perish before the war is won will not go to their deaths willingly. They also are human beings with a right to their lives and their ideals. We are asking too much of them."

"I think I see. Are you an internationalist?"

"I am nothing but a dying man."

"Is there anything I can do for you?"

"You might get me a drink of water. The attendants are all busy at this hour, and I am too tired to get up myself. There is a tap in the hall."

"I'll find it."

Entering the lobby, Jay discovered why all the attendants were busy at that hour. They were wheeling out the patients whose condition had taken a definite change for the worse during the night. The still forms, including the faces, were covered with sheets. An attendant looked up at Jay's intrusion.

"A friend outside wants a drink."

The attendant nodded, indicating the drinking fountain at the far end of the hall. Jay filled a large paper cup and made his way back through the sheeted forms. The attendants were wheeling them toward a side exit.

"Where are they going?" Jay asked an attendant.

"Hospital Ten."

A HAND of one of the patients had slipped out from under the sheet and was hanging limply down over the side of the ambulance. Jay tried not to look

at the dangling hand, but could not help himself. His own hand shaking so that the water spilled, he hurried on.

The tips of the fingers of the hand he had seen were shapeless lumps of gray jelly. The texture of the remainder of the hand was still like that of the face of his friend waiting for the drink of water. Jay stumbled out to the porch.

He handed his friend the cup.

"Thank you."

Jay could have prevented his friend from slipping the capsule from his hand into his mouth. A swallow of water dissolved the thin covering. Jay left his friend fast asleep. He did not bother to pick up the cup which had fallen from the tired hand.

"How is your friend?" Nara asked.

"I left him sleeping."

Nara started the car as noiselessly as was possible. "Many go out that way. Most consider it a disgrace."

"Did you know my friend?"

"Quite well. If he had lived he would have joined us."

"Would he have escaped this if he had?"

"Probably not. About as many of our men as theirs go. They all do the same kind of work. There are far more on their side than ours, so our casualties are much less. But the percentage is as high."

They drove on in silence for almost two hours. Once Jay had been on the point of making some remark, when he saw two ambulances ahead of them round a turn in the road. They overtook the ambulances and entered an extensive park with broad, sweeping lawns. An arrow indicated the way to Hospital Ten.

"How far is it?" Jay asked.

"Just through those trees. About half a mile."

"Slow down a minute."

She drew off the road and stopped. Jay thought in silence for a moment.

"How has the work been able to go on with all these casualties?"

"There were very few at first—not more than one or two every six months. Then they began working on what they call their 'improvements,' and the casualties began to rise. They had foreseen the possibilities and the hospitals were ready."

"If it keeps up at this rate they will defeat their own end—whatever it may be. There won't be a corporal's guard left six months from now."

"No," she agreed.

"Then isn't that the answer to what you tell me you are trying to do?"

"No."

"Why not?"

"That comes in the third part of your lesson. You haven't had the second part yet."

She started the car. Jay sat speculatively gazing at the trees ahead of them.

"Let's skip the second part. I saw enough at the rest home."

"I imagined you might. Shall we go on to the third part?"

"Go ahead."

XIII.

THEIR LONG DRIVE ended a few hundred yards from the shore on the western side of the island.

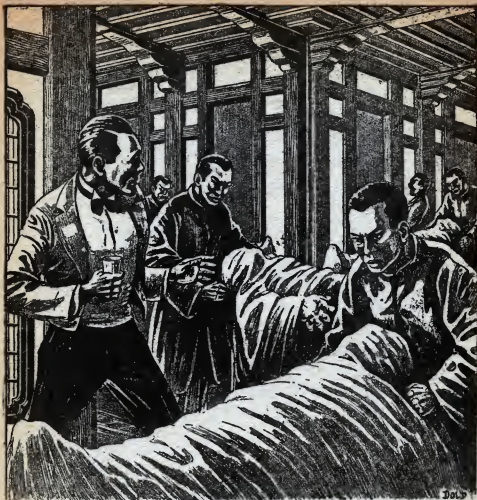
"Are you hungry?" Nara asked. "I am."

"So am I. But I don't see that we can do anything about it in this wilderness."

In the waning light the small heath where they had stopped gave an illusion of immensity. Nara got out of the car.

"Come on. I'll see that you get your dinner."

Jay followed her down a narrow, winding path through the heather. As the last of the daylight faded, the moon rose, golden, full and enormous. Still



Jay tried not to look at the dangling hand, but could not help himself. They were on their way to Hospital Ten

there was no sign of human habitation. The path made a sharp turn. Two tall, graceful spires, five miles or more away, suddenly came into view, silhouetted against the broad disk of the moon.

"There you are," said Nara.

"What? Do we have to walk to that wireless station for our dinner?"

"Not unless you wish. The relief crew lives not far from here. They are expecting me—but not you. You are just an afterthought that occurred

to me this morning when my brother and I were arguing."

Before he knew it, Jay had almost stumbled over a skillfully camouflaged cottage. Like Tori and Nara, the wireless operators who lived here while off duty were prepared for air raids. In response to Nara's knock the door was opened by a young man, rather taller than the average of his race, in undress naval uniform. Two other young men, similarly attired, rose respectfully from

the table where they had been playing some game when Nara entered.

Jay noted the look they gave her. It was the same sort of look of implicit trust that Five had given her. She introduced them to Jay in their language, with an apology for him that they understood no English. Jay's response elicited polite bows and grave smiles from the three. Nara laughed.

"Do you know what you said to them?"

"I thought I did. Was it awful?"

"Not so bad. You told them that you loved their grandmother."

"Rather a good beginning. If you want to talk to them, go ahead."

"Thanks, I will. First, dinner."

A rapid conversation with the young man who had admitted them produced the desired result. Leading them into a small room on the left of the sitting room, he summoned his companions to help him with their guests.

The table had already been set, but with places for only four. A place was laid for Jay, and one of the three began serving the meal direct from the charcoal stove. The main course was fish—somewhat flabby, as Nara was later than they had expected. During the meal Jay sat silent while the others talked so fast that he recognized only a stray word here and there. When the dessert was brought on Nara remembered Jay for the first time since they sat down.

"You must think me awfully rude," she apologized, "but I have planned this visit for three weeks. Any other night would have found one of the other members of the crew here. All the rest are on the other side."

"Don't mind me." Jay laughed. "I'm having the time of my life watching you four uncrowning kings and kicking emperors off their thrones. You go at it with such gusto. But aren't you afraid you'll get caught at it some day? What would you do if your brother were to walk in on us now?"

"Sit here and finish my dinner, of course. He knows I have friends."

"And you and your friends would keep right on talking?"

"Don't be silly."

"I'll try not to be. Please tell your friends for me that their dinner was darned good, and say I'll stand them the best in America any time they come to Chicago—if I ever get back there myself."

"You will get back," she said softly.

"Things are black enough, but they might be blacker. I'll give them your invitation."

She evidently made it attractive, for the three young men rose as one and bowed beamingly. Jay also rose and bowed. When they had resumed their seats, Nara turned casually to Jay.

"DOES the number 1287 mean anything to you?"

If Jay was startled he did not show it. "It might mean a lot, or it might mean nothing. What's the connection?"

"Still fencing with me? Then let me tell you that that number—1287—went on the air yesterday afternoon, from the wireless station where these men work, shortly after you sent Seventeen—Sam—to the library to hunt references on the induced radioactivity of the rare earths. Does that suggest anything?"

"It might. Sure it wasn't 1280?"

Nara interrogated one of the wireless men.

"It was 1287, as I told you."

"Did anything else go on the air?"

"That is why I asked you about 1287. The full message was: '1287 on Jarvis scale.'"

"There is such a number on my scale. The theoretical limit is 2000."

"You admit that 1287 does mean something to you?"

"Only what I have told you."

She searched his face for some clue to what was in his mind.

"Will nothing that I can say make you trust me?"

"Tell me what 1287 means."

"How can I? I have had no scientific training beyond high school."

"It would be precious little help to you if you had. I know no more about 1287 than you do."

"But you said there is such a number on your scale."

"I did. But suppose some one were to tell you that the temperature yesterday noon in London was 1287 on a common Fahrenheit thermometer. Would you believe him?"

"Not unless there had been a second great fire of London at that hour."

"You get the point. So far as I know there has been nothing like a great fire in my stuff. It would take something like that to make me believe that what corresponds on my scale to 1287 exists. Just like the 1287 for a probably normal temperature registered on a common thermometer. If there is such a thing as what corresponds to 1287 on my scale, I never heard of it."

Again she tried to read his face. "If you are not telling the truth you are being very foolish."

"To repeat your own question you asked me a moment ago—will nothing that I can say make you trust me?"

Nara looked miserable, and he felt sorry for her.

"We don't seem to have got very far with one another since that night on the bridge." She sighed. "In fact, I am beginning to think you trust me less now than you did then."

"What about you?" he retorted.

"I have more to lose than you if I fail."

"Fail in what?" he demanded.

"Stopping the indescribable disaster which must follow if my brother succeeds. I have told you before. There is no need to go over it again. I can see from your face that you remember what I told you."

"I remember perfectly. You said the laboratory men on your side predict disaster."

"Isn't that enough to make you choose my side? All you care about is discovering the secret of the dust—to save your country money and incidentally break my brother's people."

Jay was silent. Even if his motives—from one point of view—could be described in Nara's realistic terms, this was no time to court failure by getting too confidential with a subtly charming young woman. His father's remark that all he needed to make him spyproof was some experience with girls, returned to trouble him, and he wondered just how much he really knew of Nara, her professed internationalism, her pacifism, and her attitude toward her brother's fanatical ambitions.

Everything she had done so far could be interpreted in either of two ways. Either she was exactly what she professed to be, an ardent internationalist convinced that her brother's success would mean indescribable disaster for the world, or she was an extremely able spy on her brother's side.

If the former, her moves to frustrate her brother were precisely that and nothing more; if the latter, all her actions were being directed to the end of making Jay part with the knowledge which Tori's friends believed he possessed, and which was essential to the success of their campaign.

If only he could think of some decisive test to make Nara show her real hand, he would know what to do. But no such test suggested itself, and Jay wisely resolved to watch himself and avoid, as far as possible, giving her any lead which might lose him the game.

NARA ROSE from the table. She thanked their hosts and turned to Jay.

"There is a beautiful little bay about a quarter of a mile from here. I thought you might like to sit on the

cliffs for a while and watch the moonlight on the water before we drive back."

"You bet," he agreed enthusiastically. "But I give you fair warning I never feel very romantic just after dinner."

"Nor do I." She laughed. "That is why I insist on eating first."

The three young wireless operators saw them safely started on a shortcut to the bay, and turned back to their cottage.

"Nice fellows," Jay ventured.

"True as steel," she replied. "They are taking their lives in their hands, and they will throw them away, if necessary, without a regret."

"Your side seems to have its fanatics, too."

"Some might call them that. I don't."

"Nor do I," Jay hastened to apologize, "if your side is really doing what it thinks it is."

"I believe it is," she said slowly. "But I have to take the word of our friends in the laboratories for what I can't understand myself. I wish they had made me study more science at college. Then I could have judged at least whether the scientists have anything at all to go on, or whether they are just letting their nerves get the better of their brains."

"You have your doubts, too, then?"

"Not really. Something—call it intuition if you like, although that means nothing—tells me that I am right. I have worked with so many human beings in so many countries that I must have learned something of human nature and human motives. Our side is right, if there is any sense in anything human."

They had come upon the sea suddenly.

"There it is!" Nara exclaimed. "Isn't it perfect? Look at the reflection—oh!"

She stopped with a gesture of impatience.

"What's the matter?" Jay asked,

thinking she had twisted her ankle. "Let me see."

"See for yourself. There they are—crossing the silver lane of the moonlight. Can't they leave even that undefiled?"

She sat down on the stunted heather. Jay cautiously sat down beside her.

"The patrol again?"

Two battleships, about five miles from the shore, were steaming slowly by in the moonlight. Nara was still staring out to sea, her face a mask of contemptuous disgust. For once Jay almost believed he was getting a glimpse of her mind. If she was acting she did it extremely well—better in the moonlight, in fact, than she had ever done in broad daylight with all her wits about her and fully conscious of her audience. When she spoke it was more to herself than to him.

"You ugly brutes. Some day you will be abolished."

"I think they're rather beautiful," Jay remarked coolly, "drifting across the moonlit water like that. What have you against them?"

"Nothing," she answered curtly, somewhat to Jay's surprise.

"Then why the grouching?"

"Because they are out of date. Medieval. As antiquated as my brother's ceremonial sword and armor. If they must kill one another, why can't they forget the melodrama and do it scientifically and efficiently, even beautifully?"

"As the other side—according to you—is trying to do?" Jay suggested.

"As they would like to do. And as they will do, unless we can prevent them."

"Excuse me for pointing it out, Nara, but your logic is all haywire. In one breath you damn out the battleships for doing their job, and in the next whoop it up for something—according to what you hint—far more devilish. I don't get it. Here! What's the matter?"

Nara had sunk her head on her arms. "I hate it all," she wailed. "Let me alone."

His common sense prompted him to take her at her word. Presently she raised her head.

"I'm a hysterical fool," she said. "Please forget it."

"There's nothing to forget."

"Thanks. I didn't drag you out here to look at the moon and listen to my howling. Let us go on with your lessons—this is the beginning of the third—and last."

"I'm ready. Shoot."

"First, what time is it?"

Jay easily read the dial of his watch in the brilliant moonlight. "Exactly ten forty-eight."

"Remember that. In exactly twelve minutes—at eleven o'clock—a light that has burned for more than three years will go out instantly. I brought you here to see it go out."

"You mean the moon?" Jay asked facetiously.

"Something much more important. Look about thirty degrees to the left of the lane of moonlight. Look hard. Do you see something?"

"I see nothing—wait. Yes, I do. Or is it my imagination?"

"What do you see?"

"A faint yellowish glow just visible above the horizon. But the moonlight and—"

"It is not an illusion. That glow is all you can see from here of the yellow flames we saw that night from the bridge. For more than three years they have been trying to extinguish those flames. Scores of islands, dotted all over this archipelago, have flamed like that at night ever since my brother ordered the first fleet of the dust export trade to sail. All of those islands will suddenly cease to flame at eleven o'clock to-night."

ALTHOUGH there was no breeze and the night was mild, a chill crept up Jay's legs and stole up his spine to the roots of his hair.

"I suppose the flaming islands are where they manufacture the dust?"

"Of course. And the ships of the dust fleets take on their cargoes there, too. Seven days from to-night the fleets will sail with full cargoes for the United States, Canada, and Russia for the next dustings. Does that mean anything to you?"

"It might. How long does it take to load the ships?"

"Forty-eight hours."

"That leaves five days. Forty-eight hours seems rather speedy."

"You have taught us efficiency," she reminded him. "The loading could be completed in ten hours in an emergency. All the work is done by machines."

"I'll grant that for the sake of the argument. Then what?"

"Indescribable disaster. I am only quoting my friends on the scientific staff."

"Granting that, what can you or I do about it?"

"You can do nothing."

"Well, that's easy, anyhow. You're not in a very cheerful mood to-night, Nara."

"You're wrong. You can do nothing to stop what you have started, but you can still save your own life."

"What have I started? All the weeks I have been here I haven't done a single, blessed thing."

"You think you have not. As a plain matter of fact you have solved the fundamental problem my brother brought you here to solve. Didn't I tell you that one of the things they hoped you would discover is the secret of controlling those flames—the glow we saw from the boat?"

"Sure. I remember all that. What of it?"

"And didn't you guess that the 'fun-

damental discovery' my brother and his staff have been looking for ever since the world dust monopoly started is just this secret of learning how to control the glow?"

"Suppose I had. What then?"

"Would it surprise you to learn that you have discovered how to control the glow?"

"Surprise me? It would knock me silly."

"You have."

"Nara, you're crazy. It must be the moonlight. Come on, let's go home."

"Not till eleven o'clock. Do you still see the glow? Then keep watching it, for this is the last time you will see it on this earth."

"All right, I'll take a long last look and imagine I've discovered how to turn off the light—by Heaven! There it goes."

"Look at your watch."

"Eleven, exactly."

"Shall we go home?"

"Wait a minute. Sit down. You may have staged all this. For all I know they may shut down the dust factories every night at eleven. Then the glow—whatever it is—would naturally go off. You say I have found out what your brother and his crowd have been trying to get ever since they started the dust business. Now I'm going to pin you down. Tell me exactly what I have found."

"You have found 1287 on your own scale."

"Are you crazy? No such number occurs anywhere in my work—either in the tabulated results of experiments or in the theoretical calculations. And if it did I should not know how to interpret it."

"Really, Jay, you are slower than I thought you were. The number 1287 does occur in your work—in the work you have done since you boarded the steamer to come here. Seventeen—Sam

—has been very industrious, has he not?"

"If there were twenty-five hours in a day, Sam would have put in twenty-six."

"You have given him parts of your calculations to do?"

"I shoved practically all the mathematical physics his way. To be quite frank, most of it was beyond me. Of course, I intend giving Sam full credit when our joint paper comes out. The things that boy has cleaned up make me look like a dishwasher in a hash house. He's a genius—except in spying."

"That is where you are mistaken. Seventeen is no common spy. His genius is for spying out other men's subconscious ideas from the work they can only half finish themselves. He took the problems you gave him, and solved them. Completely. Without your ideas to start him, he could have done nothing, perhaps. But you sowed the seed and he picked the fruit. Sam has robbed you in a way my brother could never have done. He has made the fundamental discovery my brother was counting on you to make."

"So I've been scooped? Well, that's interesting. I must be better than I thought I was. And as for Sam, he must be in line for a Nobel prize."

"He is," Nara said quietly. "My friends on the scientific staff say he has already been nominated by the committee—not for what he has just done, of course, but for his work of five years ago."

"By the way, what is his real name?"

NARA told him.

Jay whistled. "The best man in his line outside of Germany. Gosh, if I had only known."

"What would you have done?"

"For one thing I would have kept my problems to myself. For another,

I would have fired him on the spot when I caught him looting my wastebasket. There's no use crying over it now. Next time I'll have more sense."

"If there is a next time," she suggested softly. "Why not draw the obvious conclusion now and make up your mind to keep out of the biological laboratories?"

"Why should I?"

"Because you will probably come out very tired—only half alive. Like your friend on the porch this morning."

"So they hope to get rid of me that way? I thought you said your brother would never stand for seeing me executed."

"He won't. But this has gone beyond his control. They are afraid that you yourself will discover what Seventeen has found by following your work—not immediately, perhaps, but in five or ten years. Then you would be too dangerous to be at large. Although the war will be over long before then, you might show the Americans or the Canadians or the Russians—or the handful left alive—how to launch a counteroffensive. Without my brother's knowledge or consent the elder statesmen will see to it that you expose yourself to fatal danger that you know nothing about. My scientific friends tell me it will be quite easy."

"Perhaps I am less ignorant than you think I am. If I step into one of their booby traps it will be my own fault. With all these hints you have given me, I shall deserve to get caught if I do."

"You are determined to go on, I see. What will you do with the secret of the dust if you do discover it?"

"Supposing that is what I am really after, I imagine the logical thing to do with it would be to use it in the obvious way. Provided, of course, that your brother is generous enough to pay for my steamer ticket home."

Nara laid her hand on his arm.

"You have told me exactly what I want to know. If you succeed you will give the secret to your country. By doing so you will join the enemy. What has tempted my brother's people will tempt yours."

"Not necessarily. If America manufactures its own dust, that will be enough. We have no great yen to hold up the rest of the world—by cutthroat competition or monopolies. But mind, I am not admitting that I have the slightest idea of how the dust is made. I haven't; and so far as I can see, I am not likely to find out in any reasonable time. So your fears about America are a bit premature."

"They are not. You will succeed. And, unless you are forced into a rest home, I believe you will find some way of returning to America with your discovery. If not, you are intelligent enough to invent some scheme for getting the secret to your government. Then—as surely as human nature is human nature—the knowledge will be misused. No—don't try to argue; I know. You have your science; I have my experience in the United States and every country of Europe."

Jay laughed. "In that case, I should think you would want me to join your noble army of martyrs and rush right into all the risks you say I must avoid. I don't get you, Nara."

"Don't you? I have told you I like you. What sort of a friend would I be if I did not warn you?"

"You might even help me to escape?" he quizzed. "I have no illusions about my status on this island. Since the day I landed I have been as much of a prisoner as any man in Sing Sing on a life sentence. Would you help me to get away?"

"I might."

"On what condition?"

"That you join our side."

"If I do, what then?"

"You are to give me your word that

you will make no use whatever of anything you learn here for ten years. You are not even to hint to any one that you have discovered anything. Further, if others try to find the secret of the dust and consult you, you are to mislead them as skillfully as you can—for ten years."

"In the meantime the dust monopoly goes on. I value my life as highly as the next fellow, but ten years' virtual slavery for the rest of the world seems a pretty steep price to pay for my own existence. Can't you make it less? Wouldn't one year do? I might even make it two."

"NO. Ten or nothing."

"Split the difference and make it five."

"Not a day less than ten years. I hold all the trumps. You had better agree."

"I'll be damned if I do."

"Then you will have to get home by yourself. You will escape eventually. But not a moment before you have spent ten years on this island."

"It sounds to me, Nara, as if you pack an iron fist in your velvet glove. Aren't you telling me that you—or your brother, perhaps—intend keeping me here ten years unless I agree to your terms?"

"You might put it that way," she admitted coolly.

"Straight from the shoulder, as usual. All right. What makes you think I would keep my word once I got safely back to America?"

"What my scientific friends tell me. They say if you do discover the secret of the dust and what it really means for the world, you will be glad enough to agree to our very reasonable terms.

They believe you have normal intelligence."

"Even after what has happened between Sam and me? They're a generous bunch."

"Far more generous than you seem to realize," she said sharply. "Unless they were decent human beings they would offer you no terms at all. But they are decent, and they happen to believe that those who would attempt to teach the world common sense and common decency must show some sense and decency themselves."

"And they think they can teach the rest of us not to make fools of ourselves in ten years?"

"They will let the older people go, and concentrate on the young. A tremendous beginning has been made already. Ten years from now the children in the grade schools will be mature young citizens. They will be the ones to decide what the world is to do with the secret of the dust. Ten years is all our side asks. With the start already made, ten years will be ample."

"It seems to me," he objected, "that you are counting rather too heavily on your side winning. How do you know the others won't wipe you all out before you get fairly started?"

"We don't know, but we must take the risk. If we fail, we fail. Well, the suspense cannot last much longer, which is something to be thankful for. We shall know, one way or the other, a week from to-night, when the dust fleet sails. It must be past midnight. We had better be starting home, or my brother will think we have eloped."

"Not such a bad idea at that," Jay remarked, helping her up. "However, I've too much on my mind just at present to get the most of out of an elopement."

"And I on mine." She laughed.

Twelve Eighty-Seven

*The Conclusion of a
great science-fiction serial*

by John Taine

XIV.

STRANGER THINGS have happened, and not so long ago, at that."

It was Admiral West speaking. His listeners were Senator Atkinson and Secretary Redding. They had met in the senator's rooms for an informal discussion of the latest report from the intelligence department of the navy. Allowing for the difference in time, the senator must have summoned his collaborators just about when Jay and Nara started home after their talk by the sea. The morning was still fresh and cool, and the senator had taken advantage of the hour before the stifling heat—which was bound to descend on them presently—could slow down his activity.

"What, for instance?" Redding demanded, challenging the admiral's assertion that things even stranger than the matter they were meeting to discuss had taken place in recent times.

"It was the mutiny of the British navy that I had in mind," the admiral replied. "The politicians in Parliament called it a strike, of course, but that did not alter the fact. Naval men called it by its right name—wholesale mutiny."

"I remember something about it," the senator replied. "They mutinied when the politicians tried to cut the men's pay. That was it, wasn't it?"

"Just that. The whole affair was very skillfully engineered. The men gave three cheers for the king, Parliament,

and the British Empire whenever the higher officers tried to order them back on the job, but there they stuck like barnacles on the guns and the decks, refusing to budge till they won their mutiny. Who would ever have dreamed it possible? The British navy in open mutiny. They won, of course."

"So you think there may be something in this report from the secret service?" Redding asked.

"Quite a lot. Our observers in the enemy ports are highly skilled, conservative, and not likely to be misled by mere gossip. Something important is happening to the morale of the naval forces of the enemy."

"What?" Atkinson demanded.

"Serious deterioration, I should call it," West replied. "According to the reports of our observers, the enlisted men are breaking up into political groups which have nothing to do with their effectiveness as a fighting unit. Agitators are at the bottom of it, of course. And we must remember," he continued, "that the enemy is more idealistic, less practical, stupider in the mass—call it what you like—than the British."

"To any one who knows the enemy as I do from frequent visits to their country, it is inconceivable that they would ever mutiny over a mere question of pay. Money is a secondary consideration with them."

"No; if and when they mutiny, it will be over a dispute about principles or ideals. The conservative element will



stick to the medieval tradition and go to the bottom to the last man rather than surrender one jot of their loyalty to their master. As for the liberals, they also will stand by their guns till the last round is fired.

"But they will not be fighting to avoid taking a cut in pay, but because they are honestly convinced that the time has come to preserve the honor of their nation by shooting it out with the conservatives. I have watched this brewing for ten years. The only thing that surprises me is that the lid has not blown off before. However, things have been moving pretty rapidly of late. Their revolution is just around the corner."

"That's all to our good," the senator remarked. "If they fall to fighting



The fleet rushed into action, to fall upon itself in a fury of destruction.

among themselves, we can stand on the sidelines with our hands in our pockets. We shan't fire a shot or lose a man."

"Exactly what I told you," the admiral reminded him.

"When? You never told me any such thing."

"I did. When you were giving me hell for having talked straight to Tori's sister. I told you—all of you—that that girl was worth more to us than a whole fleet of battleships. Now she seems to have turned the trick."

The senator made a gesture of impatience.

"Who ever heard of one girl corrupting a whole navy?"

"You have. Just now. I don't mean," he hurried on, seeing the senator's hair beginning to bristle, "that she has been down on the docks haranguing the sailors, or anything of that sort. She wouldn't have got very far if she had tried anything so silly. What she has done is more to the point. She is the king-pin—or queen-pin, I suppose you would say—in all this movement of the young people toward internationalism. Others started it, of course, but she has been the brains of it all for the past six years at least. You can't send up a smoke like that without some fire. If we keep our eyes open it won't be long now till we see the flames."

"You mean this girl has deliberately betrayed her people?" Redding demanded.

"As to that," the admiral replied, "it all depends on how you look at it. If her side wins, she will be her nation's Joan of Arc; if they lose, she will most probably be shot as a traitor. We shall have to wait the outcome before we can say what she has done."

"Rather a remarkable statement for a naval man to make," Redding remarked dryly. "Don't let the President hear you getting off anything like that."

"I shan't. And unless I understood that girl's mind as well as I do my own,

I shouldn't have risked speaking out here as I have."

"We shan't go into that again," the senator declared with an air of finality. "The President said the last word in that argument. Anything more to keep us? I'm due for a speech in the Senate to-day, and I haven't seen my secretary yet."

"He's probably still in bed," Redding ventured.

"Lazy devil, I expect he is. Well, gentlemen, we stand adjourned. If the enemy's revolution breaks out before lunch, West, have me paged. By the way, are any of our ships anywhere near there just now?"

"Only the old *Texas*. Lewis in command."

"What's she doing out there?"

"World cruise for the cadets."

"Then that's all right. We don't want some damned fool losing his head and taking pot shots at our friends while they're busy with troubles of their own. Lewis is long on discipline, short on imagination."

THE MORNING AFTER their exchange of confidences by the sea, Nara and Jay were to drive over early to one of the biological laboratories. Before parting for the night, they agreed to breakfast at seven. Tori, a maid told them when they got home, had gone to bed soon after dinner.

Promptly at seven o'clock Jay walked into the breakfast room, to find Nara already pouring the coffee.

"You look as fresh as a water lily," he said, studying her face appreciatively.

"You don't show much wear and tear yourself," she retorted. "Wait till you are ten years older." Her manner changed. "I'm worried about my brother," she said. "You know we always look in on one another to say good night, no matter how late one of us happens to come in—partly because it is an old

family custom, partly to be sure that everything is all right."

"Yes," he encouraged when she hesitated.

"Until recently—the last two or three weeks—he has always been a sound sleeper when he does sleep. Last night I found him fast asleep, but he wasn't resting. He kept muttering in his sleep, as if he were arguing with some one, and waiting for the other man's replies."

"Has he ever talked in his sleep before?"

"Not when I have gone in to see him and found him sleeping. In fact I have always rather envied the soundness with which he sleeps. I'm a light sleeper myself."

"He's probably just overworked."

Jay could have bitten his tongue out for the careless slip.

"That is what I am afraid of," she said quietly. "He goes everywhere—into the offices, the studies, the greenhouses and all the laboratories, and he never seems to consider the risk."

"But he never stays long enough in any one place to run much danger."

"You don't know. Two weeks ago he spent a whole night with your friend in the high-voltage laboratories."

"What friend?" Jay asked, although he had guessed.

"The one who asked you for a drink of water yesterday."

"Look here, Nara," he said firmly, "there's no sense in your getting yourself all stewed up over nothing. Our talk last night has made you nervous."

"I wish I could think so."

He regarded her critically for a few moments, then pushed his chair back.

"There is only one way to face a thing like this, and that is to face it. Let us go and have a look at your brother."

Without a word she rose and took his arm. He noticed that her hand trembled slightly.

"I'll go in first," she whispered, when they reached the door of Tori's bedroom.

She entered and shut the door behind her. It was fully three minutes before she opened the door and nodded to Jay. He followed her to the bedside and stood staring down at the sleeping face of his friend.

"Am I right?" she whispered.

Jay bent down to see whether he could observe any change in the familiar features. Through the closed eyelids he imagined he could just detect the contours of the eyeballs. The texture of the finely chiseled nostrils next engaged his horrified attention. Straightening up slowly he faced her and nodded. She swayed for a second, then took his arm.

As they reached the door a board in the floor creaked. They heard Tori stir and mutter. Jay turned his head. Tori was sitting up in bed, his eyes open but dazed.

"Is that you, Jay?"

"Sure. Nara and I came to tell you breakfast is on the table."

"I have been dreaming about you," Tori went on, as if he had not heard. "What was it?"

"Don't bother now," Nara interposed quickly. "Wouldn't you like your breakfast in bed? I'll bring it to you."

"I don't feel like eating."

"A cup of coffee then, before you get up," she suggested.

"Too hot." He yawned. "But you might fetch me a drink of water."

"I'll get it," Jay said hastily. "Nara, your own breakfast will be getting cold."

"Take me to my own room," she said when Jay had closed the door behind them. "Then go back to him."

"All right. Better take something and lie down."

SHE FLUNG herself on her bed, and Jay hurried away to get the water. Entering Tori's room without knocking, he found his friend still sitting up in bed, exactly as he had left him. Tori took the glass and slowly raised it, against the light of the east window, to

his lips. He was about to drink when something he had unconsciously observed caused him to hesitate. The glass was slowly lowered, and Tori sat staring at his wrist. He handed the glass back to Jay.

"Don't you want a drink?"

"Not now, thanks."

"Can I get you something else?"

"No, thanks. Sit down."

Jay sat down on the chair at the head of the bed. Tori closed his eyes and lay back on the pillows.

"About that dream I had," Tori began.

"Don't bother about it. Better take a nap—and be fresh for work when you get up. It's still early."

Tori seemed not to have heard. He continued, trying to recall his dream.

"You were in one of the greenhouses, looking at the plants. What were they? Soy beans? No, that wasn't it. I know: maize. Your corn. You asked what was killing them. Because the soil was black and rich you thought the corn should be eighteen feet high. I told you it was the glow. Controlled at last. Released at the proper time by a relayed trigger action, like the emission of electrons and positrons from atoms bombarded by radiation.

"I tried to explain it to you, but you couldn't seem to follow. Then you ran away to do some experiments of your own. What on? I remember—fruit flies. I tried to call you back, but I couldn't make my voice carry, and you disappeared in the glow. I sent men after you to get you out, and tried myself, but we couldn't find you. We kept hearing your voice. You said you were working too hard but couldn't rest till you had analyzed the glow. It was all very confused, but I remember what I planned to tell you when I woke up. You are not to go to the biological laboratories to witness the repetition of those American experiments!"

Tori seemed to be completely ex-

hausted. Jay let him rest. Presently Tori's strength came back, and he continued.

"Promise me you will keep out of the biological laboratories."

"Sure, Tori. I won't go near them till you take me there yourself."

"I will never go near them again."

"Oh rot, man. You'll be there tomorrow, busier than ever."

Tori held up his wrist between Jay and the window.

"Look at that," he said. "The first stage."

"Tori, you've had a bad dream and you are only half awake."

Ignoring Jay's matter-of-fact attempt to reassure him, the doomed man continued with his own train of thought.

"It makes little difference now. We have made the fundamental discovery. The glow is controlled. But keep away from the laboratories. I dreamed that you were exposed, although all danger for our own workers is over. In a month the hospitals will be dismantled. There will never be another patient. Probably I am the last."

"You're not going to a hospital, Tori. You are going to stay right here and rest up for a few days."

"The law says I must go at the first sign."

"All right. But that has nothing to do with you. This is just a temporary upset."

"Where is Nara?"

"Gone to her room to rest, I think. We didn't get in till almost daylight."

"See if she is asleep."

Jay found her sitting on the edge of the bed with her face in her hands. He told her what Tori had said.

"He says the law compels him to go to the hospital."

"And he will keep the law."

"Shall I see to it?"

"Yes."

He went into the hall and telephoned for an ambulance. Then he went back

to Tori to see whether he could help him pack his bag. Tori was dressing. He said nothing would be necessary.

"Please don't come with me. Tell Nara I am glad to go. Our nation shall inherit the earth! I regret nothing. We have won. The cost has been trivial."

Jay opened the bedroom door and stood waiting. Tori walked out slowly.

"Tell Nara I am sorry she has lost. But she will soon see that the victory of our people is better for her own ambitions than her success could ever have been. And tell her I have expected all along to join the others. This is not a shock. I knew it must come."

Jay walked with him to the front door.

"Please come no farther. I shall go alone."

XV.

THE THOUGHT of having to give Tori's message to Nara was too much for Jay. For over an hour he sat in the breakfast room, trying to decide whether he should go and tell her, or let her alone. He had just made up his mind to tell her, when she entered. In silence she poured herself a cup of the cold coffee and drank it standing up.

"I have been expecting this," she said, putting down the cup. "But the shock is worse than I thought it would be."

"Better sit down."

He drew a chair for her, and she sat listlessly fingering the cup. In a matter-of-fact tone Jay gave her Tori's message. She made no reply. Then, determined to get it all over at once, he hurried on to tell her of Tori's dream, and the warning to himself to keep out of the biological laboratories.

"If it is any comfort to you, Nara, I think it was the decentest thing I ever heard of a man doing. Your brother knew that I came here to get the better of him if I could, and yet he forgot himself to warn me. As long as I am

alive there is always the possibility that I may undo his work."

"None of us may be alive this time next week," she said. "But he could not have guessed that." Reading the unspoken question on his face, she amplified her statement. "There is no further danger from the glow. They have controlled that. If you did not believe me you must believe my brother——"

"Nara! You know——"

"So we need not fear what has overtaken him—just as he thought he had won. We shall not know who has won, or who is to live, till the fleet sails."

Jay did not ask her to explain. She stood up.

"You will be here all day?"

"Here or just a few steps away. Anything I can do——"

"Please tell any one who asks for me that I have gone to stay with friends. I may not be back for a week. Will you bring my car around to the front? I don't want to see any of the servants."

When Jay drove the car up to the door he found her waiting. As he helped her in he gave her what comfort he could.

"I don't suppose it means anything to you at a time like this, but I want you to know something before you start. What your brother told me has proved everything you have tried to make me see. And if I can be of any use to your side, you can count on me to do anything I can to help you. Your side asks for ten years. You shall have more than that—as long as you like—if I ever get away from here. What you told me last night gave me an idea. While you are away I will try to put through the beginning of it. Then, when you come back, we can go over the rest of it together. Take care of yourself."

"Thanks."

She drove away and Jay returned to the house, confident that sympathizers would soon begin to arrive. The first

person to arrive, however, was a special messenger with a message for Jay.

DEAR JAY:

I forgot to tell you the most important thing of all. For the next two years, possibly the next three, this island will be the safest place for you. As your friend, thinking only of your happiness, I beg you to stay here. If for any reason the scientific staff on the island is disbanded, so that living here would no longer be pleasant, you must not, for any consideration, go to the United States, Canada, or Russia. If you do find that you must leave the island, I advise you to take up your residence for the next three years either in my own country or Manchuria.

I forgot also to thank you for all your kindness to me while I was a student in America. Those three years are the happiest memory of my life.

Wishing you a long and honorable life, I am, as ever, your sincere friend,

TORI.

P. S. Please take care of Nara till she gets over this. Tori.

The news that their commander in chief had been stricken traveled fast to the men in the laboratories. Before long a steady stream of sympathizers began to arrive to leave their condolences—usually one or two flowers with a card—for Nara. Some asked to see Jay, as they had been told that he had telephoned for the ambulance. Whatever these men might have thought of Tori's ambitions, there could be no doubt that they had liked him as a man.

The older men were the first to come. About noon the first of the assistants began to arrive. These deposited their flowers and left without a word. By three o'clock only one or two stragglers every twenty minutes were coming. One of these was Nara's friend Five. The man left his flower with the rest and looked inquiringly at Jay.

"Nara has gone to see friends," he told the man in his own language.

Assuring himself that they were alone, Five produced a card from his pocket and slipped it into Jay's hand.

It was one of Nara's visiting cards, with a penciled message.

"This man will tell the others that you are one of us. In case of danger they will warn you. Destroy this."

Jay struck a match and burned the card before Five's eyes. Apparently satisfied that he had carried out his orders, Five turned sharply and marched away.

A FEW minutes later Sam hurried up with his offering. Jay detained him.

"Do you know if many more are coming?"

"No more. I am the last."

"Then I'll go back to the study with you. There are still some details to be checked over before our work is cleaned up for good."

"Yes, Dr. Jarvis. I am very fresh to-day, because I slept all last night."

"That's good, because we shall probably put in the whole of to-night and to-morrow chasing down your mistakes."

"But I have made no mistakes," Sam protested. "All my calculations check."

"That's what you think," Jay retorted. "I happen to know better. You will have to convince me before I pass your stuff as O. K."

Jay stalked ahead of his abashed assistant in dignified silence. When Jay stopped to unlock his study door, Sam made one last, injured protest.

"But my work must be right, Dr. Jarvis. They have already reset all the generators in the dust factories according to my calculations."

"They have, have they?" Jay demanded indignantly, marching into the room. "And what do you suppose will happen to you when the inspectors discover your blunder just as they give the order to begin shooting the dust into the ships? Don't you know that the fleet must sail next Sunday? They may be able to load the ships in ten hours in an emergency, and they may even be

able to unload them as quickly. But they can't unload them and manufacture a new batch of dust—even if they have all the pulverized raw material waiting in the bins for the final treatment—with the generators *correctly* set, in any ten hours."

Sam received this disturbing prophecy of the consequences of his alleged stupidity with a smirk of smug obstinacy.

"But my work is right, Dr. Jarvis." Jay lost his patience.

"Look here," he snapped. "It means nothing to me if this bull of yours costs you your chance of winning a Nobel prize. Oh, I know what you are going to say," he hurried on, as Sam showed signs of interpolating some superior objection. "Your latest stuff attempting to apply my extension of the periodic law to the problem of the dust has nothing to do with your claims to a prize. They are considering what you did five years ago—your new methods in the relativistic quantum mechanics of electron gases.

"Every one admits that it was first-rate stuff—classic. But what is the committee going to think of you as a mathematical physicist when they learn how you have fallen down on a straightforward application of your own methods—developed, of course—to my extension?"

"A first-year graduate student in physics in any reputable university could do the necessary hack work—and get it right, which is more than you seem to be capable of doing.

"Can the prize committee afford to put its O. K. on you? I think I see them telling the world that you are a worker whose results can be relied on by others in your line—nit! Come on; don't be dumb. Get your stuff out and let's see if we can chase down the mistakes before it is too late. If we work fast we may be able to get the right result and

wireless it to the dust factories before they begin loading the fleet."

"But where am I wrong, Dr. Jarvis?" Sam protested. The attack on Sam's prospects of a Nobel prize seemed to have shaken his assurance somewhat.

"That's what we've got to find out. All I know is that you are wrong."

"But where?"

"How the devil should I know till I've seen your stuff? Isn't it enough that the final setting you got is absurd? Of course, 1287 is implicit in the calculations I gave you to do. That's why I turned the work over to you—I thought you would have brains enough not to jump at the first obvious conclusion staring you in the face. Did it take you all these weeks to plod through the elementary deductions from what I gave you?"

Sam was not to be rushed off his feet. His self-confidence—justifiable—made it hard for him to believe that he was the crude blunderer Jay insisted he was.

"What makes you think 1287 is absurd?" he asked politely but craftily.

"The biological evidence alone," Jay retorted impatiently.

"But what part of it, Dr. Jarvis?"

"Do I have to go into all that? Can't you see? Oh well, I suppose it will be quicker to tell you. I suppose you can remember the intensity—on my scale—of the radiations from the commercial dust? The kind you have been shipping to the United States for the past five years?"

Sam appeared to have forgotten. Jay sighed his exasperation.

"Don't you remember even that? What's the matter with you? Over-work?"

JAY'S diagnosis of Sam's inability to recall the most elementary fact at the root of the dust industry was deliberately ambiguous. Sam could take it either way he chose; either that he was just dull from sitting over his mathe-

matics too long, or that he was about to follow Tori. Sam glanced at his hands.

"I am in perfect health, Dr. Jarvis."

"But you don't remember? Well, I hope you are right. The intensity that has slipped your mind is 1280."

For the first time since Jay began his third degree, Sam's face showed a trace of concern.

"That number is nowhere given in your work, Dr. Jarvis," he exclaimed.

"Did I say it is? But if you will take the obvious steps suggested by the second problem I gave you, you will soon stumble across 1280."

"How?" Sam asked blankly.

"There's no time now to go into all that old stuff. Our biologists have been using the 1280 intensity for a long time in their experiments on fruit flies."

Sam was now following with the closest attention. Jay pushed his advantage.

"Your commercial dust gave them an unlimited supply of the 1280 radiations they needed. Instead of trying to produce the radiations directly by the disintegration of atomic nucleuses, they used what was already at hand—naturally."

"You say they have been doing this for some time?" Sam asked sharply.

"Ever since my extension of the periodic law to cover biological phenomena gave them the hint."

"When did you make such an extension?" Sam demanded excitedly. "I have been looking for it for the past four years."

"And never found it? With my published work to go on? Some of you geniuses are slower than the plodders like me."

"But what is it?" Sam pleaded.

"As you seem to know practically nothing about what you are supposed to be doing, I'll tell you. Then perhaps you will admit that your 1287 may be as far off as I tell you it is."

While Sam hung on his words as if

he were receiving a direct revelation of divine truth, Jay rapidly outlined the new extension of the periodic law to the biological field which, as he had told Sam, was implicit in the work already published. If Jay was a trifle optimistic now and then about the scope of this epoch-making extension, he did stick pretty close to what he knew to be sound, leaving Sam's imagination to fill in the prophecies. To have done otherwise would have been to court exposure; Sam knew too much about experimental facts to be taken in by glowing guesses which, however plausible, might have already been contradicted by some of Tori's own men in the biological laboratories.

So he did not depart very far from what he knew to be reliable, leaving to some less desperate occasion the conservative conjectures suggested by what he knew for a fact. He could not afford to have Sam shying off now; at all costs he must gain the opportunity to scan Sam's work with the diligent assistance of Sam himself.

Jay began by recalling how Mendeléeef, about 1868, had arranged the chemical elements in a table in increasing order of their atomic weights, beginning with hydrogen, and how he found that elements at approximately equal intervals apart in the table had similar chemical properties. By this means, Mendeléeef grouped the chemical elements—hydrogen, oxygen, iron, tin, copper, lead, and so on; in fact the entire eighty-seven known to chemistry in 1865—into "periods."

The elements in a particular period had many similarities. But certain gaps occurred in the beautifully simple arrangement which was summed up in the famous "law"—the properties of an element are periodic functions of their atomic weight. There were no known chemical elements corresponding to the gaps. Mendeléeef boldly predicted that these missing elements would some day

be discovered by chemists, and he even had faith enough in his own discovery to predict from his law how these unknown elements would behave chemically when discovered. In time the missing elements were discovered, and their chemical properties were close enough to what had been predicted to make chemists believe there might be something more than numerology in the law. This "something" was not discovered till the twentieth century, when the electrical constitution of matter—the chemical elements—was more or less definitely established by laboratory experiments.

AS Jay ran over all this ancient history, partly to gain time, partly to make his own latest extension of the periodic law to biological phenomena less of a shock to his assistant, Sam showed signs of evident impatience.

"But, Dr. Jarvis, every high-school student knows all this," he protested. "And the elementary text books put it much more clearly than you do."

"Tell me something I don't know. I am going over all this kid stuff because you think you have understood it since you were fifteen. You haven't. Otherwise you could not possibly have missed my biological extension. Let me remind you of some more high-school stuff. Then see if you can get my extension by yourself."

He next recalled how, when the early workers of this century made their first crude—but brilliant—theory of the electrical nature of matter, resolving the atoms of the elements into minute "solar systems" with a "positive" sun, or "nucleus" of electricity, and a family of negative particles of electricity—"electrons" revolving like planets in their orbits around the nucleus, it was found more suggestive to revise Mendeléef's table in accordance with the planetary models.

Instead of arranging the elements in

increasing order of atomic weight, they now arranged them in order of increasing amounts of positive electricity in the nucleus. The resulting scheme preserved the periodic recurrence of physical and chemical properties. More important, it removed certain irritating exceptions to the original form of the "law," and brought all the elements then known into line, without exception. There still remained a few blanks for undiscovered elements. As some of these were discovered, they fitted in exactly into the places where they had been predicted.

Going on parallel with all this work was another kind of physical investigation—that instigated by the discovery of radium, which seemed to disintegrate, of itself, spontaneously, and to break down into simpler elements. This, in a way, was something like the dream of alchemists—whereby it would be possible to change one element into another, say mercury into gold, or vice versa.

Theoretically, there was no insurmountable difficulty in changing one element into another. All that would be necessary would be to find some means of modifying the structure of the atoms of the element by knocking out some of its electrical particles, or shooting more particles into it. This "all" however proved to be much more difficult than it sounded, and it was only about 1920 that it was first done. Since then a vast science had grown up around the problem, and many artificial disintegrations—transmutations—of matter had been effected in the laboratory.

Jay recalled the earlier methods of bombarding the atoms to be disintegrated with streams of high-speed alpha particles—the nucleuses of helium atoms—generated by hard X rays, the use of cosmic radiation, and other well-known processes.

"But you have said nothing yet about the biological aspects," Sam complained.

"Coming to it now. You remember

the first work on fruit flies with X rays?"

"Muller's? Who does not? The most important advance of centuries in biology."

"Glad you think so. I agree. What do you make out of it?"

"Why, that it is possible, by human intelligence, to change the heredity of plants and animals."

"Of bacteria, for instance?" Jay suggested.

Sam was not to be caught napping.

"It might be possible," he admitted.

"But it has not been tried."

"Hasn't it? That's all you know about it. Haven't they told you what your own dust does?"

If they had told him, Sam was not yet ready to admit the fact, and he let Jay continue. Jay recalled how Muller had succeeded in modifying the germ cells of fruit flies permanently by exposing them to X rays, so that the offspring of the flies inherited permanent deformities—some might have called them eugenic improvements—of wing, eye, leg, or bristles, which they passed on to their descendants. The X ray had, as it were, speeded up evolution, or quickly turned it into unforeseen channels never contemplated by staid old Mother Nature. Man had at last succeeded in tampering fundamentally with life. Some of the X rayed flies were more prolific than their natural parents; others were completely sterile.

AFTER this great step forward, it was easy and natural to take the next.

As the X rays are only one of many kinds of radiation of short wavelength why not see what some of the others would do to the germ cells of plants and animals? Perhaps they too would induce living matter to produce freak offspring, modifying permanently the original species, either for better or worse.

But as radiation in some of its forms

is given off from one element when it is changed into another, and as such radiation is penetrating enough, and of sufficiently short wavelength to be able to affect the minute structure of living cells, why not expose the flies directly to the radiations emitted from experiments on the disintegration of matter, whether by X rays, cosmic radiation, bombardment by protons, or other means? The results were highly gratifying; species of insects and plants were permanently changed.

This, and another discovery, Jay declared, had given him his own idea. Till early in 1934, it had been supposed that ninety-two different chemical elements were all that could possibly exist. If there were a ninety-third, the periodic law predicted that it would be so violently radioactive—more so than radium itself—that it would quickly break down into simpler elements. It was not likely to occur in nature.

But, improving on nature, Fermi created this ninety-third chemical element by bombarding uranium with alpha particles—the nucleuses of helium atoms. If a ninety-third element could be created artificially, why not a ninety-fourth, and so on? And if so, how would these man-made elements behave?

Taking what was known of the electrical structure of matter, it was possible to extend the list of ninety-two known, natural elements plus the one artificially created new element, as far as one liked—theoretically.

And the same evidence as that which had led to the modern interpretation of the periodic law—giving a rational, simple account of the machinery or structure which causes the elements to repeat their properties at approximately equal steps—this same sort of evidence would carry the law on to the new elements created by human beings.

"That is all contained in your first published work," Sam reminded him with a superior sniff.



Tori took the glass Jay handed him and slowly raised it against the light of the east window, to his lips.

"Glad you recognized that much. And you recall how the radiations—emanations, call them what you like—from radium, actinum, and other radioactive metals have been used to alter species of plants and animals? You do? Then did it never strike you as a rather worthwhile thing to do, to try to hook up the biological effects of the elements—the ninety-two known up to 1933, and any

others to be discovered beyond—with their atomic numbers in the series of all the elements?

"If element Number 92 has strikingly marked biological properties, why shouldn't elements numbers 184, 276, and so on have similar properties—provided we can create them? Why shouldn't the elements near the beginning of the known list—say those num-

bered 12, 16, 20, have any effect such as radium has on living matter?"

"Because they are not radioactive," Sam informed him in a superior tone. "Any radiations they may emit in their almost infinitely slow disintegration would be insufficient to affect the most delicate microbe."

"I didn't really expect you to tell me," Jay remarked caustically. "My question was rhetorical, for the purpose of bringing out my next point. As you reminded me the other day, the elements of the so-called rare earth group are practically inert—nobody could hope to make a fly breed freaks by exposing it to the feeble radiations of such inactive elements."

"The same holds for 12, 16, 20, and most of the rest. But, you remember, I asked you to look up the literature on the induced activity of those elements. Shoot enough high-speed alpha particles, or other penetrating radiation into them, and they will begin emitting characteristic radiations of their own, breaking down into elements farther down the scale, and less active than themselves, as they do."

"What specific effects will these radiations have on plants and animals—say on bacteria or fruit flies? Can you predict? Evidently not, or you would not have made the bull you have. My biologic extension of the periodic law covers the whole range of elements—those occurring in nature and those created in the laboratories. Like Mendeléeef's, it also predicts what will be the properties of elements not yet created, and it does this for the biological properties of the elements."

"It enables us to say with accuracy what the radiations, natural or induced, from any one of the elements, naturally or artificially created, will do to living matter. For example, my extension enables me to say whether the radiations from a particular element will make bacteria or fruit flies more

prolific, or less; whether it will sterilize them; or whether it will cause them to produce normal offspring or deformed freaks with the power to pass on their deformities to generation after generation of their descendants.

"In other words my new extension does for the biological properties of matter what Mendeléeef's periodic law did for the physical and chemical properties and what my first extension did for all the new elements possible beyond the ninety-two known up to the spring of 1934."

"Putting the two together, I can predict with reasonable accuracy what a mixture of given elements, when applied as an ingredient of a fertilizer, will do to the soil, to the plants growing in the soil, to the bacteria living in the soil and making normal plant growth possible, and finally to any animals living on top of the soil. Quite extensive, you see."

"What would you say if I could tell you that one of the new elements produced in the laboratories emits radiations numbered 1280 on my scale, and that such radiations greatly increase the fertility of fruit flies?"

"I should ask what is the number of this new element on the atomic-number scale in common use," Sam replied.

"To that I should have to tell you to use your eyes, and really study that first problem I gave you. The answer is implicit in the solution of that problem—if you do it right. You missed it?"

SAM was forced to admit that he had. Jay was almost ready to go to work on Sam's calculations.

"This ridiculous stuff you have given the dust factories is due to a similar oversight; 1287 is out of the question. Do you know what the specific gravity of a dust made from pulverized silicon dioxide—common sand, say—when irradiated with 1287 would be?"

"Yes," said Sam. "Does your law give you that, too?"

"Of course."

Jay plunged. If he guessed right, he had Sam trapped. If he missed it, he would have to wriggle out somehow. He gave Sam the specific gravity of the sample of the latest improved dust which Five had given him. Tori's staff, Jay reasoned, could not have had time to perfect a further improvement; so in all probability Five's sample was the same kind of dust as that irradiated with 1287.

Sam's eyes opened wide.

"Does it check?" Jay asked nonchalantly.

"Yes, Dr. Jarvis."

"Then perhaps you will believe that I know what I am talking about."

"Does your law also give you the biological effects of irradiation with 1280?" Sam inquired cautiously.

"Of course. Why not? The effects are precisely those which have been observed in the United States for the past three years—ever since we began using the dust. This includes, of course, the remarkable increase of nitrogen-fixing bacteria in the soil, which has been such an important factor in the increased fertility of the soil. The radiations from the fertilizing dust have greatly increased the fecundity of the bacteria—I suppose you could put it that way—among other beneficial effects."

"But how have I blundered, Dr. Jarvis?"

"If you mean what particular mental aberration is responsible for your mistake, I can't say. Possibly not taking any exercise is responsible."

"I meant, what is the nature of my blunder?"

"Oh, that's easy. The glow from the dust when first activated has been troubling your men for a long time, hasn't it? That was just excess radiation escaping as the unstable atoms of the first highly active form broke down into a more stable, less active form. The problem of your staff was to get the first form in a stable state, so that

the glow would not appear immediately, but would be released later, by a sort of trigger action.

"Certain atoms would store up the radiations emitted by others; when the storing up reached a sort of saturation point, the atoms of the elements concerned would begin shooting off radiation spontaneously—like the detonation of a high explosive. As these atoms released their stored-up radiation, the glow would reappear. Your problem was to delay the release of the glow till the desired time—say six months or a year after the shipment of the dust.

"Well, you blundered when you told them 1287 was the proper thing to irradiate the pulverized sand and stone with. The dust will begin glowing like hell before the ships transporting it are halfway to their destinations. Then there will be the devil to pay. For one thing the crew will all suddenly go as tired as lumps of half-melted jelly—just like those poor fellows in Hospital Ten.

"You know what the full blaze of the glow does to unprotected flesh and bone. After that—say in six months or a year—the dust will be fit for fertilizer. Come on; we've got to see if we can find what they should use instead of 1287 before they begin shooting the dust into the hulls."

Sam left the room. Confident that he had won the first round, Jay waited patiently. In less than ten minutes, Sam was back with an armful of papers and charts.

"Spread out the first of it here," Jay directed, sweeping the litter off his own desk. "Go through it with me a step at a time and we'll soon run down the mistakes. Hustle; we haven't an hour to lose."

Then began for Jay seventy hours of the most agonizing mental hard labor he had ever imagined. Meals gave no relief, as they worked while they ate, and the brief snatches of sleep were nightmares. But Jay learned in those

seventy hours what it might have taken him seventy years to discover by himself—namely, the secret of the dust.

XVI.

BY Saturday morning Jay was completely exhausted. Sam seemed as fresh as ever. At last the arduous job of checking and criticizing Sam's work was finished. Jay now had learned all that he wanted to know. If given a free hand, he was now capable of directing the manufacture of the fertilizing dust, from the first shot of dynamite to bring down the rock, to the last setting of the irradiation apparatus. Incidentally, he had learned—in passing—what General Green had wanted to know.

The new metal in the enemy tanks was common steel with a minute trace of one of the new elements created by Tori's staff. Moreover, he had now a clear idea of the enemy's strategy. His grasp of their probable—indeed certain—campaign in the United States, Russia, and Canada, convinced him that the urgent need of the moment was to prevent the dust fleet from sailing; it was already taking on its cargo. Failing that, he must, somehow or another, get word to Senator Atkinson. He pushed back his chair.

"You win, Sam."

"I have made no mistake?"

"Not a slip anywhere. A good thing too, for you, I should say. It would have been too late now to stop the loading. Well, I'm going home to bed. Clean up all this mess."

Instead of going straight home, he dropped in at the clubhouse. Small knots of men were standing about discussing the tragic fate of their commander in chief.

"How is he?" Jay asked an older man.

"As could have been expected."

"Can't we do something?"

The man gave him a long look.

"He will not take the easy way out,

as many of the others have. And to open a door for him without his knowledge would be to rob him of his heroism."

"But," Jay protested, "it isn't against the custom of your country."

"In defeat, no. But this is a victory, not a defeat. He is living till the dust fleet sails. After that I believe he will go quickly and naturally." The man lowered his voice. "Are you going home?"

Jay nodded, and the man turned to the friends with whom he had been chatting.

"Please do not wait for me. I am seeing Commander Jarvis home. He has been working rather hard the last few days."

Their startled, sympathetic looks sent a chill up Jay's spine. Once outside, Jay's new friend set his mind at rest.

"You need not be alarmed. I said that to give me a good reason for coming with you." They walked on in silence for a few moments. Then the man remarked quietly: "Nara is not coming home again."

"It would be too much for her, I suppose."

"Yes, but that is not the main reason. She has been working, and there is a great deal to do at the last moment."

"Oh."

"There is also the danger," the man continued.

"What danger?"

For answer, Jay's companion produced a wrist watch from his pocket and slipped it into Jay's hand. Surreptitiously inspecting it, Jay recognized the watch as Nara's.

"Open the back of it," the man suggested.

Jay did so, and read the message on the scrap of paper which he saw.

"Jay. Trust this man. Little finger left hand injured; stiff. Nara."

Jay glanced at his companion. The man silently exhibited his left hand.

The little finger was withered and crooked.

"What danger?" he repeated.

"If we are attacked, the buildings will not be safe."

"What about Tori's house?"

"Not safe either. It was built before the new elements were used as alloys in the steel. Since then our military chemists have developed new high explosives."

"Have you warned the others?"

"Those on our side."

"But the rest?"

"Why should I? There is no victory without casualties."

"That's what Tori said the day I arrived. Now he's a casualty himself."

"We must all take our chance," the man remarked.

"No doubt," Jay retorted. "But, not being a fatalist like most of your people, I don't believe in going out of my way to take unnecessary risks. What are you going to do yourselves? You and the others?"

"Stay here."

"Near the buildings?"

"Why not? If we are to go, we shall go. We cannot tell our fellow workers on the other side. To desert them in the hour of danger would be against the traditions of our people."

"But you are on the other side—Nara's side. Aren't you an internationalist?"

"In everything that affects international good will and peace. In other matters I am one of my people. Not all of our traditions are to be condemned."

"That's for you to say. What about Nara?"

"She must stay within easy reach of the wireless station till the fleet sails. She thinks you had better join her there. If you drive over and sit on the cliff where you and she sat the other evening she will join you. The chauffeur will drive you."

AST—10

When they reached the bungalow the man shook hands.

"Good-by. I may not see you again. I hope your work has been successful."

"It has. Good-by, if you won't reconsider and come with me."

"Thank you, but I prefer to stay with the others."

"Any message for Nara?"

"I think not. She must decide for herself what she will do if our side wins."

JAY found the chauffeur and told him to drive over to the bay by the wireless station. Dusk was falling as he walked through the stunted heather to the cliff. There was no sign of Nara, and he sat down to wait for her.

It was dark long before he heard her footsteps.

"Are you there?" she called softly.

"I've been waiting about four hours."

"Sorry, but I was busy. I've brought you some supper."

"Thoughtful as ever, I see. Thanks. Sit down and help me eat it."

"I had mine long ago." She remained standing, gazing out over the dark, moonless sea. "By the way, what time is it? You must have my watch."

"Almost exactly eleven thirty."

"Then I may as well sit down. Half an hour—— We shall know whether we have won or lost before daybreak."

"When does the dust fleet sail?"

"In half an hour—at midnight."

They sat silent for a few moments. Nara seemed tired.

"This is the first time," Jay remarked, "I have seen the ocean around this island without at least two battleships in sight. What's happened to the patrol?"

"All but two—they must be on the other side now—are patrolling the islands where the dust is being loaded. The whole fleet always draws in toward the archipelago during loading week. That is, all except a few left on duty at particularly important places like this.

But the whole fleet could get here in less than three hours if necessary."

"I see. They're afraid the dust plants may be raided while the irradiation is still going on."

"Yes. Did you succeed in putting through the idea you spoke of just before I drove away the other morning?"

"Completely. I know everything about the dust now—both the old brand the United States has been using for the past three years, and the latest improved kind being shipped to-night at twelve."

"Did you discover what the effect of the new dust will be?"

"Yes. Or rather I got it out of Sam indirectly. I doubt whether he has practical common sense enough to foresee the inevitable consequences of using the improved dust as a fertilizer. Sam is nothing but a simple-minded mathematical genius. He's like a chemist inventing a one-hundred per cent deadly and almost secret gas—secret for long enough to wipe out half a nation—without looking ahead to see the possible consequences of his scientific work. So with Sam. I don't believe he has ever suspected the use the other side intends to make of his work. Otherwise he would never have done it until he was sure his great discoveries would not be abused by fanatics."

"Most of them are like that." Nara sighed. "Clever boys playing with deadly weapons that stupider boys will steal from them. You remember what you promised me?"

"To give your side ten years?"

"You said we should have more."

"As long as you like. As I told your brother once, we humans may be crazy, but we are not crazy enough to make a universal suicide pact and stick to it. There is an extremely simple way of taking the deadly kick out of the dust."

"Chemically?"

"Nothing like that. No scientific attempt to make it safely usable would

accomplish anything. One nation could manufacture the improved dust secretly and sell it at a loss, or give it away, to its competitors. No; the way suggested by common sense beats the scientific—for once."

"What is it?"

"Simply this——" He stopped abruptly. "Do you hear anything?"

"What time is it?" she asked.

The moon had risen. Jay looked at his watch.

"Seven minutes to twelve."

"Yes, I hear it."

The far, deep hum from over the ocean was now plainly audible.

"What is it?" he asked, standing up.

She also had risen.

"The beginning. So far we have not failed. The wireless men have kept their oath and called the planes. I wish I could count them."

The gigantic bombers were now plainly visible against the pale stars in the dim moonlight.

"Count them!" she cried. "Quick!"

As the fleet was flying in massed formation Jay had no difficulty in counting the bombers.

"A hundred and forty-three."

"There should have been two hundred and fifty! The rest have deserted and gone over to the other side."

While she was speaking, fifteen detached themselves from the main fleet and roared directly over the spot where Jay and Nara stood.

"Where are they going?" he shouted, to make himself heard.

"Inland. The laboratories and hospitals. Every building on the island."

The main body, now a hundred and twenty-eight strong, continued past the island. As the roar of their motors dwindled in the distance, Jay thought he detected another drone approaching from over the sea. He was right.

"The deserters," Nara said quietly.

"It looks to me as if there's going to be one hell of a scrap somewhere," Jay

remarked. "This second lot is probably bringing pursuit planes with them, too. Shouldn't mind being closer."

"What is the time?" she asked.

"Exactly twelve."

"Look over there," she directed, pointing to the spot on the horizon where they had watched the glow and had seen it go suddenly out forever. "If our men in the navy keep their oath, the first battle will start there."

THE OPERATOR on duty in one of the United States naval wireless stations sat rigidly at the board, bored by the routine of listening for messages worth recording. His relief, just coming on duty, was preparing for his own spell.

"Anything doing?" he asked.

"There's been a lot of chatter in foreign code off and on."

"Get any of it?"

"Not a thing. Seems to be a new code. First time I've heard it. Here, it's your turn."

His back suddenly stiffened, and he held up his left hand. With the right he was already busy taking down the message. The relief strolled up to the board and read what the other wrote. Before the message was finished he was reaching for the telephone.

"Put me through to Admiral West at once. Important message from Captain Lewis."

It was some minutes before the long distance call was completed. Admiral West was just about to lie down to take a much-needed rest when the telephone in his room rang. With an exclamation of impatience he took down the receiver.

"Admiral West speaking."

"Message from Captain Lewis, on board battleship *Texas*." The ship's position followed. "Urgent."

While West listened to the short sentences he almost saw the scene they described. The grand fleet of the enemy, summoned a few hours before from its

base, was annihilating itself. Called to quell serious mutinies aboard the cruisers and battleships patrolling the freshly loaded dust fleet, the grand fleet had rushed into action only to fall upon itself at close range in an indescribable fury.

The patrol battleships had already wiped one another out before the fleet left its base, after having shelled the ships of the dust fleet, sending them to the bottom. Captain Lewis inferred from what was picked up in his wireless room that the mutiny affected all the dust plants, although the *Texas* could only observe the battle in the vicinity of one, the largest.

The enemy air fleet was also destroying itself. The mutineers of the air were bombing the dust plants; the loyal forces were attacking the mutineers recklessly, seeking to protect the plants, but the mutineers had accomplished their purpose and were now fighting to escape.

Captain Lewis was now asking for orders to be wirelessly to him. An American citizen, by the name of Jay Jarvis, had sent out a message from an enemy wireless station which had given its position, asking any American ship in the vicinity to pick him up. Should Lewis go after him? The *Texas* was only a few hours' run from the station.

"Yes!" West shouted into the telephone. "Wireless him to get Jarvis off at once."

The Admiral next called up Senator Atkinson. When the senator had taken in the mere magnitude of what was happening, he in turn called the President, to whom West repeated his news, forgetting in his excitement to mention Jay. He was just about to ring off when he remembered the order he had wirelessly Captain Lewis.

"I must stay here where further messages will be sure to reach me immediately." He then detailed the order relating to Jay. "That was all right, I suppose? The matter is evidently

urgent, so I gave the order on my own responsibility."

There was a commotion at the other end of the wire.

"Don't you realize that sending the *Texas* to that island to rescue an American citizen without their permission is tantamount to an open declaration of war on our part? Have you taken leave of your senses?"

"Suppose it does amount to a declaration of war? What of it? Their ships are sunk and a large part of their air force destroyed. The dust fleet is at the bottom of the sea. They're through, commercially and as a naval power."

"If your action leads to an incident, you will be held responsible."

"I am ready to take the responsibility. I was right last time, and I am right this. Didn't I tell you that girl was worth more to us than a whole fleet of battleships?"

The receiver at the other end was hung up with a bang.

JAY AND NARA followed the progress of the battle for twenty hours. Only the distant flames of the fight in one sector were visible from the island, far across the water, but the air reverberated continually from salvos far below the horizon.

A runner from the wireless station brought them the news of the sailing of the grand fleet, and they returned with him to the station, where messages from distant stations on their side, dotted all through the archipelago, and calls from battleships in action and maneuvering planes kept them informed of the fluctuating course of the revolution. The wireless station had contributed its share of casualties. The three operators not on Nara's side had paid for their loyalty to their government with their lives, while one of the three revolutionists had been shot in the surprise attack to capture the station.

On the battleships, in the dust factories, on the ships of the dust fleet and in the air force, those who remained loyal to the government were given the chance to surrender, but none took it. Both sides recognized the outbreak from the first as a fight to the finish, and both sides fought to the finish.

Outnumbered by about four to one, the government ships and planes were at last totally destroyed. The victors were fit only for the scrap heap. At the usual cost of merciless bloodshed a new nation had been born.

But if thousands of lives had been sacrificed to bring the new nation into being, its birth saved at least three hundred million from death by starvation and unnatural disease.

The trembling of the air grew less perceptible; the revolution was drawing to a close. Nara tossed aside the last scribbled report which the operator had handed her.

"My brother's dream is ended," she said. "I am glad he died before he knew that he had lost."

"What will you do now?" Jay asked.

"Stay here for a few days to see if any have survived and need assistance."

"And then?"

"Go on with my work. It should be easier now."

"Well, this seems to be the time to begin keeping my promise to you. Do you know what would have happened if that dust your men have just sent to the bottom of the sea had been used as fertilizer—as was planned by the other side?"

"I have learned something during the past four days from the men of the scientific staff who were on our side."

"Then see if it checks with what I inferred from Sam's work. This improved dust that was to have been used wholesale in the United States, Canada, and Russia would have lain inert in the soil for about six months—possibly less. Then the delayed trigger action of the

activated elements in the dust would have come into play suddenly, releasing radiations lethal to all soil bacteria.

"When that phase was completed, and the soil sterilized, a more penetrating radiation would have been emitted from the further decomposition of the activated elements. This would have destroyed all the remaining organic matter in the soil, breaking it down into volatile gases. Still decomposing into elements yet farther down the scale, the dust would have continued to emit harmful radiation—harmful because they would disintegrate the atoms of nitrogen and phosphorus in the soil.

"The result would have been a complete sterilization of the soil. For years, possibly a century, it would be useless to attempt to bring this soil back to the point where it could nourish even the rankest weeds. It would be dead itself and incapable of supporting life.

"Few, I suppose, would have survived to see the beginning of the universal starvation. The first outburst of penetrating radiation from the disintegrating elements would have attacked every animal living on the soil. The entire population of the United States would have gone the way the laboratory workers here went before they controlled the glow. And so for Russia and Canada.

"The strategy, of course, is simple. If one nation wishes to dominate the world, without competition from progressive rivals, the most effective way is to eliminate the rivals and reserve enough land elsewhere for national sustenance and expansion. There would be plenty of land in Australia, Africa, Asia, and South America for one dominant people after the United States, Canada, and Russia were out of the running for at least a generation. Does that check with what your friends told you?"

"Essentially. They told me more details—they don't matter now. You

could teach the Americans how to manufacture the dust?"

"Yes."

"Will you?"

"If I ever get back to America."

"Would any one but you be likely to discover the secret within the next ten years?"

"That's hard to answer. But judging by the merest superficialities of the work that was done here, I should think it very improbable. A basic discovery—the kind that is made only once or twice in a century—gave the men here a tremendous start over the rest of the world in creating new chemical elements. Further discoveries, almost as important, gave them a flying start on all the problems of inducing and controlling artificial radioactivity. Even knowing something of this work, other men would probably take at least ten years to duplicate it on a commercial scale."

"So the danger of another insanity like my poor brother's overtaking the world in the next ten years is small?"

"Negligible, I should say."

"Yet you plan to teach them how to make the dust?"

"Why not? Properly used it is a blessing if ever there was one."

"But will they use it properly?"

"That remains to be seen. If one gets a monopoly, probably not."

"Then what do you propose?"

"Don't you see the obvious way out? Tell them—everybody—*everything*. Let every nation manufacture its own supply. Tell them all how to make the dust deadly to all life, plant and animal. To let one nation rediscover the secret ahead of the others would be fatal. If all know how to create the lethal form of the dust, the majority will see to it that the minority does not manufacture that brand, but sticks to the safe kind."

"Do you really think so?" she asked.

"No. That is where you come in. If your side can't supply the rest of the solution before the majority has time

to go completely insane, we might as well acknowledge ourselves beaten right now. Well, do I get back to America, or don't I?"

"You shall. I knew you would be reasonable, so I notified the operator to broadcast a call for an American ship to come and take off an American citizen, Jay Jarvis."

"You've kept your word," he said. "Now I'll keep mine. As soon as the operator picks up an answer, I'll begin. In the meantime I'm going to catch a nap, and you had better do the same. You might tell the operator to wake me when he gets it."

JAY could not judge how long he slept when he awoke to find Nara standing over him. She had been shaking him.

"The *Texas* will be here in about five hours to take you off."

"Thanks. Then I can begin. Your operator can spell out my English a letter at a time as I write out my stuff. Two hours from now every nation in the world will know as much as I do about the manufacture of the dust, both the beneficial and the lethal varieties. It may take them ten years to produce either in commercial quantities, but all will know how.

"Tell your man to give some sort of a stand-by or call that will make every high-powered wireless station in the world prick up its ears. Then he can begin broadcasting what I feed him as fast as I can write it out. I suppose he can read English script?"

She nodded, handing Jay a pad and pencil.

"Then here goes. When he has put it on the air once, he can repeat it—all.

Enough will be listening the second time to pick it all up."

"We have won." She sighed.

Among the first to hear of that astounding broadcast was Admiral West. From him, before many minutes had passed, Senator Atkinson heard the news. Leaving the broadcast to the experts, the senator hurriedly called his colleagues together for a conference. They came on the run.

Gloomy Winters muttered something about shutting a stable door, and lapsed into silence. Secretary Redding mourned the willful scuttling of a world monopoly and glared accusingly at Admiral West. General Green compressed his lips very tightly when word was brought that the secret of the enemy's new tank metal had just been broadcast to the world. Senator Atkinson remarked that he never had believed in women messing in politics or espionage. "That girl" had turned their observer's head; they should have sent an older man.

The conference was interrupted just as the second broadcast began coming in clear. A messenger from the White House brought a note of regrets from the President that he could not attend the conference, as he felt the need of a swim. The note concluded with two enigmatic sentences. "All's well that ends well. I beg Admiral West to accept my profoundest apologies for having underestimated his abilities as a statesman, and I now ask him to convey my sincerest appreciation to Count Tori's extremely talented sister."

"I told you that girl was worth more——" The admiral did not finish.

"Shut up!" the senator roared, stamping from the room.

THE END