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by P. SCHUYLER MILLER

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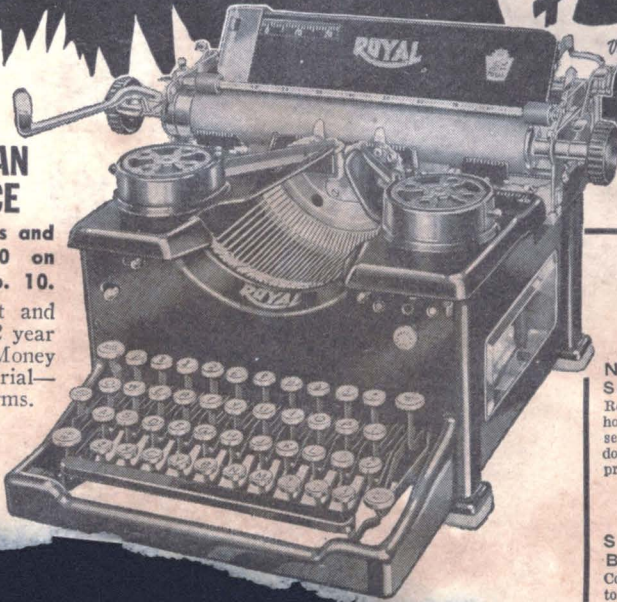
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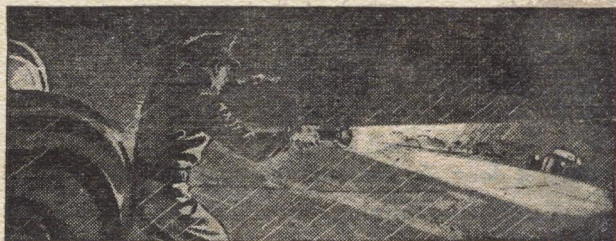


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Part I was good. Part II was better. Part III was best, you think? Ha! This conclusion is guaranteed to justify the high rating we've given Slan!

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COVER BY ROGERS

All stories in this magazine are fiction. No actual persons are designated either by name or character. Any similarity is coincidental.

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FOG

As a good many readers already realize, "Robert Willey" is the pen name Willy Ley has used for many years on his fiction material. Largely a scientific writer, Ley has wanted a distinguishing mark for his fiction work, so that there may be no confusion between facts, remarkable as the facts may seem, and the fiction he does.

Astounding does not, ordinarily, publish author biographies; it is comparatively seldom that an author's background has much meaning in relation to his science-fiction work. In this case, there is a very real and interesting relationship. Willy Ley is thirty-four, which means that he was twelve years old in 1918. A German citizen then—he is no longer—he saw the revolution that ended the World War. Since that time, there have been four revolutions in Germany, of greater or less extent, and Ley was caught in the midst of each of them. He has seen revolutions in major cities of a major power from precisely the viewpoint used in presenting "Fog"—a second-line executive position of a large company. He knows from first-hand experience the churning uncertainty of revolution's fog. There was no radio dome in those revolutions—but neither was there a radio set in every home.

"Fog" was written at my suggestion after Ley and I had been discussing Heinlein's "If This Goes On—" Ley had remarked that telepathic sensitives were precisely what was needed if a revolutionary leader had any hope of keeping his lines of communication open, and that even with them, only the leaders would be able to know.

The result is, I think, a fascinating and paradoxical story—a clear picture of what revolution means to the innocent bystander because it is so completely unclear.

That, on the word of one who has occupied precisely that role of unwilling bystander, is precisely what revolution is.

THE EDITOR.

HOW A FREE LESSON STARTED BILL ON THE WAY TO A GOOD RADIO JOB

I HAVEN'T HAD A RAISE IN YEARS-- GUESS I NEVER WILL -- I'M READY TO GIVE UP

BUCK UP, BILL. WHY NOT TRY AN INDUSTRY THAT'S GROWING -- WHERE THERE'S MORE OPPORTUNITY

MARY'S RIGHT-- I'M NOT GETTING ANYWHERE. I OUGHT TO TRY A NEW FIELD TO MAKE MORE MONEY

LOOK AT THIS-- RADIO IS CERTAINLY GROWING FAST -- AND THE NATIONAL RADIO INSTITUTE SAYS THEY TRAIN MEN FOR RADIO RIGHT AT HOME IN SPARE TIME

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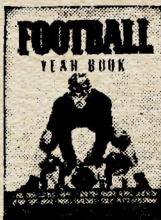
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By P. Schuyler Miller

Mulligan was a queer old guy, with delusions of age. A hundred thousand years of age—

Illustrated by Schneeman

DAVIS stopped under the glow-lamp to light a cigarette. Ten feet away the mist clamped down, swallowing all but the pale cone of light in which he stood, the hulking shape of Top Sergeant Gibbon casting its gorilla's shadow beside his own. The fishy reek of Venus' shallow sea and the stench of discarded garbage in

Laxa's narrow alleys got in a man's throat and made his mouth taste like rotten cabbage. He'd be glad to breathe canned air again, and see the stars hanging like diamond spangles against space. There wasn't a planet in the System, outside of Earth, fit for a man to live on—and Venus was the worst of the lot.

Down the street a door swung open, silhouetting two wavering shapes against a blur of yellow lamp-light. The yowl of maudlin voices spilled out after them, with one raucous bellow rising above the rest:

*I was bo-o-orn a hunnerd thousan' years
ago-o-o.
An' there's nothin' in the world that I dun-
no-o-o;
I seen Peter, Paul an' Moses—*

The door slammed, shutting it off, but Davis was already grinding his cigarette under his heel and the sergeant's boots were scuffing restlessly on the cobbled street. They knew that voice of old. Mulligan! And when Mulligan sang that song there'd be hell to pay in a matter of minutes!

Gibbon's hairy fist smashed into the door. Gun in hand, Davis stepped after him into the barroom. Over the heads of the cutthroat crew that packed the place the patrolman's eyes went unerringly to the source of trouble. Mulligan was standing on the bar, spraddle-legged, his favorite oaken staff gripped threateningly in one huge fist and his beet-red face thrust forward like an angry ape's. His little red eyes peered furiously out from under massive eaves of bone and his bun-shaped skull shone like a china door-knob. His back was hunched, his shirt was open on a barrel chest, and an empty bottle swung at the end of his long left arm.

"Who called me that?" he bel-lowed.

There was a party of slummers in a wall booth—a blond girl and three pale, sleek youths in faultless formal dress. One, with a smear of mustache and horn-rimmed spectacles, was pretty far gone. His face was as red as Mulligan's as he wavered to his feet.

"'S a lie!" he shouted. "'S a damn lie! No . . . nobody's that old!"

Davis' gun snapped up. The drunken fool! But he was too late. Mulligan's arms swung like striking snakes. The bottle smashed on the wall above the youngster's head. His legs slid out from under him and he sat down hard just as the oaken staff bored a hole through the flimsy partition beside his ear.

Things happened then. The girl was on her feet, slim, white-faced, scarlet-lipped, wrapped in a sheath of silver. Her escorts were struggling with their chairs. And from somewhere behind their booth came the *sput* of a silenced gun. A dripping red line slashed across Mulligan's receding jaw. And in the same instant Gibbon shouted, Davis spun instinctively, and the world went out in a splash of fire.

THAT SAME hoarse voice wormed its way into Davis' dreams and made him wince. It brought back memories that started chariots of fire careering around inside his skull:

*—I seen Peter, Paul an' Moses
Playin' ring-aroun'-the-roses,
Aaaan' I'll lick the guy who claims that it
ain't sol*

*I'm the guy that got ol' Samson's whiskers
curled;
I helped Joe an' Adolf divvy up the world,
An' I led the gang to cover
When George Washington came over
With the A. E. F. to see their game was
spoiled!*

*I taught Solomon to say his A-B-C's;
I helped Brigham Young invent Limburger
cheese;
An' I ran the plane for Lindy
On his transatlantic shindy,
While Chris Columbus whistled for a breeze!*

It was all he could endure. He pulled himself up on his rubber legs and held his splitting head in both

hands and yelled "*Shuddup!*" Then he opened his eyes.

He saw bare, gray rock and gray sky, and a curtain of gray mist that blanketed it all. It was drizzling, and he was stark naked, with little dribbles of tepid water running down his spine and dripping off the end of his nose. He saw Mulligan, a hundred yards away at the edge of the gray sea that lapped and gurgled horribly against the wet, gray rocks. The old man was as bare and pink as a skinned monkey, hunkered down puzzling-over a clam.

Mulligan's monkey-face twisted toward him. It grinned, and the old man brought his fist down with a whack on the rock in front of him. Clam juice spurted and Mulligan began painstakingly to slurp up the mess out of his cupped palm.

Behind him Davis heard the noises of someone being sick. It was the very drunk young man of the barroom. In nothing but spectacles and a mustache he looked even less impressive than he had in a boiled shirt and a red sash. He was a little knock-kneed and his belly bulged more than it should at his age. Davis patted his own taut abdomen approvingly and strode masterfully to investigate.

They were on a lump of rock that stuck up twenty feet out of the steaming, stinking waters of Venus' mud hole of a sea. From the marks on the rock they'd have six or eight feet to themselves at high tide. And there'd be things that would want to eat them.

He counted noses. Six, with Mulligan. Gibbon was sitting up in a puddle, staring ruefully at his bare toes. There was a bullet hole through the biceps of his right arm and a bloody gash in the clipped hair of his round skull. The two

kids who had been with Goggles and the girl were still out. And they were all as naked as the day they were born, if you excepted the fur on Gibbon's chest and the toothbrush under Goggles' nose.

OLD MAN MULLIGAN came paddling over the rocks toward them. He was sober now and looked as harmless as a kitten. Davis felt his official temper rising.

"You got us into this mess, Mulligan," he snarled. "Now get us out of it!"

Mulligan's long face wrinkled in a toothless grin. "You look pretty good without pants, cap," he observed. "I remember one time down in Nubia we run into a tribe that didn't wear nothin' at all . . . but could they fight! Pharaoh says to me, 'Mike' . . . that was short for whatever it was those Egyptians used to call me . . . 'Mike, you train me a couple thousan' of them cannibals an' we'll wipe ol' Hubble-Bubble an' his Hittites right off the map!' So I picked me a brigade of the biggest an' barest an' blackest bucks I could find an' put 'em through the ol' West Point stuff. Then we got over in there back to Carchemish, an' damn if the lot of 'em didn't get homesick an' light out for Nubia! So I hopped a ship for Mycenae an' got mixed up in a war they was havin' over a babe called Helena. Redhead, she was." His little eyes had a faraway look. "Geez, cap . . . them was the days!"

Davis found his shoulder muscles sagging. You couldn't bawl Mulligan out. Tougher men than he had tried. "You damned old liar!" he snapped. "Can't you drop that phony past of yours long enough to think about the mess we're in?"

The red glint came into Mulligan's eyes again and the chin he

didn't have jammed forward and set. "They was too many of 'em," he complained. "I'd of handled 'em, only the barkeep took me from behind with a full bottle." He fingered the back of his hairless skull. "Look . . . I got a bump like a egg."

"Never mind your bump!" There was more in this than met the eye. Mulligan's ruckuses usually landed him in jail or the hospital, not on a rock in the middle of the ocean. "Who shot you . . . and why?"

"Oh . . . him? That was one of Slip Hanlan's boys. I got him with a chair while Slip an' the rest was busy with the girl."

"What about the girl? What happened to her? How did we get here?" It was the young man with the mustache. He had come up silently in his bare feet, and the others were with him. "What happened to the girl?" he repeated. "Where is she?"

"Her?" Mulligan seemed surprised that anyone should be interested. "Hanlan got her." He chuckled. "She's got guts, that babe! Blacked Slip's eye for him an' damn near took the ear off one of his monkeys with a bottle. They had to put a bag over her head an' tie her up like a bale of weeds. That was when the barkeep slugged me. You was already out, cap . . . you an' the sarge both."

Davis heard Gibbon's growl and intervened hastily. "Who is this girl?" he demanded. "What does Slip Hanlan want with her . . . and why did he dump us here?"

One of the pale young men answered. "She's my cousin . . . Anne Bradshaw. Her father's regent, you know. I . . . I guess they just figured she'd be worth a lot of money so they kidnaped her."

THE regent's daughter! The kid was right—she would bring anything Hanlan wanted to ask—but the System wouldn't hold the man who kidnaped her after she was back in her father's hands, nor the man who failed to return her after the ransom was paid. Every man in the Space Patrol would be personally pledged to blow the guts out of the man who laid hands on Anne Bradshaw—and Slip Hanlan was ordinarily a smart guy. Too smart to stick his neck out—unless he had an absolutely sure thing.

"What were you punks doing in that dump, anyway?" he asked. "Haven't you got sense enough to keep a woman out of a dive like that? Hell . . . you might have run into some lug who *didn't* know who she is and was too hopped up to care!"

"Captain Davis." It was Goggles again. "Perhaps I can explain. I am at the University . . . Professor of Anthropology there . . . and these two young men are my students. There was a dance at the University Club and Miss Bradshaw herself insisted on our taking her to that place. We must find her, at once!"

He looked like the kind of daisy the government would import for their pet boarding school at Laxa. All on a very high plane—no rough competitive sports, no engineering, nothing practical: the young of Laxa's Brass Hats had to have culture, so the pedigreed cream of Earth's Ph.D.'s were shipped to Venus to teach them. What the planet needed, Davis reflected grimly, was a military academy with a major in pioneering. Because the first generation on Venus had had a tough time keeping alive, they wanted everything to be silk and sugar for their offspring. The only trouble with that was that human beings

had a toehold on less than two percent of the planet's surface, and the days of pioneering had a couple of generations yet to run.

"Look, boss." Gibbon's face was glum and he seemed self-conscious in his nakedness. "The way I see it there's got to be politics mixed up in this business. Any other way Slip'd be drizzly to try it. It's been fixed at headquarters that the whole thing'll be hushed up when he brings the girl back. The Patrol won't even know she was missing . . . or the professor here, or these young punks. Only Mulligan mixed in and we showed up. So they ferried us out here where we'd be out of their way, and no questions asked. Somebody'll come by with a boat, when it's all over, and be very much surprised to find us here. Then we'll be told just what we're supposed to know and how unfortunate it'd be to have other ideas about things.

"Only we won't be alive. Not in winter, and without clothes. Slip Hanlan's foxy that way!"

The girl's cousin, young Bradshaw, pushed forward. His face was flushed. "I don't believe it!" he cried. "Uncle Arthur would never stoop to anything like that."

Davis patted his thin shoulder. "Take it easy," he advised. "Even if the sergeant's right, that doesn't mean your uncle is mixed up in it. There are powers behind him, here and on Earth, with their own strings to pull and their own reasons for pulling them. It could be pretty smart to pick up his daughter and keep him worried about her instead of about other things that may be brewing. If nothing happens to her, he'll play along, for the good of the colony. That's how politics work."

He turned to Mulligan. The old man was down on his hunkers again, pulling shellfish off the rocks and

sucking them out of their shells with gusto. "Mike," he called, "come back here. You know more about Venus than any man on it. My father told me so. Where are we, and how do we get out of here?"

Mulligan's face wrinkled perplexedly. "I been here," he admitted. "There's a lot of these little islands off the coast where the main ridge of the skyscrapers runs into the ocean. I was here once with Morgan, back in the old days, fishin' for sea serpents."

"Sea serpents?" It was the second boy. "You mean here, in these waters . . . around us?"

The old man nodded. "Yeah. It's pretty deep here. There's plenty of room for 'em to get real big, like they used to be back on Earth. Why, I remember—"

"You forget it!" Davis told him. "Do you mean that we're stuck here?"

"I wouldn't say that," the old man protested. "You better leave me puzzle it over a bit. We got to wait for high tide, anyway."

THEY LEFT Mulligan opening clams and sought shelter under a ledge where they could hug their knees and steam in a little less discomfort. Winter on Venus was predominantly wet and windy. It was hot; the air was chokingly humid, and the rain was like cold soup, but the rock shelter made them feel a little more like men.

The professor had given up trying to see through his glasses and was peering owlishly over them. "Can we trust this man?" he wanted to know. "What can he do?"

Davis shrugged. "He can do all anyone can," he replied. "Old Man Mulligan's the biggest puzzle on Venus. He's been around as long as anyone living can remember. He

was here with Morgan on the first exploring trip, if you believe the records. He hasn't changed a bit in two men's lifetimes, and I seriously doubt that he'll change in mine . . . or yours. He knows Venus better than any man in the System, and if he says he can get us off, he's got a way of doing it. Am I right, Gibbon?"

"Yeah!" The sergeant had been packing lichens over the hole in his arm. "That song of his was the first thing I heard when I stepped out of the transport thirty years ago. He was drunk and whalin' the devil out of some dope that called him a liar, and I had to get three other cops to help me put him in a cell. Then I had to hear him tell about Moses and Pharaoh's daughter, and how he'd been a priest over in a place called Midian and this Moses married his daughter. He's got daughters all over the System, if you believe half he says."

"Fantastic!" The professor was on the verge of exploding. "No man can have lived since the days of Moses. Four thousand years! It's absurd. I happen to be an anthropologist, and I know!"

"He lays claim to a hundred thousand, if I remember," Davis said dryly. "I know for a fact he was alive eighty years ago, when my father came out here, and the records give him nearly twice that. He knows a lot about history, too, if he does get it garbled up sometimes. There must be a hell of a lot in your head to get twisted if you've lived a hundred thousand years!"

The professor stared at him accusingly over his glasses. "Be serious!" he snapped. "You're an educated man; you know as well as I do that no man can live a thousand years, let alone a hundred thousand. It's ridiculous! I'll admit there is

something peculiar about the man . . . the shape of his head for one thing, and his posture, and that brow ridge. He definitely represents a very primitive type. Almost Neanderthaloid, I would say. A throwback, I presume. Where is he now?"

The second boy, Wilson, was at the far end of the shelter. "He's been hammering at a big rock," he reported, "and now he's knocking little pieces off it with another stone. Look . . . about those clams. If we're marooned here, shouldn't we be doing something to conserve them? I mean, they're all we have to eat, and they won't last long if Mulligan goes on wolfing them down like that!"

IT WAS GROWING colder as night drew on. Venus never got really cold, even now, near the pole and in the dead of "winter," but night in the rainy season could be as dismal an affair as you'd ask for. Davis tried to remember how the tides were running. The shallow sea and submerged coastline made them freakish and irregular. Getting to his feet he peered out to sea. There was a definite, strong current setting past the end of the island, and rocks he had seen well above water a half hour before were buried in phosphorescent spume. The tide was rising.

He scrambled painfully down over the ledges to where the old man squatted. In the open the rising wind caught him and he shivered with the sudden chill. He heard other feet padding behind him and saw that Gibbon and the professor were following him.

Mulligan had found a vein of flint in the limestone of which the island was made. He had half a dozen big chunks of the stuff on the ground

beside him and was knocking fist-sized spalls off them with a lump of waterworn quartzite. He had about a dozen of them, and as they approached began to work them down to shape with deft, quick raps of his hammer stone, flaking off smaller chips all around their edge. Pretty soon he had a spear-shaped blade, flat on one side and rounded on the other, with an uneven cutting edge and a rounded base. He laid it down and started on another. The professor nudged Davis excitedly.

"The Mousterian technique," he whispered. "Indubitably. Extraordinary!"

Davis cleared his throat apologetically. He felt like an ass, standing here in the rain watching an old man play caveman, but he had a feeling that he was intruding on something important.

"Mulligan," he said, "the tide's rising. Hadn't we better do something pretty soon?"

The old man looked up at him. "I am," he answered. "I'm makin' knives an' spears for the lot of us. There's things comin' in with the tide that'd make one nip of the sergeant or you an' use the pefessor for a toothpick. If I was you, I'd get them punks out lookin' for somethin' I can use for handles. It ain't always convenient to get real close to critters like them."

"Do you claim that you are one hundred thousand years old?" The professor's voice nearly cracked.

Mulligan ducked his head sheepishly. "I guess mebbe that's a little strong," he admitted, "but it fits good in the song. Last time I figgered it out for a feller that knew about things like that it came out about thirty thousand. Might be five or ten thousand off one way or the other, he thought. There was a long time there I didn't have no in-

clination to keep track of stuff like that, an' it was pretty hard to catch up. Even in Sumer they wasn't much good at big numbers, an' this was way before that before they come down out of the hills, even."

Davis turned away as he saw the professor's jaw beginning to drop. The damned old liar! He rounded up Gibbon and the two boys, and they began to search for long, straight staves of green wood which might serve as spear shafts. They found only three which were long enough and strong enough to be of any use. The continent must be fairly close, Davis reflected, to get any green wood out here at all. Maybe Mulligan knew what he was doing, after all.

They still had an hour's half light left, Davis estimated. The dense Venusian atmosphere strung twilight out into what was practically a diurnal season. They found Mulligan up to his armpits in the surf, his enormous nose nearly in the water, prodding and poking with a notched and pointed stick. As they reached the water's edge he jabbed viciously at the general neighborhood of his feet and plunged after the harpoon to come up, coughing and spewing salt water, with something leggy and shapeless squirming on the end of his stick.

Davis watched with interest and the professor with what bordered on despair as the old man planted his bare feet on the thing's lashing tentacles and proceeded to slice it up with his flint knife. Presently he had several long strips of tough, leathery tissue with which he lashed his spearheads firmly into the cleft ends of the shafts they had found. Inasmuch as Gibbon's right arm was useless, Davis decided that he would have to be their reserve. To the tune of the sergeant's grumbling the



Despite Mulligan's lasso, the vast beast continued toward the shore.

five men returned to their shelter to watch and wait.

Mulligan did not join them. He was making a weapon for himself—a wicked-looking tooth of chipped flint half as long as his forearm, with the butt rounded for a grip. The professor called it a fist-ax and went into a profound sulk because evidence and science were growing more and more at odds with every moment.

IT WAS fast growing dark. Mulligan's squat form was barely visible against the pallid phosphorescence of the sea, perched on the end of a spine of rock that thrust out into deep water. Davis wondered how long it would be before the tide flooded them out and forced them to take refuge on the exposed crown of the island, at the mercy of wind and rain and every famished sea monster that came that way.

Grimly he watched the glowing line of surf lap higher and higher. It was almost up to Mulligan's dangling legs when he let out a piercing yell and vanished.

They went pelting down the rocks, spears in hand, to the promontory where Mulligan had been. Waist-deep in the rising water, the old man was jumping up and down like a maniac, waving his arms and hooting like a demented ape. Then, a hundred feet beyond, Davis saw something rise sluggishly to the surface. The old man saw it, too. He retreated toward shore, still yelling and waving his arms frantically. Then it rose again!

It was like Leviathan of the legends. It rose out of the sea like a billowing wave, washed over with creamy spume—a colossal turtle's carapace, studded and ribbed and grown over with barnacles and clinging weeds—an armored, vast-eyed head with sneering beak, set on a wrinkled neck—huge, curving flippers that hooked and scabbled at the sloping rock. The black bubbles of its lidless eyes stared at the little bandy-legged creature who danced tauntingly before it. A wave broke over its back, hiding it, and then it appeared again, much closer, and began to move ponderously toward the shore, its snaky dragon's head thrust evilly forward.

Mulligan came scrambling over the rocks toward them, shouting at them in some unknown tongue. With a shout to the others Davis began the same insane dance, drawing the thing's attention, luring it ashore. The hooked beak and staring eyes rose out of the foam at their very feet. It lunged at the little group on the rock's summit, fell short, and before it could recover the old man leaped.

He twisted like a cat in midair

and came down astride of the monster's wrinkled neck. Flat on his belly, legs locked around that barrel of muscle, he drove his fist-ax into the creature's throat. Blood spurted like black oil into the burning sea. His whole arm was buried in the gaping wound he had torn. The monster writhed and twisted, striving vainly to reach him. Its flippers churned the sea. It was turning—heading for deeper water!

Gibbon, empty-handed, went over the side of the rock. He came up flailing madly with his good arm, found footing and dashed at the thing's head, turning it. As it snapped at him he leaped back, and then Davis and the others were beside him. Young Bradshaw's spear glanced harmlessly off the monster's armored head and vanished into the sea. The professor's eyes were gleaming strangely behind his spectacles. He danced down the slippery ledge under the sea thing's very beak, and rising on tiptoe planted his spear deep in the giant turtle's staring eye.

The thing recoiled, nearly hurling Mulligan from his perch, then lunged viciously. The edge of its carapace caught the professor, spinning him aside, and its beak gaped before Davis' startled eyes. Before it could close he drove his spear deep down that reeking gullet and flung himself out of its path. Its horny jaws closed on the shaft, clipping it like a twig, and then the Wilson boy darted in and drove his weapon into its other eye and through into the brain beyond.

The gigantic jaws gaped wide. Black blood poured out of them. The scabbled flippers sagged and the monster surged forward on the beach, its long neck writhing blindly. Then Mulligan's blade reached home and the life gushed out of the great

beast in a steaming stream, leaving it inert on the rocks with the tide lapping against its vast, curving shell.

The old man clambered to his feet and stood looking them over. They were a bloody, draggled crew—but they had won! He grinned approvingly and waved an arm up the beach.

"Get the knives," he ordered. "We got work to do."

Thick-deep in blood and foam the six men hacked and pried at the giant carcass, hewing away the muscles which held the bowl-shaped carapace, separating the ribs, cutting through the colossal spinal column. The sea was red around them, and beyond the first line of breakers they could see black, misshapen forms rising and falling with the surge of the waves. Ghouls, drawn by the taste of death. And, Davis reflected, a living wall between them and the mainland.

THE TIDE had nearly reached the high-water mark when they finally lifted the edge of the great shell and tipped it over into the sea. It floated low in the water, with a bloody soup slopping around inside it, and Davis' stomach turned over as he realized that this was to be their ferry to the mainland.

A rocky point, which had been a ridge when the day began, ran into the sea at the tip of the island. At Mulligan's direction they dragged the huge shell away from the carcass—and away from the ravening creatures of the deep that had scented its blood and were waiting for the tide to float it out to them. Young Wilson had kept his spear, and the professor's had been dragged out of the ruin of the turtle's eye after it collapsed. Mulligan's fist-ax was their only other weapon. And the

thrash and bellow of monstrous life out there in the darkness told them what they might expect before their crazy coracle reached shore.

While Mulligan busied himself with the sea thing's tangled entrails, cutting long strips of gut and twisting it into a kind of cord which he wrapped around his waist, the others bailed out what they could of the mess inside the shell and gingerly took their places on its slippery bottom. Davis and the old man were last. Slowly they edged the great bowl along the rocks and out into the current that swirled past the point. As the tide caught it, they tumbled in and crouched with the others in the bottom. It rocked drunkenly with the force of their shove, grated for a moment on a submerged rock, then swung ponderously around and was loose.

Every other wave, it seemed, broke into the sluggish craft. Gibbon and the boys bailed furiously with their hands. Davis took Wilson's spear and stationed himself at what had been the tail end of the oval shell. The professor, using his weapon as a staff, crouched unsteadily in the middle, and Mulligan, still gripping his spike of flint, squatted in the bow, his long toes gripping the slimy ladder made by the creature's ribs.

The old man's restless eyes sighted the first danger. At his grunt Davis raised himself as far as he dared. Ten yards away the thing broke water. It had a snout like a crocodile and a streamlined, glistening body that slipped effortlessly through the waves. It rolled over, showing a gleaming belly, and dove. Ten seconds slipped by—twenty—a minute, and Davis let himself drop back. Then at his very elbow the monster rose again. Two tiny red eyes, buried in slits in the glistening

flesh, glared down at him. A snout edged with tiny, saw-edged teeth grinned at him. And with all his strength he drove his heavy spear into the soft, pouched throat beneath that narrow jaw.

The great thing rose like a breaching whale—up and up and up until it seemed to stand on its tail in mid-air. Then with a crash that nearly swamped the shell it fell back. Davis hung on grimly with both hands and watched the sea spin past. Off to the left the creature rose again. Its outline was barely visible against the pale phosphorescence of the water. Something stout and stubby, with bristling fins, had fastened itself savagely to its dangling lower jaw.

Suddenly the sea about them was alive. The taint of fresh blood was in the waves, and the death-watch gathered. A vast, scaly something rose almost under the shell, tipping it and hurling Davis back into the human tangle in the bottom. Water poured over them, and out of the murk a spined and wattled head peered down at them. Mulligan yelled defiance, brandishing his fist-ax like a war club. Another wave caught Davis in the face and bowled him over. Over the bellow of the sea beasts the sergeant's voice rose in a howl of anguish:

"Bail, damn you! We'll be under!"

They bailed—Gibbon with his one good arm, the others with both hands, splashing bloody water out a little faster than it vomited in. The professor's spear was somewhere underfoot, swashing back and forth in the reeking bilge, and Mulligan still clung like a limpet to his perch. Off in the night another of the sea monsters grumbled, and Davis' fingers closed on the floating spear.

He straightened up, straddling

the knobby column of bone that ran from stem to stern of their drunken craft—the turtle's spine. His eyes fell on Mulligan, silhouetted against the pallid glow of the sea, and a tingling chill ran down his spine. The old man's head was drawn down between his scarred shoulders, his chinless face thrust out, tasting the wind. His broad back was curved like a crouching wolf's, his bandy legs drawn up under him, his long arms dangling. He was like a great, hairless ape of the night, carved out of ebony and set there for a figurehead to ward off demons. His great bald head swung suddenly toward the men, and Davis thought he caught a glint of greenish fire in the little eyes before it turned away.

THE MINUTES passed by over them, and the hours. How long it was Davis could not tell. The wind had fallen and the sea was more quiet. There was an oily swell that rocked their cranky craft like a cradle, up and down, back and forth. The professor was sick and the two boys crouched miserably together in the bottom. Hour after hour passed, while Davis watched vainly for some glint of dawn in the sky and Old Man Mulligan squatted silent and inscrutable in the bow, peering ahead into the darkness.

They were the sea's toy, tossed where it willed, at the mercy of unknown, uncharted currents. If the tide had turned they might be drifting away from land, out into the unmapped, unfathomed, mist-wrapped waste that covered half of Venus. Five men, naked in the night with the cold rain slatting down across their backs and the slap and whisper of the phosphorescent waves the only sound in all the world. Five men, Davis thought—and Mulligan.

He closed his eyes and listened.

Very far away, he thought, he could hear a sullen roar as of surf against rocky ledges. Perhaps the tide was carrying them back to the island. It might be land. He strained his ears, but it was gone, and Mulligan had not stirred.

Suddenly the old man was on his feet, his legs braced, his head thrust forward like a scenting hound's. He was unwinding the rope of twisted gut from his waist and running it through his gnarled fingers, tightening it, forming a noose. Cautiously Davis got to his feet. It was lighter now. Past the old man's tense shape he saw the arch of a glistening dome—another of the great turtles. Mulligan crouched lower, and with a cry to Gibbon, Davis hurled himself back into the stern as the old man's noose settled over the monster's head.

Their weight in the stern was all that saved the shell from going over. As the rope tightened, the front of the carapace plowed deep into the waves. Davis was hanging to the rim with both hands; Gibbon had him around the waist, and the others were sprawled on the bottom. One by one they scrambled to join the two patrolmen. Like five naked apes they perched on the edge of the great shell, balancing the pull of the runaway monster. Both feet planted against an arching rib, Old Man Mulligan was lying back with all his weight, the rope tight around his waist. The muscles stood out like oak roots on his arms and back. They were on their way at last, but where they were going only Heaven—or the turtle—knew.

At a word from Davis, young Bradshaw slipped down from his perch and went to give Mulligan a hand. He was the lightest of them, and the old man could not stand the strain alone much longer. Side by

side, like charioteers of old, they stood and rode the sea—the gnarled, brown body and the slim, white one, outlined in the brightening day.

There was no doubt—ahead there came the roar of surf. Mulligan shouted back at them but his voice was whipped away in the wind. Then, with a crash that hurled them headlong into the sea, the shell struck. It split like a gourd and went down, sucking them after it. Savagely Davis fought his way to the surface. Gibbon was clinging to a rock, just clear of the water. Wilson's head bobbed up between them, and the boy struck out vigorously to join the sergeant. But of the others there was no trace.

THE MIST was lifting. There were rocks all around them, jagged and black, with the waves breaking angrily over them. Then out of the gloom came a hail:

"Ho-o-o-o-o!"

A second voice joined the first: "Ho-o-o-o! Da-a-avis!"

Gibbon answered with a strangled bellow, and then Davis saw them. The cliffs were close, steep and frowning, with the sea smashing against them. Mulligan and the boy were clinging to a long, rocky spit that ran out from a little cove at their base. Davis took a long breath and let the sea carry him in.

Mulligan's hand closed over his wrist and dragged him to safety on the reef. Out in the welter of foam he saw Gibbon's clipped head and young Wilson's sleek one. The sergeant was forging ahead vigorously in spite of his wounded arm. A few minutes later they were all together—all but the professor.

A step at a time, feeling their way through the surf that broke over the reef, they edged their way shoreward. It was Gibbon who saw the

missing man, lying in the wash of the waves. His glasses were gone and there was a great bruise on his forehead, but when they dragged him up on the little beach he stirred feebly and opened his eyes.

Watching Gibbon drain the water out of the bedraggled teacher, Davis wondered what came next. They were naked, famished, marooned miles from the nearest settlement. There might be a way over the circle of cliffs, but beyond was the unexplored wilderness of the skyscrapers, peaks that dwarfed many of Earth's proudest ranges, and beyond them the jungle. Venus was no Eden.

He studied Mulligan, busy over the professor. The old man was the only one of them who didn't seem out of place. Those cruel scars and massive muscles spoke of battles with Nature more terrible than anything they had yet gone through. What was the truth about him?

Gibbon limped over, hugging his hurt arm. "The prof took quite a beating, boss," he observed sourly. "We better stay here a while." He scowled. "We won't go any place barefoot, without anything in our bellies."

"You'd oughta have feet like mine." It was Mulligan. The old man's soles were like black horn. "I been goin' barefoot every chance I get, ever since I can remember. Shoes is crampin' if you was brought up free-footed like me."

"We weren't," Davis pointed out acidly. "We've got to get back and start on Hanlan's trail before he puts over whatever trick he has up his sleeve, but without shoes we won't make a mile a day over those mountains. What's more, we'll starve at that pace."

The old man chuckled. "You'll get shoes," he said. "Nor you won't

starve. I been here before, remember, an' if I hadn't I could still keep goin' any place that'll grow worms. Tell those two punks they got to find a little pile of sand, up above high water. When they get it, yell."

In less than ten minutes Bradshaw let out a whoop. Almost simultaneously Wilson called from farther down the beach. Each had a low mound about eight feet in diameter, heaped up in the sand. Mulligan went at the first like a terrier in a rat hole. Sand flew for a minute; then he swung back on his heels and held up a dirty yellow object about a foot long.

"Turtle eggs," he explained. "There's a string of these little beaches along the coast where they come to lay. The one we rode in was likely headed for this one, but we scared her off."

There were twelve eggs in the nest Bradshaw had found, and ten in Wilson's. Mulligan made himself another crude stone knife with which he carefully cut a circle out of an egg, just short of the end, big enough to push a foot through. The leathery shell made a crude but effective moccasin, and the egg itself went a long way toward satisfying their hunger.

THEY SPENT the night huddled together under the cliffs, wet and miserable. What wood they could find was too water-logged to burn, even if they had had any way of lighting a fire. As the first gray light began to filter through the clouds, they gulped down a breakfast of raw turtle eggs, pulled on their clumsy shoes, and set out to explore the circuit of the cliffs. The professor seemed himself again, and Mulligan was as chipper as a youngster. Gibbon's arm was painin' him, and Davis fashioned a sling out of

strands of seaweed, but there was nothing more he could do.

Davis had been planning a conference in which every contingency would be brought up and disposed of, and a plan of action worked out. He never had the opportunity to suggest one. Before he could protest, Mulligan went at the cliffs like a squirrel, his seaweed basket of eggs bobbing merrily on his back. They could only follow.

The old man was thoroughly at home. He trotted along with the thin drizzle of rain cascading down his backbone, uncomplaining and sure-footed as a goat. The others were less fortunate. After struggling painfully up a precipitous slope, clinging to the rock with tooth and nail, they would reach the top and find him squatting on a hand's-breadth of level ground, only to have him swing tirelessly to his feet and disappear into some chasm or up a steep crag.

When at last they came down out of the mountains into the jungle it was worse. There was no trail. Mulligan seemed to flow through the underbrush where the others had to fight their way step by step through a wall of thorns and tangled vines. Nevertheless, it was Mulligan who kept them alive. The six-foot staff he had provided for himself was like a magic wand. With it he probed seemingly bottomless morasses or made a bridge from root to root where black ooze crawling with venomous life was the only floor to the jungle. With it he knocked down small animals which they learned to eat raw, and on it he strung the poisonous-looking fungi which nevertheless filled their stomachs. With it, once, he fought off a snarling, yellow catlike thing which contested their way.

Once, even, the old man found a

tree whose inner bark was dry and tindery, and all that night they crowded gratefully around the little fire he made by rubbing a stick of dry wood in a wooden groove. By morning the crude friction device was soaked and their fuel gone. They got stiffly to their feet and stumbled on, cold and empty, following the old man's great, splayed footprints in the mud.

They had spent a night at sea in the shell and a night on the beach. They spent a night in the mountains and three more in the forest. A little light was still filtering down through the giant tree ferns when they suddenly came upon Mulligan, flat on his face in the mud at the edge of a clearing.

Davis was bringing up the rear. He nearly fell over the professor, who was lying in the middle of the trail peering near-sightedly ahead. On hands and knees he made his way to where Mulligan and the sergeant were lying. Gibbon pointed wordlessly.

There was a house in the clearing. It was the familiar pill box of the Venusian trader, a rambling affair of concrete without windows or any other unnecessary openings which would afford an entrance for the unpleasantly persistent fauna of the jungle.

"Hanlan!" the sergeant muttered through his teeth.

Hanlan? Then Mulligan had known all along where they were. He had brought them here deliberately, naked and unarmed, where they could only sit and fume at their helplessness. Red spots danced before Davis' eyes. He'd been playing second fiddle long enough!

"Sergeant Gibbon," he snapped, "we're taking over. I'll reconnoiter.

Stay here until I signal you. If Hanlan is here, he won't be expecting us. We have the advantage of surprise, and we'll have to use it."

Beside them in the mud old Mulligan chuckled. "You ain't got a badge any more, cap'n," he pointed out slyly. "You ain't even got a uniform. Mebbe Slip won't recognize you."

Davis ignored him. "Hanlan may not be here," he went on. "We have only Mulligan's word that it's his hideout. But if he is, and I don't come back, you're in command. Understand?"

"Sure, boss." Gibbon saluted awkwardly. "Only I don't see what we can do about it if he puts up an argument."

WELL inside the forest, Davis made a circuit of the clearing. Someone was evidently in the place, for a good-sized launch was tied up inside a breakwater where the jungle met an arm of the sea. For safety's sake, he removed some of the engine's vitals and watched them disappear in a dozen feet of turbid water.

A series of terraces rose steeply behind the hut, and a quick examination showed him no easy road over them. The place was set in a sort of niche in the hillside and would probably be entirely invisible to Patrol boats unless they ventured into the unknown waters of the fjord on which it faced. It was an ideal hideout.

If Hanlan had a tele-cells set, there was no evidence of it. When he had made sure that there were none of the scanning eyes in evidence anywhere on the hut's exterior, Davis made bold to scurry up close to its walls. He located the radiation plate of the cooling system, at the end opposite the single

door. It was hot, proving that there was someone inside.

There might be spying devices in the door frame, invisible from a distance, and he kept away from that. The rest of the walls he went over foot by foot. There was a ventilator on the roof, but it had a stout grating across it and in any case was barely big enough to admit a man's head, let alone his body. If Slip Hanlan wanted to stay inside till doomsday, there was nothing Davis could do about it.

He went back to the radiation plate. If the hut was built on the usual plan, the conditioner would be in a booth in the little store room which was in the rear of most such shacks. The chances were good that nobody ever went into the place unless something went wrong. He studied the plate carefully. The metal grid of cooling fins was set flush with the wall, but the concrete was stained and crumbling around its edges, and in one place there was a good-sized crack. If only he had some sort of tool!

He remembered the launch. Fifteen minutes later he was hard at work, chipping away at the concrete. It was soft and fell away easily. Soon he was able to get the end of a steel bar under the edge of the plate. He heaved with all his strength and the thing yielded a little. He heaved again. Inside the hut something spanged and the plate came out a good two inches.

Whoever had set the conditioner up had been careless. The bolts which held the plate were loose enough for Davis to get a wrench in through the slit and remove them completely. This gave him enough room to push an arm through and grope around for the couplings of the heat-exhaust tubes. He found them at once because they were hot,

and it took much poking and swearing before he had them loose from the radiation plate, and had lowered it gently to the ground.

He listened. Everything was dark and still inside except for the liquid chuckle of the refrigeration fluid in the pipes of the conditioner. Using wads of wet leaves to protect his hands, he bent the tubes aside as far as they would go. With a chisel from the yacht's tool kit he slid back the tongue of the lock on the cabinet door. It swung noiselessly open. With a wriggle he went through the hole, grazing the hot tubes painfully and scraping a patch of skin off his hip.

THE storeroom was dark, but there was a crack of light under the door leading to the other part of the hut. Davis tiptoed toward it, one fist closed tightly around a man-sized wrench. Then something clipped him neatly behind the left ear and he went down with a thud.

His legs were hobbled and his arms tied behind his back when he came to. A wad of metallic-tasting cloth was jammed into his mouth. He struggled and commented violently through the gag. A small hand slapped him smartly on the jaw.

"Shut up!" a woman's voice hissed.

Twenty years later in life Davis might have been in danger of apoplexy. "Gug ga gu!" he gargled. "Ge gee gow! Gu . . . gu—"

A small, cold circle pressed purposefully into his naked stomach. He knew the feeling. She had a gun.

"Be quiet!" she whispered. "They'll be in here any minute! Get under that bed at once or I'll knock you out again and put you there."

He submitted meekly to being rolled under a small iron cot that stood against one wall. She dropped a blanket over the side to hide him and switched on the lights. He twisted his wrists tentatively. She'd done a good job, but maybe not good enough. By dint of much writhing he was able to bring one eye close to a hole in the blanket. What he saw made his jaws clamp down hard on his gag.

It was the girl of the barroom, Anne Bradshaw. It would be, he thought. Her silver gown was rumpled, and the skirt had been torn off knee-high, revealing a pair of entirely satisfactory legs. She was fiddling with her hair. With a glance toward the bed, she turned her back and rummaged for a moment under her skirt. Davis' eyes hardened when he saw the gun in her hand—small but businesslike. Chances were that it threw the new high-velocity slugs that bowled a man over like a cannon ball.

There was a brisk knock on the door. Stooping, the girl slid the little gun across the floor and under the bed. A key rattled in the lock and two men stepped into the room.

The smaller of the two was Slip Hanlan. Every man in the Patrol knew his face and record. He was sleek and dark, with a ratty little mustache. He had a long, red scratch down one cheek which might have been made by an enameled fingernail. The man with him was the standard slugger—burly, empty-faced, thoroughly overdressed in imitation of his leader.

At Hanlan's gesture the gun lug closed the door and leaned against it. The gang leader looked the girl over coolly from head to toe and she stared calmly back at him, eye to eye. Straining furiously at his bonds, with the little gun lying un-

der his very nose, Davis watched apprehensively.

"We have visitors." Hanlan was going to be silky about it. "Know anything about 'em? It wouldn't be nice to have 'em trying to bust in where they're not wanted."

The girl stared at him, blank-

facéd. "What do you mean?" she inquired.

His smile was very like a snarl. "I mean that if any snooping sons of crumb-worms interfere with our little conference it might be embarrassing for you. Regent's Daughter Surprised With Gang Boss. Dé-



Using leaves to protect his hands, he climbed inside the air-conditioner and started bending pipes aside.

butante In Jungle Rendezvous. That stuff! It'll stink!"

She sat down on the bed and crossed her long legs calmly. "There were friends with me who know what really happened. The Patrol knows by now. Probably they're getting ready to give you the going over you deserve! They've wanted to get something on you for a long time. I'll enjoy watching them!"

Hanlan's little laugh was nasty. "Whoever it is out there is lying low," he told her. "The Patrol don't act like that. As for those monkeys you were with, they're keeping cool where nobody'll bother 'em until I say so."

THE STRANDS of twisted cloth with which Davis' hands were tied yielded so suddenly that he nearly rammed his elbow into the wall behind him. He pulled the gag out of his mouth and unfastened the hobbles on his legs, then cautiously picked up the little gun. It was loaded.

"Plug." Hanlan jerked a thumb at the lug by the door. "Get outside and tell the boys to keep an eye open. Old Bradshaw may have put a scout on the babe here, but it won't do him any good. I'm calling the play from here on."

"Are you really?" Anne Bradshaw's voice dripped icicles. "And what is the play, as you see it?"

Hanlan's nasty little smile vanished. "I'm sick of being kicked around by stuffed shirts," he snapped. "Twenty years ago every one of 'em was doing what I've done, an' getting rich on it. They were pioneers an' I'm a criminal. They're rich an' have fancy mansions, an' I have to hide out in a stinking shack. They've killed and thieved and cut the government's throat, and they're respected for it. Well . . . I'm joining 'em!"

"What do I have to do with that?" There was a satin-smooth note in the girl's voice that made Davis suspicious.

"You're my ticket," Hanlan sneered. "Right now there's a bill on the regent's desk. It's had the vote of all the council and all he's got to do is put his name to it. It leases the government development on the West Continent to the Dobermann Colonization Association for ninety-nine Earth years. The association has to build roads and houses, and provide transportation for good, able-bodied, honest settlers who want to come out and be big shots in a new world. They're all members of the association, and if they're still alive after ten years they can sell out or sign up for another ten. If a man don't stick out his time, he pays cash for every day he's used the land and every mouthful of food he's put in his belly up to the time he quits. The government goes his bond when it picks him to come out here and sells the association the idea he's a good risk. If he can't pay up, or won't, his holdings go to the association outright, on account of the trouble and money it's put into him. It's legal and it's respectable. Only . . . if the regent should somehow get the idea that Felix Dobermann, the millionaire promoter, is also Slip Hanlan, he might let his own respectability run away with his common sense.

"That's where you come in. While he's reading that bill over an' reaching for his pen he'll be remembering where his daughter is, and how long you've been here, and the kind of stink the papers will make if they hear about it. He'll remember that Slip Hanlan never back-tracks on his say-so and that you're O. K. unless something happens to that bill. If it was crooked he might hold out,

but it's legal and it's got big men behind it. Bigger than he is, maybe. So . . . he'll figure what he don't know is none of his business and maybe Felix Dobermann is just as good as any other man with the same money and the same friends. He'll sign . . . and ten minutes after he does you'll be on your way home. Simple, ain't it?"

ANNE BRADSHAW began to laugh. It was silvery, taunting laughter, but there was nothing hysterical about it. She was just very, very much amused about something, and from what Davis could see of Slip Hanlan's face the gangster didn't like it much.

"So that's it!" she gasped. "Slip Hanlan . . . a social climber. Trying to buy into the white-coat circle. I suppose Felix Dobermann would be trying to buy himself a seat on the council after a while. Maybe he'd like to be regent, after the big boys got to know what a square guy he is. It's *funny!*"

Davis saw Slip Hanlan's lips curl in a snarl of fury. No dame laughed at him! He slipped back the safety catch on the little gun. Then something crashed into the back of the shack with a shock that brought flakes of concrete rattling down from the ceiling.

It was a privilege to watch Hanlan draw. There were guns in both hands before he had turned. As he reached the door a second blow shook the hut. A long crack opened in the rear wall and more fragments of concrete dusted down.

The door burst open in his face. It was the slugger, Plug. The man's eyes were popping. "Slip," he cried, "they're rollin' rocks down on us! Whatta we do?"

There was no silk in Hanlan's snarl now. "Get out there with the

Manton and cut their guts out! Use hot stuff on 'em. If they want to play, we'll play with 'em!"

As the door closed behind them Davis was crawling out from under the bed. The girl confronted him, face white, blue eyes blazing. "You meddling fool!" she snapped. "Can't you play detective somewhere else?"

Another boulder struck the rear of the hut with terrific force. Davis remembered the steeply mounting ledges behind the clearing. Gibbon was using a potent weapon, but against a Manton rapid-fire gun with explosive bullets five naked men would be like babies. Why hadn't the fool stayed put!

What was left of the girl's skirt after she had bound him was on the bed. He twisted it around his middle in a kind of kilt and cautiously tested the door. It was unlocked. He eased it open.

There were three men with Hanlan in the outer room. A frantic pounding began on the outside door. One of the three pulled it open. A man crumpled on his face on the floor. Something whizzed past Davis' head and stuck singing in the door beside him. It was a long sliver of wood, smeared with some black stuff that smelled like dead fish. As they rolled the man over he saw a second dart buried in his throat.

A man whimpered as another blow rocked the hut. "Whatta we do, Slip?" he wailed. "They got poison on them darts. They got Plug an' Benny, too. Whatta we *do?*"

"We sit tight!" Hanlan snarled. "They can't get us by rollin' rocks. Blowguns won't shoot through concrete. We can wait as long as they can, an' when old Bradshaw gets wise to himself he'll call 'em off!"

"Will he?" Davis stepped out into the room, his gun ready. "Those

are my men out there, Hanlan. The men you left sitting on a rock in the middle of the ocean. The regent has nothing to do with them. Open that door."

There was an ugly glint in Hanlan's eyes. It changed suddenly as something dropped over Davis' head, binding his arms to his sides. A slim leg tangled with his and he went down with the girl on top of him.

PROPPED against the wall with his wrists wired together and his legs doubled behind him, Davis watched furiously as Hanlan and the girl faced it out across the little room. She had the gun now, and Hanlan seemed distinctly uncomfortable.

"You talk like a politician, Mr. Hanlan . . . or is it Dobermann?" she said coolly, "but you don't think like one. Who really planned your little deal for you? Who taught you the pretty speech you made just now? My father has been very curious about that ever since he heard that your precious association was lobbying for a land-grant. He wants settlers on Venus, but he doesn't want them exploited, you see. And he's not interested in figureheads. He likes to get to the bottom of things, and so do I."

Hanlan eyed her sullenly. The nose of the little gun was leveled at the fancy silver buckle on his belt. He said nothing.

"The naked gentleman was telling the truth," the girl told him. "I'm perfectly able to take care of myself without calling in the Boy Heroes. I came here on my own free will, to see just what your game was and how you were going to play it. I want to know who is playing it with you."

"What does it get me?" Hanlan demanded. "I been paid well to

keep my mouth shut about that. Why should I spill it to you?"

"That's a good question," the girl admitted. "You're really a business man. You've lost two men, you know. You can't leave this place until someone calls off that blowgun squad." She lifted one slim foot and unfastened a silver rosette from her shoe; tossed it to the gangster. "That little gadget has been buzzing ever since you picked me up," she told him. "There's a coast-patrol cruiser off shore now, listening to it and waiting for me to signal them in. There'll be a kidnaping charge against you. Our gallant hero here may want to add a charge of *lese majeste*, unless you give him back his badge and uniform. Tell me what I want to know and we'll all walk out of here together like old friends."

An oily smile had crept over Hanlan's face. He flipped the little transmitter lightly in the air and caught it again. "Clever, ain't you?" he jeered. "The boat that brought you here was screened against gadgets like this. This shack is screened. Nobody's heard it, and nobody's going to."

Davis thought the gun wavered a little in the girl's hand. His own patience was exhausted. "Stop your crazy chatter and untie me," he growled. "I have men out there who can handle him if you haven't. The Patrol knows how to deal with lugs like him. Now we've got something we can prove on him, there'll be a hundred rats squealing about other things we've known for years but couldn't prove. That's what his kind is like. You won't have to worry about Mr. Slip Hanlan Dobermann!"

Anne Bradshaw's eyes blazed. "I expected that of you!" she cried. "The way you blundered into this

affair in the beginning was typical of you high-and-mighty tinhorn policemen. You got what you deserved, and I'm glad of it! The Venus government is handling this business in its own way, and that happens to be my way. The Space Patrol will have nothing whatever to do with it."

Davis wriggled into a sitting position. The maneuver brought his bound wrists against an angular bit of steel that had been digging into his shoulder for the past several minutes. It was apparently a bit of the skeleton of the shack, and it was firmly anchored where it would do the most good.

"When I do get out of here we'll see who handles this case how!" he retorted. "If you think the Patrol or the Triplanetary Commission is going to stand by and see a lot of fat-headed politicians exploit some poor half-starved imbeciles who'll sign anything for a chance at a decent living, you're mistaken. I know too much. My men know too much. Maybe Hanlan and his lugs won't be the only ones we lock up!"

The girl turned her back on him with a jerk. She was fairly quivering with anger. "Mr. Hanlan," she said. "You're looking for a chance to be respectable. All right, you can have it. For the information we want, you can be Felix Dobermann. We want settlers here, and the people who can hurt them are the crooked politicians, not nobodies like you. Tell me who is back of this deal and we'll forget I ever left Laxa. We'll forget there ever was a Slip Hanlan. I think you can make sure that the news doesn't slip out in any other way."

Hanlan's jaw sagged. His beady eyes scanned the girl incredulously. "What are you drivin' at?" he demanded.

ANNE BRADSHAW never answered, because at that moment one of Hanlan's gunmen let out an anguished yelp and batted at his neck. A new sound impressed itself on Davis—a shrill, humming whine that grew louder every minute. Hanlan himself ducked violently and began to wave his arms like a madman. Then Davis saw them—a little cloud like a wisp of black smoke, streaming through the ventilator grille above his head. Midges!

He sawed furiously at the wires that bound him. Midges had made their life miserable in the jungle. Their bite was sheer torment, and men had been killed by them. Mulligan had found a plant whose odor kept them off, but the cure was about as bad as the complaint.

The room was full of the little demons. The four men were stamping, swatting, stumbling blindly around in what must have been an agony. Then the first of the midges found Davis. Its bite was like a hot needle, pouring vitriol into his veins. Through the tears that filled his eyes he saw Anne Bradshaw, backed against the door with an arm over her eyes, the gun pointed waveringly in front of her.

"Keep back!" she cried. "You'll stay here until you answer me . . . every one of you!"

The wire on Davis' wrists seemed looser. He hooked the loop under the little point of steel and jerked on it with all his might. A stab of fire under his left ear and another in his thigh spurred him on. The wire broke. Tottering on his bound legs, he snatched the fragment of cloth from his waist and stuffed it into the ventilator, then dove for the safety of the floor just as Hanlan lunged at the girl.

She was blind with the pain of the midge bites. As Hanlan caught

her around the waist her little gun went off with a wicked *spat*, bringing a howl of new pain from one of the three gunmen. She came spinning across the room, tripped over Davis' prone form, and fell. Then Hanlan yanked the door open and there was a rush for the open air.

Through half-closed eyes Davis saw Slip Hanlan go down like a rag doll under an enormous club wielded by a monster out of nightmare. There were five of the things, black and shapeless, plastered from head to foot with dripping, stinking mud and swinging their clubs with a will. Clouds of midges swarmed like smoky halos around their heads, and there were tufts of leaves growing out of their scalps and behind their ears as though they had taken root and were sprouting.

One of them was fumbling with the wire on his legs. Another was bending over the girl. The door was shut again and the midges were no longer pouring in through the air intake. Painfully, through one good eye, Davis surveyed the besmeared, one-armed monstrosity which was presumably Top Sergeant Gibbon.

"Account for yourself!" he barked. "You had orders to stay where you were until I signaled an attack. I gave no signal."

The mud-covered figure snapped to attention. "Yes, sir. It was Mulligan, sir. I saw 'em whisperin' and then the four of 'em jumped me. By the time I got loose Mulligan and the kids was rollin' rocks down on the shack and the professor was whittlin' himself a blowgun. When he poked a hole in the air filter and began pourin' in some stinkin' stuff as bait for the midges, I figured I might as well lend 'em a hand."

The girl was staring in bewilderment at the mud-covered figure bending over her. "It's Tomkins,

Miss Bradshaw," it said apologetically. "Professor Tomkins, from the University. I was with you when . . . when it happened. Remember?"

That silvery laugh made Davis wince. He distrusted it. "If father could see you now!"

The little professor undoubtedly blushed under the mud. "They took our clothes, you know," he told her owlishly. "All of them. But for Captain Davis and Mr. Mulligan, we might not be here."

"Not *the* Captain Davis?" She was being acid-sweet. "I've heard so much about you, captain. I hardly expected to meet you so . . . informally, shall we say?"

Someone had brought in a blanket. Davis draped it around himself like a toga and drew himself up with what dignity a badly swollen face left him. She didn't look much better herself, he reflected with satisfaction.

"Bring them in here," he commanded. "All of 'em. We're going to have a showdown!"

THEY lined up across the end of the little room. Hanlan and his men were swollen and sullen, Gibbon looked sheepish, and the professor and the two boys had dried a little and were beginning to peel. They looked thoroughly embarrassed, in spite of the clothes they had managed to find. Only Mulligan and the girl seemed calm.

The old man ambled in after the others, black gobs of mud still dripping from his broad body. "Too bad you got bit, cap," he said solicitously. "It looked like the best way to smoke 'em out, when the rocks wouldn't fetch 'em." He giggled. "Last time I remember rollin' rocks on anyone was clean back when I

was just a cub. The Horse-Eaters was tryin' to take over our caves an' we stood 'em off until our food give out. That was when I got hit on the head. They was a doctor once claimed that might be why I'm so old. I heal quick, like a lizard when you pull his tail off. I dunno how many sets of teeth I had. They just keep on pushin' out an' comin' in again."

"The blowguns were the professor's idea," Gibbon volunteered. "They found some kind of big red snail with poison in it that keeps a man paralyzed for two . . . three days. Mulligan knew about it. Then the two of 'em kept the door covered while the boys rolled rocks."

Tomkins blushed under his mud. His face, with a disreputable stubble bristling on the chin, was almost clean. "As an anthropologist I have had the opportunity to observe primitive man and study his methods of assault and defense," he explained pedantically.

"Just a moment!" The girl's voice was very quiet but it held a sting. "As representative of the Venus government I happen to be in authority here. These gentlemen will bear me out. And I intend to find out before we leave this room who is really behind the land grab to which Mr. Hanlan is so naively hitching his wagon. When Mr. Mulligan . . . interfered . . . I had made an offer. It is still good."

Davis stared at her aghast. "You'll let that crawling worm get away with this?" he demanded.

She eyed him calmly. "That was my offer," she said. "The government has enough information about Mr. Hanlan to make a very good executive out of him if he chooses to turn his talents and his money to such a worthy project as colonization of the West Continent. I'm

sure he will co-operate. If he agrees, we will forget about what may have happened in the past few days . . . all of us. That is an order, too. You understand orders, of course, Captain Davis."

A grin spread over Mulligan's long face, cracking its crust of mud. "I got a few scars here some place 'at Slip Hanlan give me one time," he observed hopefully. "That was quite a while back, when he was just a punk. I'd be willin' to persuade him for you, ma'am."

"Forget it!" Hanlan's swollen face was dark. "It'll be a pleasure to see the fat slob get it in the neck. Cookson is the one who's behind it. I put up the scrip and he put it through the council . . . for half the profits. Only half wasn't enough. If I didn't cut him a bigger piece, he was going to let the regent know about me and get the whole deal turned over to his Department of Immigration, to be handled at government expense until the council could be sure everything was over the table. That's why I grabbed you . . . so the regent would think twice about listening to what he might have to say. You gimme a chance and there won't be any more Slip Hanlan. You have Slip Hanlan's say-so for that!"

STUFFED into pants that were too small for him, Davis sat gloomily in the stern of the coast patrol launch that had come at Anne Bradshaw's signal to pick them up. Dimly, through his gloom, he heard Old Man Mulligan's hoarse voice making highly mythical replies to Professor Tomkins' persistent questions. Maybe he *was* a Neanderthal hangover who had lived out the whole span of human history. He was old as the hills, and he had more practical information tucked away

in his skull than any illiterate Irishman could ever learn, even in the four generations that men could swear to. Maybe he *was* Moses' father-in-law and Abraham's body-guard and Julius Caesar's blacksmith. Maybe he *had* won the American War and the Battle of the Drylands and beaten Morgan to Venus. What difference did it make?

What it boiled down to was that the Space Patrol had been given a going-over by a cocky girl and a doddering old man. It had lost its pants, not to mention its shirt, and it was being ferried back to Laxa by those damned mud-bound landsmen of the coast patrol to be the laughingstock of every needle-headed nincompop in the System!

He'd show 'em yet what the Patrol was! If any living being so

much as breathed a word of what had happened, he'd blow their pretty little deal wide open! He'd give Slip Hanlan a going over that would last him as long as he could remember. He'd make old Bradshaw bow and scrape and back water like a crab. He'd get Old Man Mulligan roaring drunk and put him in the Patrol where he'd learn what discipline was like, if he had to drink the old liar silly himself to do it. And as for that girl!

He colored at the flashing smile she threw him. Maybe she could read minds. He hoped so!

He sucked in a long breath of fishy, clammy fog. He'd be glad to smell the tang of canned air again. He'd be glad to get off his hog-wallow of a world and feel space under him again. He'd be glad to see the stars. Damn glad!

THE END.

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LEGACY

By Nelson S. Bond

His inheritance was remarkable—a robot with far-from-human intelligence, capable largely of making a nuisance of itself. Or so it seemed—

Illustrated by Orban

WE were about five minutes out of the Mars H-layer when the door of my control turret banged open and in popped Cap Hawkins.

I took my feet down off the audio banks and shoved the copy of *Space-*

ways Weekly I had been reading out of sight and said: "Look, skipper, I can explain everything. I—"

But for once he was too excited to stunt my growth with verbal vitriol. His gray hair was bristling like the

antennæ of a Jovian glowworm in a thunderstorm; his optics were sticking out like they grew on stalks. He clutched my arm and yammered: "It's come, Sparks! I got it by messenger just before we lifted gravs from Mars Central. Come along! I'm gonna open it now."

He had me halfway down the corridor before I got a chance to gasp: "That's swell, skipper. But if it's all the same to you would you mind telling me what you're talking about? What did you get? What are you going to open? You haven't been writing to the Lonely Hearts Club again, have you?"

He turned pink and snorted: "Blast your jets, Bert Donovan, you know damn well I never done nothin' like that. Or hardly ever. You're the dumbest radioman I ever met, an' that's sayin' a lot. Don't you remember me tellin' you that my uncle Lester died?"

I said faintly: "He . . . he didn't send you his mortal remains, I hope."

"No, you idiot! But his lawyers sent me the legacy he left me in his will. You oughta see! It's in a crate in the storage chamber. It must be somethin' terrific. The old man was as rich as a twelve-egg cake, an' I was his favorite nephew—"

"There's no accounting," I told him, "for tastes." But I was curious now, too. So pretty soon we were standing in the storage chamber, armed to the fingertips with hammers and crowbars, looking at a crate that had been delivered all the way across space from Earth to the *Andromeda*, somewhere off Mars.

The skipper looked like a cat in an aquarium. His grin was as broad as a lensman's shoulders. He spit on his hands with gusto and squealed; "O. K., Sparks, let's go!" So I spit

on mine with saliva and did all the dirty work, while he stood around yipping and hollering every time I pried off another plank.

After a while, I was sweating like a Mercurian miner and the floor of the storage room was ankle-deep in lumber. But the crate was open, and there before us was a mysterious something draped in burlap like a mummy in a jute topcoat. I said: "Well, here goes! Now we'll see—" and made a pass at the canvas, but the skipper stopped me.

"Gently, Spark, gently! It may be something very fragile. There's no hurry. It took us a long time to get it open; we can be patient for a few more seconds."

"We?" I demanded. "Where do you get the community spirit? I—"

Hawkins wasn't paying me any neverminds. With the stuffy aplomb of a politician unveiling a small-town memorial statue of himself, he snipped the cords, laid tender hands on the burlap, tugged.

"There, Sparks!" he declaimed. "Behold the gift of my late, dearly beloved Uncle Lest—"

Then he stopped, strangling. For staring inperturbably into our startled eyes was a rusty, worn-out, thousand-time-patched-and-welded robot!

THE WORST part was it wasn't even a *new* robot! A new robot would make a pretty nice gift for anybody—maybe not the kind Cap Hawkins had been expecting from his uncle, but a pretty nice gift just the same. Robots cost about two thousand credits, F. O. B. Birmingham, and many a housewife on the outer planets has sobbed herself to sleep because friend hubby couldn't afford to buy her one.

But *this* jellopy was one hop-skip-

and-jump from an antique collector's trophy room. It was about a 2189 model, which is to say approximately twenty years behind the times. It was one of the early experimental "androids," with only two arms, frontal visual apparatus, manual control buttons and knee-action stride instead of rollers. It was all steel; it didn't even have rubberoid foot soles. At a rough guess, I'd say the thing was worth maybe fifty credits—depending on the gullibility of the buyer.

All this I saw while Cap Hawkins was collapsing of grief, rage and disappointment at my side. Then suddenly he decided not to have apoplexy, and he reverted to type. With a roar, he grabbed the crowbar from my hand and upped motors toward the silent robot.

"Legacy, eh?" he howled. "So this is the legacy I get from my dear, departed uncle—fry his tight-fisted hide! Lend a hand, Sparks! I'm gonna bust this here fugitive from a junk pile into a million rusty rivets! Take *that!*" yelled the skipper. "And *that!*"

Metal went *whonk!* against metal; one of the robot's legs slipped and the crash was deafening. Cap Hawkins' gift sprawled seven ways from Tuesday, but as it fell its fingers let fly a scrap of paper. I picked it up, saw the writing on the envelope, and was just in time to halt Hawkins' mashie shot at the android's cranium.

"Hold everything, Cap!" I squalled. "Here's a note addressed to you. Maybe it explains—"

"If it's from *him*," bellowed the skipper, "I ain't interested. Well, gimme it! What the hell's the idea of readin' somebody else's mail? Hm-m-m! It *is* from him—"

I read the letter over his shoulder.

AST—3

It was short, somewhat cryptic, and to the point:

DEAR NEPHEW CLARENCE:

This is Jessifer. Treat him well and follow his precepts and he will bring to you the same kind of happiness that has lightened my life.

The voice of Jessifer beside you in space should lead you to glowing contentment. He is not, as man, prone to error.

Your affectionate

UNCLE LESTER.

P. S.: Button No. 3 controls his speech.

Cap Hawkins gargled the message twice aloud, snorting like a grampus. "Same kind of happiness that lightened his life, hey?" he howled mournfully. "The credit-hoardin' old miser! I bet he had safe-deposit vaults built into his coffin. 'Glowin' contentment' your eye! I'm burned up, if that's what he meant. Get outta my way, Sparks! I'm gonna chop that museum piece into buck shot. *Jessifer!*"

And once again he prepared to play anvil chorus on Jessifer's wishbone. But I said: "Aw, take it easy, skipper! Jessifer's not a bad-looking stovepipe. Maybe Slops can set him to work in the galley. Anyway, it won't hurt to see how responsive he is—"

I levered Jessifer to his feet again and found the button Uncle Lester had mentioned; pressed it. Current hummed through Jessifer's frame, the beam lights of his eyes lighted dimly. There was a confused gobble-gobble in his audio, then he said, loudly and distinctly, "All things come to him who waits!"

Cap Hawkins stopped cold in his tracks; shivered like a nudist on Pluto. He said, in a tone of wan, hollow hope: "Sparks . . . didja hear that? It was all a gag. Dear ol' Uncle Lester was just kiddin'. This is his way of advisin' me how to get his fortune—"

But Jessifer was talking on, slowly,

methodically, mechanically. And if his speech was advice to a credit-hungry space skipper, I'm a snail man from Sirius. There was no coherence to Jessifer's speech. It was composed of nine hundred and six adages—old saws that have been passed down through time from the quaint old jaspers of the Business Age.

"A stitch in time," Jessifer was saying, "saves nine. The early bird catches the worm. An ounce of prevention is worth a pound of cure. Look before you leap. Early to bed and early to rise, makes a man healthy, wealthy and—*awrk!*"

The last, friends, was not on the script. It was the fingers of Cap Hawkins clawing Jessifer back to silence.

So that, to converse in monosyllabic grunts, was that. Cap Hawkins sobbed openly for fifteen minutes. After he had sponged the salt off his leathery cheeks he decided:

"Sparks, I ain't gonna have that no-account, 'Poor Richard's Almanac,' advice-quotin' hunk of tin any place in the *Andromeda* where I can see it. I don't want it near the bridge, or in my quarters, or down here, or even in the galley where it would make Slops cook worse than he does. So you take it. Put it in your radio room."

I said: "Is that what you want me to do with it?"

"No," he said, "but it's too big for what ought to be done. G'wan, get it outta my sight before I decide to massage it with a blowtorch."

So I got Henderson and Jorgens to carry it up to my turret. I stood it in the corner, and in my spare time I worked on it. Since I'm not as bad an electrician as the skipper likes to pretend, I got it into first-class working order after a while. First-class,

in this case, meaning I got the legs and arms to working so Jessifer could clump around on his own props, could fetch and carry and do all the heavy, menial tasks commercial robots are supposed to do.

I found stripped wires in the television, replaced them, and was rewarded by finding that Jessifer's eyes could light properly again. I put a new audio needle in the sound box. That, lads and lassies, was a sad mistake. Jessifer waxed voluble. From that moment on, I became the target for the collected bromides of the centuries.

First thing in the morning, Jessifer would warn me that "Prosperity is just around the corner." What ancient dope invented that one is mankind's No. 1 prankster; a million humans have developed astigmatism trying to squint around that right angle. Then all morning, while I was trying to earn my board and keep, Jessifer would keep up a running fire of comment to the effect that "A rolling stone gathers no moss" and "Birds of a feather flock together."

All day long. Evidently Jessifer wasn't intelligent enough to heed one of his own adages: "Speech is silver; silence is golden."

Aside from that, he wasn't much trouble. On only one occasion did I have any trouble with him. That was one afternoon, about the tenth day out, en route to Summer City, Io, when Lieutenant Dick Todd dropped into the turret for a chat. He just about got through the portal and had waved a greeting when—

"*Pweel!*" said Jessifer.

Todd started. So did I. Jessifer's eyes, oddly, had lighted. Now, as we stared at him, his right hand began to rise. He pointed squarely at Todd's midsection, and in a faintly

querulous, tinny voice said, "Pweel" again.

Todd gasped, "What the hell, Sparks—"

"It's fate," I told him solemnly. "After all these years, Dick, you've finally found the one person to whom you are attractive."

"Yeah?" said Todd belligerently. "Well, wise guy, at least *one* person—"

"*Look out!*" I yelled. Because Jessifer, clucking like a thwarted mamma hen, had suddenly lurched out of his corner. His eyes glowing brighter by the second, both arms upraised, he was clump-clumping toward Todd.

Todd was pale but game. He groped in his belt for his needle gun, but I grabbed his shoulder and shoved him to the door.

"Don't ever argue," I yelled, "with a fast express or a robot. Beat it. I'll find out what's the matter with Jessifer."

But I didn't. The moment Todd hoisted gravs, the robot went to sleep in the middle of the floor. I took down his wiring and couldn't find a darned thing wrong. The only part I didn't touch was a square box in his cranium, sealed and hard-forged. I didn't take that apart because I didn't know whether I could get it together again or not.

ALL THIS, to keep the record straight, took place while the *Andromeda* was warping space lines from Mars to Jupiter. It's a long trek for the fastest vessel, which the *Andromeda* is anything else but. The *Andromeda* was an ancient crate, built way back before the beginning of the century. It was old, and slow, and leaky at the joints. It had long since been taken off the passenger service by order of the SSCB—Space Safety Control Board—and

was now used only for freight transport.

Even that on sufferance. We were all hoping, from trip to trip, that the corporation would continue to let her ride the spaceways. Else we'd all be out of jobs.

So, as I say, it was about a hundred-day drag from Mars to Io. Time passed, as time has a habit of doing, and the first thing you know we were getting ready to hurdle the asteroid belt. It was about this time that Jessifer, bad luck, and the corporation officials all began acting up at the same time.

FIRST crack out of the box, I was wakened out of a sound sleep by the irate voice of Cap Hawkins. The skipper shook me out of a swell dream, all about a blonde I know, to scream in my ear: "Sparks! Wake up, you lazy son of a space comber! Where's your watch?"

I said drowsily: "If you want to know what time it is that bad, why don't you look at a clock? There—on the night table by the bed—"

"You think so?" stormed Hawkins. "Look again!"

I looked. The table was as empty as the inside of a cloud chamber. I said: "That's funny. I put it there before I went to sleep. I don't know what—"

"I do!" snorted the skipper. "It's that confounded robot of yours."

"Oh," I said, "so he's *my* robot now?"

"He's a thievin' rascal. Last night Chief McAndrews an' I were havin' a little game of stud—"

"Now who's a thieving rascal?" I interrupted.

"Keep a civil tongue in your head, Sparks. As I was sayin', last night Chief McAndrews an' I were havin' a quiet little poker game, when all of a sudden that there damn robot

came stalkin' into the room. He was makin' funny noises. He didn't attack me, but he walked right over to McAndrews an' jerked the wrist watch right offn the chief's arms! Like to busted it, he did."

"If the band," I guessed, "was as tight as McAndrews, the arm probably went with the watch. So Jessifer's got time on his hands, huh? Well, what do you expect *me* to do about it?"

"Go up to your turret an' collect them watches! Yours an' McAndrews isn't the only ones he stole. He went all over the ship last night an' collected every watch on board!"

"Then what's that thing in your vest pocket?" I demanded. "A sun dial?"

"Well . . . almost every watch. He missed mine an' the third mate's an' Doug Enderby's. Get goin', Sparks!"

So I went up to the turret, and it was just as the skipper said. Jessifer had turned ticker collector. He was standing in his customary corner, quiet as a lamb—or maybe I should say a hydraulic ram, because he had steel wool—cuddling close to his metallic bosom a round dozen watches! He was crooning to them, so help me! His eyes were glowing placidly, and he was murmuring over and over: "Bwaaa! Bwup! Bwaaa!"

I said reproachfully, "Now, Jessifer!" Whereupon his innards clacked and he said, with firm dignity, "Honesty is the best policy!"

"Check!" I said. "And birds of a feather gather no moss. Gimme! Give to papa!" But Jessifer wasn't giving out. I had to switch him off before I could take the things out of his hands.

From the doorway, the skipper watched the proceedings bitterly. "That," he pledged, "is the last straw! I'm through messin' around with that tool chest full of old saws.

Tomorrow he goes out the space lock. Or maybe this afternoon. Come to think of it, what's wrong with right now?"

"Nothing," I said, "except that my radio is about to bust a vacuum tube. Stand by, skipper. Sounds like somebody's in a hurry."

WHICH just goes to show you how you never know the world's going to turn upside down until *bingo* there you are on the bottom.

I cut in the banks with the greatest of ease—and proceeded to get my heart broken in one simple sentence. Because it was a message from the government relay station on Pallas, and it said, curtly:

HAWKINS,

COMMANDING S. S. *ANDROMEDA*.

TURN *ANDROMEDA*, WARES, CHATELS, EQUIPMENT OVER TO IO METALS CORPORATION IMMEDIATELY UPON LANDING SUMMER CITY.

CHALLENGER, PRESIDENT, IPS.

You could hear my heart drop. It made a loud plunk in the room and the skipper grunted, "Well, Sparks?"

"Far," I told him mournfully, "from it." I handed him the flimsy. He read it, wailed, and dropped into a seat, pawing his grizzled pate wildly.

"Sold down the river! After all these years, sold down the river, Sparks!"

Well, that's corporation gratitude for you. I was a young man. I'd find another job—eventually. But Hawkins was an old spacehound, just barely hanging on. If the *Andromeda* were sold, he'd never get another command. He'd get a watchman's job on a Lunar outpost, maybe, or be transferred to lightship duty on one of the planetoids. I said: "Wait a minute, Cap. Sit

tight. I'll see what I can find out."

I switched the verniers to the eight-plus band and contacted Bud Murphy, the Pallas operator, on a private wave length. I tapped out, "Just got the official notice, Murphy. What's the lowdown?"

"The *Andromeda* has been sold, Bert," he shot back, "to the Ionian freight shuttle. You and the gang are ordered back to Earth."

"It's a long walk," I reminded him.

"The *Spica* is standing by to pick you up." It was Murphy transmitting, all right, but somehow it didn't sound like his fingers. You get to know bug-pounding styles after a while. I knew Murphy was embarrassed and sympathetic, but didn't want to make me feel too bad. He ended up: "Somebody cutting our wave, Bert. So long, and—chingo regrejimmol!"

Which is Universal for "damned sorry, pal!" but it didn't do us much good. I turned again to the skipper.

"Isn't there anything we can do, Cap?"

He shook his head. "Nope. We've lifted grav's for the last time, Sparks, on the *Andromeda*."

"But maybe they'll change their minds—"

"Wishful thinkin', Sparks. The corporation's only altered a decision once in the past twenty years. That was when old Cap Lafferty, after bein' ordered to scuttle the *Explorer II* in the Sargossa, came lumberin' home triumphant with a space claim on a diamond-dust asteroid." The skipper rose slowly. His shoulders sagged. He'd aged five years in as many minutes. "Well . . . that's the end, my boy. I wish it coulda been different, but— What did you say?"

"Nothing. It was him," I answered apologetically.

And Jessifer repeated his ill-in-

spired adage in a louder voice. It was the worst example of poor taste I ever heard from a robot.

"Easy come, easy go!" he quoted.

WELL, life on the *Andromeda* is never what you might call a three-ring circus. And the long hauls, like the Mars-to-Io jump, are always monotonous. But I never knew a trip to be so dismal as were the next few days of that trek.

The skipper was one big hunk of melancholy dressed in officer's blues as he guided the *Andromeda* out of the plane of the ecliptic, hurdling the asteroid belt to avoid collision with one of those countless millions of frozen rocks swarming around the Sun between Mars and Jupiter. His gloom communicated itself to the rest of the brevetmen; there were times when the officers' mess was as light-hearted and gay as the receiving room of an abattoir.

The crew, even without being told, sensed something wrong. In an effort to liven things up, without being ordered to do so they went to work and housecleaned the *Andromeda* from tip to base. I tell you, the old lugger simply shone. Which was heartbreaking in itself. It looked like a shiny new coffin being delivered to the mortician's clip joint.

The only cheerful voice in an atmosphere of deadly monotony was that of my canned companion, Jessifer. He made my life miserable with his interminable rumblings of sage advice.

"Be good, and you'll be happy," he said one night for no apparent reason while I was playing solitaire.

I started guiltily and moved the queen of diamonds back where I'd taken it from. Then I realized it was Jessifer making with the antique chromos.

"Be good," I snarled back at him, "and you'll be *sappy!* I wish you were stuffed with tomato juice instead of wires, wheels and advice."

"'Tis better to have loved and lost," returned my perambulating hardware store stolidly, "than never to have loved at— *Pwee!*"

"*Pfui, yourself!*" I said. Then I squinted at him anxiously, recognizing symptoms. Because his eyes had begun to light up again with that same glow that had limned them when he made a pass at Dick Todd and when he went on his one-robot timekeeping expedition. "Hey, you!"

The glow became brighter. And, "Bwaaa!" Jessifer rasped. "Bwaaa! Bwup! Bwaaa!"

I jammed in the audio and yelled at Cap Hawkins on the bridge: "Hey, skipper, call out the reserves. The adage machine is on the loose again!"

"Disconnect the damn thing!" ordered the chief. I turned to do so, but it was too late. For Jessifer, getting louder, if not funnier, by the split second, had roused from his corner. His right hand was pointing over my head; his eyes were shining like sealed-beam headlights, and he was on the move. For the doorway!

I let loose a frightened squawk and hightailed it after him. But it was no use. Did you ever chase a robot? It's like pursuing a meteor in a kiddie car. I matched him step for step, but his steps were twice as long as mine and ten times as noisy. Not that the *clumpety-clump* disturbed my eardrums. I could hardly hear it for the greater din he was perpetrating with his audio-diaphragm. As the "pwee" sound had given way to the "bwaaa," now the "bwaaa" had been supplanted by a wild, exuberant bellow.

"Whorrooo!" Jessifer was howling as he sped up the corridor, turned

into the ramp that led to the bridge. "Whorroo! *Whooooooo!*"

Cap Hawkins heard us coming. Why not? He stepped to the door of the control cabin and took one frightened eyeful. "Turn off the siren, Sparks!" he yelled. "What the blue space do you—"

Then Jessifer breezed past him so fast that ozone crackled around the skipper. Right into the control room. He paused there for a moment in the middle of the floor, as if orienting himself. His body turned, his right arm jabbed skyward and to the starboard declension line. "Whorrooooo!" he bleated.

"Crazy!" yelled Hawkins. "A crazy robot! That is a fine gift. Bless my uncle Lester!"

"Beware the Greeks," I told him, "bearing a gift horse in the mouth. Don't stare at me, skipper. I got that way listening to Jessifer. What's he up to now?"

For Jessifer, as if his mechanical brain were finally settled on some obscure point, had suddenly stalked to the navigator's seat. With steely deftness he picked up Lieutenant Todd and thrust him out of the way. Then he sat down in the seat; his fingers groped for the control keys.

Cap Hawkins shouted: "Migod, don't let him touch those controls! We're right in the middle of the asteroids. He'll crack us up, sure as—" And his hand groped for the pistol in his belt.

AND then, folks, something clicked in my brain. I suddenly experienced that phenomenon known technically as an "idea." What's more, it made sense.

I grabbed the skipper's arm, jerked it aside just in time to save the howling Jessifer from becoming a heap of fused rubbish. "Stop,

Cap!" I yelled. "Let him alone. It's all right!"

Hawkins turned shocked eyes upon me. "Now *you've* gone crazy, too, Sparks? Well, by golly, I'll hafta lick the two of you. I ain't gonna lose this ship without a fight."

But I wrenched the pistol from his hands. "He who fights," I told him, "and pulls his freight, will live to fight some other date. Skipper, everything's going to be all right, I tell you. More than that—"

Just then Jessifer found the combination he'd been seeking. The ship lurched and slithered, everything movable slid, topsy-turvy, all over the room. Chairs and charts and inkwells and slide rules and miscellany started raining upon us like Gargantuan confetti. Cap Hawkins' gobboon, which hadn't been emptied for about three days, was now violently emptied scant inches from the skipper's locks. The control cabin audio began to clamor with the outraged howls of men in other parts of the ship. I recognized the voice of Doug Enderby calling plaintive queries from the mess hall; Chief McAndrews added a few choice epithets from the engine room. I collared the skipper and forced him through the doorway; Todd was on our heels.

"It's mutiny!" bawled Hawkins as soon as he got his breath back. "Grab Sparks, Todd! He's gone nuts! It's insubordination!"

"It's nothing of the kind," I retorted. "It's genius cropping out in me. Listen, Cap—and make it a serious listen. Am I right in thinking that whenever a ship is sold, intracosmic law gives the commander the right to buy the ship in on option at the price of the highest bid?"

"So you're still sane?" demanded the skipper. "Or are you? Yeah, that's right. So what? The *Andromeda* prob'ly cost the Io com-

pany about a hundred thousand credits. I ain't got anything like that amount, an' if I had I wouldn't waste it on a wallowin' old crate that's just about to be cracked up on an asteroid!"

"Then come along!" I yelled gleefully. "Come on up to my turret. We're going to buy this lugger right *now* while it's still legitimate to do so! Come on!"

I turned and streaked up the companionway, while the *Andromeda* continued to lurch and wobble. I thought Hawkins and Todd were following me; Todd confessed later that what they were really doing was chasing me. They thought—and not without reason—I'd slipped my gravs.

But as we ran, I talked, and as I talked their two mouths dropped open. By the time we had reached the radio room, Cap Hawkins was more eager to start sending that message than I was. I sent it. And the ship settled down; a dragging told that she had approached some object in space and taken it in tow. An answer came back from the Lunar outpost of the IPS:

CORPORATION FORCED TO APPROVE SALE OF *ANDROMEDA* TO COMMANDING OFFICER HAWKINS AT SALES PRICE NINETY-THREE THOUSAND CREDITS, EARTH EXCHANGE.

Then, querulously, an afterthought from the fingers of Operator Joe Marlowe:

BUT WHY, BERT? YOU CAN BUY COFFEE IN BETTER CANS THAN THE *ANDROMEDA*.

And all the time, from the bridge came that constant, ear-splitting howl of Jessifer. "Whorrooo! Whorrooo! *Guvv!*"

Then the radio-room door burst

open, and in barged Chief Engineer McAndrews, a hundred and forty pounds of anger and curiosity.

"If ye'd be so kind, Captain Hawkins," he demanded, "would ye explain to me the idea of this nonsense? We take a headlong dive into the asteroid belt. We risk our necks. We slow down and take something in tow—"

Hawkins beamed like a solar-energy mirror and yipped: "Congratulate me, you bowlegged old Scotchman! I've just bought the *Andromeda*."

"Congrat—" McAndrews' face looked like a patchwork quilt. Then a vast sorrow crept into his eyes. "I was afeared o' this! Too much strain and worry. Now, captain, if ye'll lie down and rest a while—"

"He hasn't cracked up, chief," I grinned. "He did buy the *Andromeda*."

"But . . . but why?"

"If you'll look out the aft perils," I suggested, "you'll find out. The skipper, in buying the *Andromeda* before we assumed new cargo, became sole owner of whatever property the spaceship salvaged subsequently. Therefore, that miniature mountain we're towing on our traction beam belongs to us, not to the corporation. And unless I'm wrong, and Jessifer is a lousy bloodhound, and Uncle Lester—bless him!—was off his button, that mountain is pure pitchblende!"

AFTERWARD, when Dick Todd had gone out in his bulger and proven, by analysis, my hunch to be correct; afterward, as we continued our journey on to Io feeling like the crew of bloated plutocrats we soon would be, Chief Engineer McAndrews insisted that the loose ends be tied up for his information.

"I'm not saying," he said cannily,

"that it wasna a gude stroke o' business. But I'd still like to know whyfore and how come."

Cap Hawkins looked at me so affectionately that I blushed. "You tell him, Sparks. You're the hero."

"Not me," I corrected. "Jessifer was the hero and Uncle Lester was the brains. I was just the go-between who happened to guess the right answer.

"We were all pretty dumb not to see the meaning in the first place. The way I figure it, just before his death Uncle Lester must have discovered that his supposedly 'vast' fortune was not as great—or would not be as great—as was reckoned—"

Cap Hawkins interrupted, nodding: "That's right. Now I remember that Uncle Lester told me once that his affairs were tied up in non-transferable credits. Still it was a shock to get only an old-fashioned robot as a legacy."

"Anyway," I continued, "Uncle Lester wanted to leave the skipper some substantial proof of his affection. He knew the skipper was a spaceman. He knew, also, that in space there floats incalculable wealth for the man who is fortunate enough to find it. So he constructed, or had someone construct for him—Jessifer!

"We should have guessed Jessifer's real purpose when we read Uncle Lester's letter. The wording had to be veiled so that, in the event Jessifer fell into strange hands, he would not be stolen. But the clues were there. You remember that Uncle Lester said, 'The voice of Jessifer beside you in space should lead you to glowing contentment'? And he also mentioned 'the same kind of happiness that has lightened my life.' That is—wealth.

"Moreover, if you'll analyze the name 'Jessifer' you will find that it means 'bearer of wealth'—"

McAndrews nodded sagely.

"I see. Wealth . . . 'glowing' . . . he meant that Jessifer was an animated radium finder, is that it?"

"Precisely. We've seen by his performance that he was built by a man of genius. When I had him apart, I saw a strange cube in his head. Undoubtedly this activated him whenever radium was anywhere within a certain range.

"We had several hints as to his ability, but were not smart enough to guess the solution. The time he stole all the watches but Enderby's, Wilson's and the skipper's. Now we realize that these were the only three watches aboard that did *not* have radium-illuminated numerals. And the time he 'attacked' Todd, he was performing his natural function: going toward the radioactive charge in Todd's needle gun.

"And the 'voice' that Uncle Lester mentioned; that is Jessifer's habit of peeping, yelling or howling whenever radium is in the neighborhood. The volume of sound is determined by the amount of radium."

Cap Hawkins grinned from ear to ear.

"An' that's the answer, boys. Well . . . now we own a spaceship.

An' we're gonna have enough left over to go into business for ourselves—with Jessifer as robot first mate. But—" A sudden frown creased his forehead. "But, Sparks, I just thought of somethin'. Jessifer's other mode of talkin'. Them everlasting, damn maxims he spouts. Why—"

I grinned right back at him. It's nice to realize that at last you're independent of a credit-conscious outfit like the corporation; are slated for a steady berth under a competent old spacedog like Cap Hawkins. I said thoughtfully: "Well, now, skipper . . . I think maybe Uncle Lester figured you could profit by some of that ancient wisdom. I've come to the conclusion that Jessifer *never* makes a mistake. And by some strange quirk of his mechanism, he usually manages to quote some proverb with a direct bearing on the conversation— Eh, what's that?"

Jessifer's eyes were glowing pleasantly. He said again, louder this time and meaningfully, "Empty barrels make the most noise!"

So everybody laughed. So I shut up. And I kicked Jessifer. It didn't hurt him, but my foot's still in bandages. Oh, well—what do you expect from a robot?

THE END.

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SPHERES

By D. M. Edwards

***A new author presents a new type of self-defense—
and Sezzy-Blacky, a man of two minds, so to speak.***

Illustrated by Schneeman

THE old fellow stepped into Vesta's best known barroom and glanced around eagerly. At last!

"Set 'em up, Sammy!" he shrilled

at the barkeeper. "Let 'er rip!"

Eyes jerked to the figure in the doorway.

"Sezzy!" Female voices screeched

and their owners stampeded.

Men grinned and laughed and headed for the bar.

The frothy half of the human tide swirled about the wrinkled old fellow and gurgled and moaned and sighed. Sezzy beamed his contentment and dipped his hands into the bouncing bubbles.

"Hey, Sezzy," called a brunette, "where's Blacky?"

"Right here . . . aching!" came from the old fellow's lips.

"Hi, Blacky!" laughed the brunettes.

"Hi, gals!" Blacky returned the greeting. "Limber up . . . I'm howling first this time."

"What's the idea of double-crossing us blondes like that, Sezzy?" asked one of 'em.

"Aw, the damn brain-twist got lucky and found the first piece of caradinite," growled Sezzy.

"Lucky, hell!" sneered those same lips. "Sezzy hasn't got wits enough to find iron unless I help him."

"Is that so? Who found the biggest nugget this time? Tell 'em that, Blacky . . . who did?"

"Yeah, Sezzy, but who decided we should head out that way? It was me, that's who!"

"Cut the fight, you two!" ordered a shapely leg. "Kill a few of these bottles for us instead of each other."

"Sure thing, kid," agreed Sezzy easily. "What'll you have, Blacky?"

"Twice as much as you, Sezzy, and twice as strong."

A squat, bald-headed man downed his drink and moved away from the crowd. A few minutes later he entered a private room two levels below. He ignored the hard-eyed man who stepped in behind him.

Reed, a thin man with a long scar on his left cheek, glanced up. "Tired of looking at the girls, Venus," he

asked sarcastically. "Want me to take your place?"

"Sezzy's in," the bald-headed one told him flatly.

That brought the scar-faced chief to his feet. "How long's he staying?"

Venus shrugged heavy shoulders. "The girls are priming him. Maybe a week . . . what one guy said."

Reed turned to a droopy-eyed fellow on his right. "Sleepy, you and Venus watch him. We'll lift before he does and pick him up later."

SEZZY, prospector extraordinary, lay on his bed—alone.

"Well, Sezzy, looks like we're gonna have company when we hit the Belt again," observed Blacky.

"So what?" groaned Sezzy. "That's nothing new."

"The hell it ain't. These guys that're hanging on our tail are different. I've been watching 'em while you were too slug-eyed with Sammy's swamp water and blondes to know the difference."

"Go away, dammit. Lemme die in peace."

"You've been dying for the last five days. Come on, snap out of it! What're we gonna do about those mugs? They're not prospectors."

"How the hell do you know they ain't Belters? It's a wonder you don't suspect me of stealing our caradinite."

"You'd steal our pants if you weren't in 'em too," accused Blacky.

"You ain't in the ecliptic plane, either. How come I can't go broke like I used to?" asked Sezzy.

"There's something funny about you, Blacky; something mighty queer." This had been Sezzy's pet peeve ever since he recovered from an asteroid crack-up and found that his old "says-Blacky" companion had been running the show for over a year.

"If it weren't for me," said Blacky, "there wouldn't be any wits in our head. Taper off, damn you, or I'll lift you cold."

"O. K., Blacky, don't yell . . . it shorts my nerves and makes the relay chatter. I'll bet I'm picking caradinite out of the Belt while your half-wit's still hunting crabs in Scorpio."

"You'll be hung on the horns of Taurus if you don't use your Aries to help me dodge the beasts of Leo."

"Take 'em along, Blacky. The Spheres will make monkeys out of 'em."

"Nothing doing. We ain't taking any chance. That'd be a dirty trick, and the Spheres won't like it. Let's forget it this time and take 'em for a ride."

"Ride be damned!" Sezzy cursed softly so as not to rattle the loose rivets in his skull. "We're too old to ride the Belt for the hell of it. Here's where we belong . . . having fun. I'll tell you what, Blacky, we'll try to lose 'em. If we can't, we'll take 'em along."

"If we can't, we take 'em prospecting! I ain't taking any chance of those rats getting their hands on the Buckle's best."

"Now listen here, Blacky, I ain't gonna spend the rest of my life bouncing around in the Belt."

"You'll do it before I'll let anyone blast that rock!"

REED STARED at the forward aggie-field tension screen. Shifting black specks dotted its surface. A bright spot held steady in a cluster of specks. The cluster was expanding.

"Take him, Draper," said Reed.

The pilot touched a lever. The powerful ship eased ahead.

"Damn that split-brain!" cursed Reed, as the bright spot vanished. "Why in the name of a calloused

asteroid does he want to take it the hard way?" He looked at the screen intently.

"He just doesn't know what a soft-hearted guy you are, chief," grinned Draper, "or he wouldn't risk a run with neutralized aggie fields."

"Yeah, I sure was a soft-headed sucker to pay so much for these screens."

"But they're working. That's better'n trying to pull a kidnaping on Vesta."

Where the bright spot had been, there was now a ring of light, faintly brighter than the rest of the screen. Suddenly it moved to the right. Draper swung the ship and centered the ring. The ring continued to increase in size.

From behind the pilot room came curses and yells.

Draper laughed: "Maybe someday those apes'll learn to keep their safeties fastened." The ring swung to the left, and again Draper followed, laughing viciously at the uncomplimentary descriptions of himself coming from behind.

Reed snapped on the ship's audio. "Get into those safeties back there! What the hell do you think you're made of . . . rubber? That's what you smell like . . . burnt rubber and sulphur!" He noticed Draper's hand move toward the drive lever. "Hold it, Draper! I know you'd just love to bounce 'em around, but we may need a little help loading the stuff."

"That's what a lot of others thought before they disappeared. From what I found out, old Sezzy has ways."

"Worried, Draper?"

"Would I be here if I were?"

"O. K., pile on the G's—those guys should be hung by now. Let's get it done."

"Look at that old fool," exclaimed

Draper, as the ring began to contract. He jammed on full drive and grunted from the effects of acceleration. "He doesn't dare hit the Belt that fast without his fields."

"Catch him and he won't have to." But Reed wasn't so sure they'd catch him in time. The old fellow's ship was showing more than its share of driving power.

Draper glanced through the port; then back at the screen. "We'll never make it, chief. He's got more ship than we figured on."

"We'll get him . . . and his damned caradinite, too," snarled Reed.

"Hell, chief, there's no use killing ourselves. There'll be other times."

"You dope, all we gotta do is follow him in. If he can do it neutralized, we sure don't have to worry about the aggie fields we've got. We came out to get that stuff, and by all the lice on Sleepy, that's what we're going to do!"

"O. K., Reed . . . it's your neck, too. We're faster'n he is, but he'll dodge this thing easy when we get inside."

"That's why you're here . . . so he won't get away."

"You've got a good job here, Reed, but it won't jump around as fast as that little one up ahead. We'll have to take short cuts, and that spells trouble."

"I don't care how you do it—catch him! There you are. I didn't think he'd hit the Belt without his aggies." The faint ring became a bright spot on the screen.

"Which only makes it tougher on us. He'll take more chances now," answered Draper. He laughed. "Tell you what, chief . . . you might put that rot-gut mob of yours outside to help blast us around corners."

"You know, Draper, that's what I

like about you. You're always so thoughtful of the boys. Sometimes I think I should let them show their appreciation."

Draper grinned: "You're the only one that's got guts enough to try it, Reed. And I think you've more sense."

"You'd better catch Sezzy, or I may forget you think I'm smart."

BUT SEZZY wasn't so easily caught. Blacky dove through a cluster of asteroids and curved sharply to the left. His little potbellied ship groaned as it strained in the arc.

"Damn you, Blacky. We're getting too old for this kind of game. Let's take 'em along without all the fuss."

"And what do you think they'll do with you after they get there? Pat your old gray head and say, 'Thanks, Sezzy; here's your share'? They could pat your skull in all they wanted if I weren't in it, too."

"The Spheres'll fix 'em. Why should we break our old bones doing this?"

"What's in the ore lockers?" asked Blacky.

"Nothing big enough to blow out, if that's what you're thinking of."

"How about that souvenir locker of yours? The last time I saw it, it was crammed full."

"Nothing doing!" squealed Sezzy. "I ain't throwing those away! You can't make me!"

"See that little lever over there, Sezzy? That's the one that dumps your locker. Aren't you glad you've got something to throw at those bad, bad men? Nice pretty rocks and crystals, Sezzy. Won't they sparkle in the sunlight? They'll be so pretty . . . till they plow through those guys."

"I won't do it, Blacky! Just cause you don't like specimens, you're al-

ways trying to keep me from collecting. You're just using this as an excuse to dump them. It ain't fair! You're always picking on me, and I'm tired of it!"

"Don't argue, Sezzy old blonde-chaser, or I'll keep you away from 'em till your ideas dry up."

"Some day, Blacky, I'm gonna take us to see a head doctor and have you pried out."

"You'll never get the chance unless you look where you're going." The right side screen went black for an instant and the ship lurched hard to the left. "Go on, Sezzy, swing her through a figure-eight and make him cut his aggies. Catch him head-on with the stuff. You can have fun picking up more between blonde-chasing sprees."

Sezzy swung back and away from the longer arc of the larger ship. Again he swung, but to intersect the other ship's projected path.

Something of Sezzy's wild determination must have made itself felt to the "Blacky" part of the old fellow's brain. Blacky couldn't read the "Sezzy" part's thoughts, but he had learned to make some shrewd guesses.

"No you don't, Sezzy! We're getting old, but we've got plenty of good sprees left in us yet. Turn loose of those controls, you crazy fool!"

"Just try and take 'em! Try to dump my collection, will you? I'll show you! You're always so smart . . . let's see you think yourself outa this one," and he held straight for a dead-center crash. The bright spot on Sezzy's forward screen was expanding rapidly.

Blacky struggled to take over, but the only part of their one body released by Sezzy was the jaws. Blacky made fluent use of them. The rest of the body made frantic jerks like a jitterbug with St. Vitus dance. To

a being capable of watching it, the sight of this interplay of nerve impulses between the two halves of Sezzy's dual-intellect would have been brilliantly kaleidoscopic.

THE TWO SHIPS hurtled at each other; Draper was trying to slow up and dodge, and Sezzy vice versa. The antigravity fields of the ships took hold of each other and made Sezzy's job easier.

Draper felt the increased acceleration. He snapped off his aggie circuits. "The damned fool's trying to crash us!" he yelled at Reed. "Brace yourself . . . I'll snag him."

Then came a quick play of aggie field switching. Sezzy shut off his own to match Draper's. Draper switched on to repulse Sezzy. Sezzy switched on to attract Draper. Draper switched off again and blasted to the right. Sezzy's internal conflict slowed him up too much to match this last play. The ships passed within a few yards of each other as Draper snapped on his fields. The result was the same as though no fields had been present, but multiplied thousands of times.

When it was over, Draper glanced at Reed. "Why don't you grow something between your head and shoulders? It's guys like you who get their oversized brains splattered on the control board."

"Damn you, Draper! If you've killed him, I'll blast you!"

"He's got a tougher neck than you'll ever have. He'll be all right. I'll bet the Belt's handled him plenty worse."

"Pick him up and let's see."

The ships had ceased separating. Attraction of the fields was drawing them together again, like two dogs going back for another sniff.

Sezzy wasn't trying to change the course of events now; nor was Blacky

trying to reform Sezzy. The void in which Sezzy wandered was much darker than the brunettes of which Blacky was so fond. And no blonde preferred by Sezzy could have sparkled with such brilliancy as the constellations now observed by Blacky's inner self.

TWO SPACESHIPS rested lightly against a small ragged asteroid. The smaller ship was empty, its emergency lock open. In the larger ship, six men were gathered about one who was unconscious.

"Doesn't he look peaceful? I could go for some of that, myself," yawned Sleepy.

"I wish you had it instead of him," complained Reed. "Dammit, Fox, what'd you wanta slug him for?"

"Nobody's gonna swing a pick at me and get away with it."

"Especially when the guy's got one foot and half his brain in the grave, eh, Foxie?" sneered Draper.

"Two of my toughest," added Reed, "and they're not enough to handle one lame-brain. A couple of Sammy's girls could have done better."

"I had to slug him," Fox dumped his troubles onto other shoulders. "Venus went at him like it smelled good. Sezzy kicked him into a corner and started making eyes at me."

"You said you didn't want him hurt, chief," Venus defended. "I thought he was out on his feet. He kept squawking for Sezzy to wake up and for Sezzy not to leave him. How was I to know that split-brain stuff wasn't just a gag?"

"You had time enough to learn. You tailed him into every bottle on Vesta."

"Give him a whiff of that Jupiter cloudburst you feed your tapeworm, Sleepy. That'll stand him up and

give him a few more personalities, too."

"That'd be better'n not having any, like you, Fox," Sleepy came back.

De Koven, the engineer, moved away from the animated wake. He went back to the generator room and opened a rather neglected first-aid kit. From under an assortment of oily waste, spare circuit parts, bandages, and what not, he dug out a tube of corpse-reviver—according to the money-back guarantee. Well, he figured, try anything once—the other guy.

As De Koven bent over Sezzy, Reed grabbed his arm. "Wait a minute, De," he said. "He's been trying to say something."

"Hell, bring him around. He'll talk plenty when I—"

"Shut up, Fox," ordered Reed. "If you had more brains and less mouth, you'd—"

"I won't," mumbled Sezzy. "I'll tell 'em, Blacky . . . try and take it . . . I'll kill . . . the Buckle . . . Spheres'll fix 'em . . . the Belt Buckle . . . Damn you, Blacky!"

"The Buckle, huh?" said Reed. "I wonder if—"

Draper laughed: "If you're thinking that's where he gets the stuff, guess again."

"Why would he be talking about it, then? It must have been on his mind a lot or he wouldn't dream it now."

"You've never heard a bunch of these old Belters talk, Reed. To hear them tell it, the Buckle has more caradinite than all the rest of the Belt put together. Hell," continued Draper, "every time one of 'em knocks off another Belter for a few pounds of the stuff, he always spins a tale of a lost asteroid somewhere in the Buckle. What he says now can't mean much."

REED LOOKED down at Sezzy. The old man twisted and groaned; then babbled some more about the Buckle and Spheres and damn Blacky. Blacky's spirit was not in evidence. Apparently it was sleeping off the effects of Fox's right cross.

"He gets his stuff somewhere, and it's blasted fresh from something big. I talked to the buyer on Vesta. The guy said Sezzy has something good. That's what we heard on Earth, too. Sezzy's dreaming Buckle," finished Reed. "That's where we're going."

"We ain't going down inside, are we, chief?" worried Sleepy.

"Maybe, if Sezzy wants to. Like to come along and make him talk, Sleepy, or would you rather stay here and take a nap?"

"No, chief . . . I'll make him talk."

"Venus, you run Sezzy's outfit."

"But, chief, I—"

"Get going. We'll hold down. Stay with us and you won't get lost."

"Saving it for a souvenir, chief?" kidded Fox.

"I'll ram it down your throat if you don't keep that big trap closed! Hang him up, De, and bring him around," Reed indicated Sezzy. "Make him talk if you can, but no rough stuff till we get there. That goes for the rest of you mugs, too. Come on, Draper, let's get going."

And so the two ships climbed out of the Belt and drove for the Buckle—Boot Hill of Belters.

THREE DAYS of hard driving had passed since Sezzy became a guest of the Reed mob. Their concern for his health was second only to their curiosity as to the source of his caradinite. Sezzy was pleased with the first but reticent about the second.

The ships finally pulled up about five thousand miles from the asteroid swarm known as the Belt Buckle.

The Buckle's planetoid core was about twice its own radius in diameter while it waited for a Belter to land. No one knew what its diameter was while it ground him up. No one cared. A few had tried to penetrate to that spinning planetoid of loose, shifting junk. Fewer had lived to tell about it. In fact, the core had never had the pleasure of chewing on a nice, live Belter. They all had the kick kicked out of them long before they fell that far.

For much too far around this planetoid, space was filled with criss-crossing orbits. Big hunks of this went that way, and little pieces of that went this way. And they all seemed to be in a hurry. Anyone who tried to get inside was liable to bounce off a fragment into the path of one going backward. And if it weren't one going backward, it might be one that was side-stepping just to be different. A live Belter was one who hadn't tried to polish the Buckle.

Reed unstrapped and stood up. "Here's where Sezzy's memory improves. Come on if you'd like to see the fun."

"Here's where we get stuck, you mean. We couldn't get through the Buckle with aggies ten times this strong, even if it were full of the stuff," answered Draper.

Reed shrugged. "We'll let Sezzy worry about that."

The men were moving about, stretching, when Reed walked in.

"Remember this place, Sezzy?" asked Reed.

"What'd you bring me here for? You're crazy if you think there's anything near the Buckle."

"That's just what we want to know . . . all the places it isn't; then we'll know where it is."

"Why don't you look for it, yourself. That's what I do. I get down

in the Belt and look with a cadrometer until I find some."

"We're green, Sezzy. We don't know how to find stuff like the big one you blast from," Reed smiled. "Tell us where it is and you'll save us a lot of trouble."

"And yourself, too, Sezzy dear," added Fox.

"I haven't got anything. Not much, anyway." Sezzy didn't like the tone of their voices. "There's just a little in—"

"Shut up, you damn fool!" Blacky took over for an instant. His moral influence on Sezzy, since Sezzy blew up and tried to crash them, was almost nil.

"Just a little in your ship, Sezzy? . . . or in the Buckle?" questioned Reed. "When you were out, you did some talking. We know your stuff's in the Buckle. You're telling us where and how to get it; so get at it!"

"I won't do it . . . there ain't any there. Take what's in my ship if you want it, but stay out of the Buckle. It'll tear us to pieces."

"Except you and yours, huh, Sezzy?" Reed looked at Sleepy. "Got any ideas, Sleepy?"

Sleepy woke up, slightly. "We might dig his eyes out, chief," he suggested.

Sezzy liked his eyes. "I'll tell! It's down inside near—"

"Shut up!" yelled Blacky.

"Near the green—"

"You yellow rat—"

"I'm not! You guys'll have to—"

"Damn you, Sezzy! Shut—"

"I won't! Hop from—"

"Shut up!" screamed Blacky, and swung a hard left to Sezzy's jaw.

"Damn you, Blacky, I'll tell 'em if I—" began Sezzy, groggily, but Blacky cut him off with a "No you won't!"

Then began a performance that

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awed the spectators. The wrinkled old Sezzy-Blacky looked and sounded like a cross between a cat fight and a hen party. Sleepy didn't move fast enough to get out of the way. Sezzy climbed all over him. Sleepy's eyes popped open—for once in his life—and he let out a bubbling, terrified scream; then gave a marvelous imitation of a midnight Negro trying to go places with all the spooks of a graveyard on his back.

The rest of the mob went into convulsions of laughter. Reed, grinning, finally stepped in and dropped Sezzy with a fast left. He turned to Sleepy. "Go back to sleep, Sleepy. You're demoralizing my mob."

"Why didn't you dig his eyes out?" roared Fox. "Look out, Sleepy, the evil-eye's in your back! Look out . . . it'll get you!"

IT WAS Blacky who opened his eyes in time to see Sleepy, his face contorted with rage, whip out a knife. But it was Draper who kicked the knife spinning just as it was driven hard for the old man's face.

"The joke's still on you, Sleepy," Reed said gently, as Sleepy staggered away holding his wrist. "That little knife trick just cuts your share in half. And you really should thank Draper for saving your greasy hide. The boys would've peeled it off a little at a time. I guess you'd better get into your safety till you cool off. Go on . . . get in!" He turned from the frightened Sleepy and spoke to Fox. "Fox, you and Draper hang Sezzy in a safety. Strap his arms and legs. De, drag out your pet. That'll make him talk."

De Koven's "pet" was a small aggie field plate. It's feeder line to the generator room was broken by a variable interrupter.

"Strap it to his legs, De. Know what it is, Sezzy?" asked Reed.

"I'm Blacky, you scrawny rat! And I ain't talking!"

"O. K., Blacky, Sezzy, or just plain goat. A little aggie agitation may loosen your tongue. Start it going," he ordered De Koven.

"The 'goat's' legs began to vibrate. But Blacky wasn't worried. He could take everything better than could Sezzy; and Sezzy was still in dreamland.

"Where is it?"

"Go to hell!"

"Wind it up, De."

"Go to hell again!" gritted Blacky, but he was getting worried now. He could feel Sezzy beginning to stir.

And Sezzy came to with a yell. He twisted and jerked and yelled some more.

"Shut it off, De. Now, Sezzy, if that's you, where's the stuff?"

"It's inside near—"

"Don't tell 'em, Sezzy!"

"I can't stand it! Let 'em have it . . . I don't care."

"Think of the Spheres. They won't like it, Sezzy."

"I am and to hell with 'em! Let 'em take care of themselves."

Reed swore and motioned to De Koven. Sezzy's legs took some more of the reducing treatment. Sezzy screamed and passed out. Blacky took it without a squawk.

Fox took a hand: "Turn it off, De. Let him rest a minute. I'll show you how this should be done."

Blacky looked at him thankfully, but not for long. Fox jerked the plate loose and restraped it higher—onto the old fellow's belly.

"Good idea, Fox," complimented Reed. "That'll get action. Ease it on, De."

Draper began to look his distaste for this proceeding, and especially for Fox.

THIS NEW torture brought a slight groan from Blacky, but he wasn't talking.

"Hell, let me have that thing," Fox shoved De Koven away.

De's face blazed with anger. He was about Fox's size but didn't quite have his courage. He stepped forward to regain his little machine by peaceful means. Fox straightened up, put his hand on De's face, and shoved hard. De Koven tripped and sprawled. He said nothing, but looked murder.

"And stay away!" Fox told him.

Reed was amused. He enjoyed these fights among the members of his mob. There were always plenty more to take the loser's place.

Draper walked over and stood beside the interrupter. When Fox turned back, he received the same treatment that he'd just finished giving.

"And stay away!" mimicked Draper; then he reached down and shut off the aggie fields that were tearing at Blacky's insides.

Reed's face straightened. This was different. Oh, well, he would see the fun before he said anything—if Fox had anything but a big mouth.

Fox had more guts than Draper figured. He picked himself up and came in fast—too fast. He came in again, with bleeding lips. He jarred a left onto Draper's cheek, and received one into the belly in return.

During the rest of that fast two-minute fight, Draper worked on Fox's stomach. He caught a few but gave more. He finally tired of asking Fox how it felt to have his guts ripped up, so he crossed his right to the button. Fox slumped into a left to the same spot, then finished his fall to the floor.

"What's the idea, Draper?" Reed indicated the interrupter.

Draper took a few deep breaths.

Then: "Tearing his guts out won't get you anything."

"Got a better idea?"

"Maybe." Draper turned to Blacky. "Why don't you tell him where the damned stuff is? If it's in the Buckle, he can't get it anyhow. There's no sense in letting your other half take a beating. Maybe you can't feel it much, but think of what it's doing to your pal."

Blacky had been thinking. Much more of this and there wouldn't be any Sezzy—or Blacky, either. There was a better way to accomplish the same thing. If he had to die, he'd sure take company when he hit the skids to hell.

"O. K., fella, I'll tell you . . . Sezzy's had all he can stand. Will you give me some when you get it? It's big enough so you won't miss a little." Blacky wasn't fooling himself about what he'd get.

"Sure," agreed Reed, too readily. "You can have the half-share Sleepy didn't want." Then: "Take a nap, Sleepy; we'll wake you when we get there."

Fox woke up. He looked around dazedly.

"It's all over, big mouth," Reed told him. "And don't start anything else. We've got work to do."

Blacky talked. He told them to time a fast drive along a tangent to match the orbit of a greenish-tinted asteroid in near the center. He said they could test for the caradinite fragment from there; that it was further in and in a different plane.

"Let's go, Draper. We'll have a try at it."

Draper laughed: "They go in, Reed, but they never come out. Think we're better'n all the others in there?"

"We can do it if Sezzy can. We've got better fields." Reed was too confident in the protection given by his

ship. He didn't know the Buckle.

Blacky patted his own back—mentally. Suckers! Well, he'd lived his life, but he would like to go on one more sprec. Too bad to go out like this.

By aggie field communication, Reed ordered Venus to park Sezzy's outfit and return to the larger ship. Venus set down in a crevice of an overgrown boulder and turned on a location signal. Reed wasn't fool enough to throw away a tool until he was sure the job was done.

Everyone climbed into heavy, lead-impregnated spacesuits. They had hopes of getting near some caradinite, and it did things to guys who weren't protected. Caradinite was plenty radioactive, with ideas of its own about the subject. Mitogenetic rays of a queer type seemed to be only one of its side shows. Its main attraction was a controllable ferrocarradinite reaction that was fast enough to make light run like the hen that said "No!" to the big rooster.

Draper didn't like the idea of diving into the Buckle—Blacky had yielded too readily to the persuasion. To his knowledge, no ship had ever penetrated half the Buckle's radius and returned. And here Reed was ordering him to take the dive to a rock closer in than that. The damned fool!

"Got any last words, Reed? If you have, you'd better say 'em now," said Draper, after he finished checking his objective's orbit. Spacesuit audio carried his voice.

"Yeah. It's been nice knowing a big, brave man like you."

"Thanks," Draper answered in kind. "And I'm sorry I ever met a fool like you."

"Thanks, Draper. I'll remember that when I divide the stuff."

"I'll swap you my share for Sezzy's ship right now. How about it? Sezzy can take you in if you're so certain he has something."

"Nothing doing. You're in this with the rest of us. I wouldn't want to part with your invaluable piloting experience. Let's go."

They went. Not so long after Draper added a few G's to the ship's acceleration, a huge black spot flashed across the lower screen and the ship bounced upward. He corrected course. He dodged to the right to escape a rapidly expanding spot on the forward screen. He corrected again. A small spot on the left screen went black and stayed that way.

"Damn!" Draper jerked out. "Good thing it was a little one. Climb out and fix that plate, Reed . . . you got us into this."

Then Draper blasted downward with everything the ship had. A chunk of asteroid larger than the ship shot upward close ahead. Forward, then upper screens went black as aggie fields did their work. The two heads in the pilot room snapped forward; then those heads strained to stretch the necks that tied them down as the ship shot downward with added acceleration.

DRAPER FOUGHT to get his arms down to the controls. Viciously, he corrected course and tried to see through the bright specks in his eyes. As the ship started upward, a huge boulder shot in from the left and passed below. The ship bounced and Reed's arms came down with a crash onto a section of the control board. The heavy spacesuit was all that saved him from broken bones. He groaned and looked at Draper with a new idea in his head. Then he winced, as though it were skin off himself, at the jar that went

through the ship. A long streak became permanent on the upper screen.

"There's some more aggie plates you can fix!" Draper yelled at Reed.

"We can't make! Let's get out!" Reed noticed that they still had something over half the distance left to go; and that their troubles were piling up fast.

A few-ton fragment came up from below and drove into the fields. It was forced out, spinning ahead.

"Too late for that!" answered Draper. He saw the boulder flash away. "There you are, Reed. There's one you can see. How do you like it, pal? Think your head's harder'n it?"

"Get us out, damn you! We'll never make it!"

"Good guesser, Reed . . . we'll never make it!" said Draper as another jar went through the ship and several more field plates went dead. "We should've been going the other way all the time, wise guy!"

Draper's audio unit was filled with blending curses and yells from Reed and his mob. They all wanted to put the ship into reverse. Blacky's roaring laughter came through, punctuated by Sezzy's "Damn you, Blacky!" and "Set it down!"

One of Sezzy's "Set it downs!" penetrated Draper's consciousness just before he snapped off his suit audio. Damn Reed's caterwauling mob! Set it down? Where? How? Look out—blast left! Straighten out! Up! Wow, that was close! Set it down? Wish he could! Damn this lead suit! Damn Reed! Damn the Buckle! Damn caradinite! Damn Sezzy! Damn! Blast down! Catch it! Set it down? On what? Blast—

The ship jarred upward. A third of the bottom screen went out. Draper's arms felt like they weighed a hundred pounds each when he

lifted them to the controls. He stopped the ship's slow spin. The Buckle's center was in the wrong place now. He straightened to the course, but without hope—they'd already been delayed too long to make that orbit in time to land.

Land! Set it down! Where? There goes one! Too late—it's gone! Blast right! Now left! There goes another plate! Damn Reed! There's a good one—blast you! Catch it! Never mind—it's gone—damn!

Draper stabbed at a lever to blast down, but his hands shot upward before he could touch it. He caught a glimpse of a wide, black streak across the top screen. Then came a jerk away from another one that flashed upward on the right screen. Black crossed the forward screen—too small to feel, but close. Then he noticed a spot that was becoming larger on what remained of the bottom screen. He finally got his hands down to the controls. The big spot drifted up into the forward screen and began to dwindle rapidly. Glancing out the port, he saw a huge asteroid pulling away far ahead. He felt the aggie fields try to shove it away faster.

Frantically, Draper jammed on full acceleration. He cut the anti-gravity fields and gambled everything on this one chance. The ship shot forward, gained on the floating mountain, and finally caught it. Draper cushioned in on aggie fields. Set it down? He had!

DRAPER was practically floating in perspiration within his heavy suit. He glanced at the air-pressure gauge—it was down to eighty percent normal. Then he unstrapped, turned on his audio, and stood up like a man who has things to say.

Draper spent only five minutes on his main topic, but within that time

he ripped Reed's character to shreds, wrapped the pieces in blue flame, and hurled the unwanted into the unknowable. Fox, Sleepy, Venus, De Koven, and Sezzy, individually and collectively, were included in a sparkling three-minute character analysis. The qualities and quantities exposed by this analysis were nothing that should ever have been included within a human being. In a one-minute concluding remark, Draper showed an exceptionally rare insight. The character of his own intellect, he was forced to admit, was such that any respectable virus must refuse to associate with him.

A little color finally oozed into Reed's face, and a little strength into his legs. Some of his self-confidence began to return.

Draper indicated the pressure gauge. "Well, brainstorm, going to sit there and let your air sizzle away? Maybe you don't like air. Maybe you'd rather die gasping than bouncing. Which'll you have, pal? Take your choice."

Reed took his choice. Everyone began plugging leaks, even Sezzy. The inner shell of the ship was soon welded tight enough so that it started bragging about how well it could hold its gas.

A test was made with the caradometer. No caradinite. Everyone put on lighter weight suits to go outside. That's one of the things that Draper remarked upon at length—the insanity of wearing heavy lead suits before they came within striking distance of caradinite.

THE ROUGHLY round asteroid on which the men found themselves was nearly a quarter mile through. Their ship rested in a shallow iron-streaked depression on the back side, with relation to the asteroid's orbital motion. The satellite's primary showed

as a huge speckled crescent sinking near the curve of the ragged horizon. A small blinding sun drifted slowly across southern skies—dark skies, the whole of which were filled with gleaming specks. Here was a planetarium demonstration done to perfection.

For a minute, Draper watched Reed look over his surroundings; then his face took on an I-told-you-so expression. "Well, here it is, Reed," he said. "How do you like it? Think it's a good enough headstone to mark the last resting place of your massive brain?"

Hysterical relief from terror and unpredictable yanks of his safety loosened Sleepy's tongue. "Look at it, chief!" he laughed and pointed at the ship. "It looks like Venus did the time that gal on Pallas worked him over. And look at its bald head—plates peeled clean to the bone and back to its ears. Patch it up for us, Venus—you've had experience."

"Sure, patch it up!" The fear that was still crawling in Venus made him yell. "What with? Our smart chief likes to travel light . . . with only a couple dozen spare plates. Sure, patch it up! We might use Reed's hide, since he thinks he's so damned tough."

"Swell idea," ground out Fox. "And the easiest way to do the patching is to ram the whole ship down his throat. Yeah, and while we're at it, we'd better jam some controls in his ears so we can steer him while he blasts us out."

De Koven looked his agreement as Venus laughed callously: "That's a blasting good idea. Put him to work outside instead of inside . . . he's already ruined our air filter."

Reed was chief because he didn't stand around waiting for someone else to think up his next move. He touched the controls of the heavy

drive-belt at his waist and was inside the air lock before anyone moved.

"He's leaving us!" yelled Sleepy, terrified.

"Emergency . . . come on!" Draper shot himself to the ship's upper side.

Sezzy took his time about following. He was enjoying the antics of his hosts. Hanging in space above them, he laughed as he watched while they jerked at the mangled emergency hatch. Its controls had been ripped out by the same raking blow that hopelessly jammed it.

"In the bottom! Crawl in the bottom!" and Fox was first away toward the great ragged gouge. He found an opening between the asteroid and ship and began tearing at the inter-shell packing. Venus, Sleepy, and De Koven hunted holes like scared rats. Draper shrugged philosophically and hopped to the rock. Sezzy laughed. So did his cerebral mate, Blacky, whenever he could wedge in a cackle.

Draper decided to amuse himself by exploring. If Reed was fool enough to leave, there was no stopping him; so why worry? Draper kicked himself outward a hundred feet and began a leisurely drive along a three quarter mile circumference.

REED was not afraid of his mob. They aroused only two emotions with him: one was anger; the other, disgust. He moved with a purpose. First, he strapped on a couple of caradine blasters above his drive belt. Next, he hunted out his crew's weapons, and blasted the mechanism of each. Finally, he sat down to do a little thinking. And his first thought brought terror into his eyes—he was deep in the most unpredictable accumulation of junk in the System. Anger replaced fear as he

thought of his mob's jeers at his leadership. He'd show them, the witless scum!

Sezzy's drive belt was still holding him aloft when Reed finally returned to the scene. Reed pointed one of his blasters and invited Sezzy down. Sezzy accepted.

Fox heard via audio. He stopped digging to look out. Reed saw him; looked surprised; then laughed.

"Well, Fox, I've always known you

thought yourself foxie, but I didn't know you dug in every time you found dirt. I'll have to put a little box of it near your bunk so you'll feel at home. Come on out before I singe your fur!"

Venus crawled out of a larger hole, followed by De Koven and Sleepy.

Sezzy held his sides and Blacky helped him laugh.

Reed gaped. "What the hell's



Blacky moved so fast the others of his kidnapers couldn't stop him. He climbed all over Sleepy.

coming off here, Fox? Look at Venus. Say, what is this?"

"We thought you were leaving us, chief." Sleepy laughed, sillylike. "We were just trying to dig in between the shells and go along. We should have known better. You wouldn't leave us, would you, chief?"

"Hell no! Not till you've fixed the plates for me, anyway. Where's Draper?"

"He went kiting. That way," Sezzy pointed toward where the little Sun was dropping low.

"O. K., he'll be back. Now listen, you little foxes, I'm running this mob. If anybody thinks otherwise, he'd better dig fast and dig deep, because I'll burn what goes down the hole last."

"Sure, chief . . . we were just kidding," Venus apologized to the caradine blaster.

"'Kidding' is right. And that's putting your mental age ten years too high. You guys have work to do; so don't waste energy trying to think. I want the front end of the ship cleaned up. That's where we're laying all our plates. De, you connect the feeders and see to it the job's done right. Better drag out lights . . . you'll need 'em in a few minutes. Get to work! You too, Sezzy!"

Another voice sounded in the suit audios:

"Hey, Reed!"

"That you, Draper? Come back here and get to work! Damn this menagerie! What the hell are you aping . . . a flying fox? Come on!"

"Come and get me!" Then, in a different tone of voice: "Come on, Reed; I've found something that'll burn you up."

Reed went.

REED AND DRAPER rested easily on their belts above the satellite's surface. They looked down; Draper

grinned and Reed swore. Blasted into the rock below them were two huge letters: S and B.

Reed was just about through with his description of Sezzy. "—and when I get through with that son-of-a-cat-by-a-monkey, I'll make the boys put him back together so I can do it again!"

"Better leave him together till we get out of here, anyway."

"Yeah . . . till we get a load of caradinite and get out! That cross-wit's gonna show us where and how or I'll paint this pebble with him."

Draper looked startled—he hadn't expected that from Reed. "You're going on in?" he asked.

"You're damned right we are, Sezzy or no Sezzy! I put plenty into this job, and I ain't letting a bunch of lily-livers go back and noise it around that I can't produce." Reed knew that his crew was listening. "You hear that, fox-ears? We're going in, instead of out; so pat those plates on tight."

A babble of protests came back at him. He silenced them with a few savage remarks. Reed was afraid of this mess he was in, but he considered his reputation as a leader to be of greater worth than the total of lives involved. Reed didn't stop to think that the biggest fools make the best martyrs.

"Come on, Draper, let's find out if Sezzy can remember his past."

"He's sure passed this way before," answered Draper. "And he'd better remember how he did it if he expects his future to have a past."

The two returned to the ship to find the crew working hard—on Sezzy. Audios had been switched to another channel, of the several provided, so that Reed couldn't hear the cry of pain that answered the questions.

Reed took over. "I'll take care of

Sezzy. Draper, help them patch it up. Pull plates off the rear if you have to. You know what you'll need. Keep off No. 1 audio, you guys; Sezzy's going to do some talking on it. Come on, Sezzy; we're going by-by."

"Why don't you kill us now and get it over with," Sezzy spoke for Blacky, too. "You'll just kill—"

"Shut up and switch to No. 1. You'll live just as long as your tongue can flap out words. Switch and drive—that way," he pointed in the direction of the carved initials.

"Now, Sezzy," Reed said, after they arrived at their destination, "tell me all about it."

"You won't stop me, Blacky?"

"No. Tell him. I'm beginning to have fun."

Sezzy looked at Reed. "You won't kill—"

"No, dammit!" Reed yelled impatiently. "You're staying with us till we get out of here . . . if you talk. Now, talk!"

"O. K. We blasted our initials into this rock on our way out once, long time ago. We had to do something to kill time while we waited for an apposition."

"Apposition?"

"Sure. It's the only way through the Buckle. If you don't take it in short hops, you get gallstones—and they don't come from inside you, either."

Reed was staring—at last Sezzy had said something that made sense. Reed snatched at the idea, but—"Hell, man, that takes time!"

"Sure, mister . . . that's why I'm so damned old. But that's why I've been polishing the Buckle and dragging out caradinite while the rest've been bouncing and wishing. If you young premature squirts would just

take a little more time looking things over, you'd soon learn how to get more for your money. Polish the Buckle? Hell! You're nothing but a damned bunch of get-it-over-quick Buckle Bouncers."

"You told us to drive hard and come in fast," snarled Reed.

"And you were fools enough to believe me," put in Blacky. "No wonder you young-uns don't have fun or last long."

"Why, you lying mummy! If I wasn't saving you for the boys to play with when we get out of here, I'd—"

"You'd be crazy if you did," Blacky interrupted. "We know plenty about the Buckle; and we're having so much fun watching you monkeys perform that we've decided to put you on a real stage. I'll bet there isn't a rock in here we haven't ridden. Better keep some experience handy till you learn which ones are safe to hop."

"O. K., hopper; but we won't go out the easy way if you double-cross us again!"

THE PLANETOID'S satellite turned and shadow followed light; it swung through its orbit and the small blinding Sun shifted strangely across starry skies. And as the primary waxed and waned like a huge Moon, the men worked to repair their torn ship. Occasionally they would pause for a moment to watch a swiftly moving star explode across the sky, and look after it longingly as it collapsed into the distance. They would return to their work with renewed interest, for those aperiodic celestial visitors seemed like steps to the stars.

But despite the objections of his crew, Reed had no intention of attempting that rugged trail to the stars just yet. In his thoughts, he

had already plunged down the trail and returned with a fabulous fortune of caradinite. It remained only to traverse that journey in reality. Simple—so he thought.

Sezzy sat beside Draper in the control room. They were in light-weight spacesuits—just in case. Draper was at the controls. Sezzy was on the audio with his experience. The detector screens were still dead—they wouldn't come to life until the antigravity fields were turned on; and that wouldn't take place till the ship made a hop from one asteroid to another. The men waited, tense, for an apposition of the right direction and size.

Then: "O. K., fella, here comes one. We'll take it . . . it's a good one. Wait a second."

"Don't forget this ship's slower to handle," warned Draper.

"I won't. Wait . . . wait . . . take it!"

Draper snapped on aggies and blasted. The ship shot downward to intercept the smaller asteroid. Specks flashed onto the screen, with one big spot moving from lower to forward. A tiny streak shot across the upper screen. Draper started to come in on aggies, but changed his mind and caught the ship's momentum with decelerators. He corrected a landing error with a flick of the fields; then took a deep breath of relief and eased down to the underside of this boulder. He held the ship up against it, lightly. Their first step was done.

But Sezzy didn't let Draper rest long. "Here it comes, son. Wait . . . take it!"

Again they blasted. Again they leaped inward. Again they—

"Don't touch it!" yelled Sezzy. "Stay with it but don't touch it . . . it's spinning!"

But Draper had eyes. This one,

too, was barely larger than the ship, but it was spinning fast enough to grind away plates.

"Get under it so we can see," ordered Sezzy.

"And don't swear so," added Blacky. "This is real sport . . . a man's game!"

"A fool's game!" corrected Draper. "No one but an imbecile would commit suicide this way."

"Don't take it so hard, young fellow; we've only about a half dozen more hops to that greenish rock. It's big enough to take a rest on. Then one more hop after that and you can load up with all the caradinite you can handle. Sounds good, huh, fella?"

"Sounds like a nightmare's pipe dream! Any time I let that Reed talk me into going on another job with him, it'll be because—"

"Here it comes," Blacky cut in. "Take it!"

AND SO it went. Hop, skip, and jump, with a couple of long stopovers. They made their hops just as short and quick as possible—those were the danger points. They picked their stopovers to be as large and heavy as possible—those were the only safety spots in the Buckle. Time and the law of survival had cleaned the big pebble's orbits. Hop, skip, and there they were—like migrating fleas. Then into lead suits for the final hop—to an asteroid in a heat.

The ship rested lightly against a dark-streaked boulder many times larger. Sezzy looked out the port expectantly as Draper walked back to midship.

"Snap it up, fellow," said Reed; let's get a load and get out of here. We'll get a real outfit and come back . . . and clean up!"

"You and who else?" growled Draper. "You may come back, but

I ain't! I'd rather make mine slitting throats. It's safer."

"Yeah? Well, courageous, right now you're working for me . . . and don't forget it! Grab those ore blasters and tools, you guys, and get out of here. Sezzy! Come here and grab a pick. We'll let you clean the stuff, since you like to swing picks at hard-heads like Fox."

Sezzy just grinned and looked out a port.

"Well, what's so damned funny?"

Reed glanced out the port, but could see no reason for Sezzy's chuckle that followed this remark. He was more than a little suspicious of Sezzy, despite the strong indications of caradinite in the asteroid. "Fox, you and Sleepy take Sezzy and get out. The quicker we get away from here, the better. Shove the clown out first . . . that'll keep his pick out of our backs. Get going!" Reed wanted to see what happened to Sezzy before he risked his own neck.

Nothing happened to Sezzy. But something did happen to Fox and Sleepy. The three men were drifting a few feet above the asteroid's surface as the caradinite streaks began to blow bubbles—or so it looked to Reed. Little bubbles no bigger than a man's fist, they were, the big bubbles three times the size of a space suit's transparent helmet. Deep-red bubbles were there, and bright-violet bubbles. And from the small red to the large violet ones, the spectrum of color was matched by the spectrum of size.

Reed and the others gaped as the Spheres swarmed about the three men—and through them. Fox and Sleepy began slapping as they would at bees; then they started for the ship. Sezzy laughed when the two men suddenly changed their minds and returned. And he laughed harder still at the silly grins on their

faces and the shimmering Sphere bisecting each head. Fox's face stuck out the front of a blue one, and Sleepy's face from one of violent color. The back of their heads could be seen within, colored to match the transparent Spheres.

The men in the ship watched in fascination as Fox and Sleepy began laughing and wrestling like a couple of kids. Sezzy was carrying on almost the same, but no Sphere clung to him.

"Spheres! That's what Sezzy and his pal were fighting about when you were working him over. Don't you remember, Reed? And he's been laughing at us ever since. Hell, I'm getting away from here!" Draper started for the control room.

Reed looked worried, but he held his ground. He yanked out a caradine and told Draper to come back.

"You damned fool, Reed! You haven't enough brains to stuff a neutron!"

"Let's get outa here, chief," begged Venus, as a group of little red and orange bubbles floated toward the ship.

"You guys are just scared of your imagination," accused Reed. "Some of the mitogenetics are probably getting through the helmets and making us see things."

"Why're those things hanging on Fox and Sleepy, but not on Sezzy, if it's just imagination," argued Venus. "Come on, chief, let's . . . look out! They're coming through the wall!" He jumped back and banged into De Koven. They both sprawled on the floor as overhead aggie fields shoved them down.

DRAPER EDGED toward the control room. Reed slapped a medium-sized green Sphere; his hand passed through it. He slapped again, and

felt the same tickling sensation. Larger Spheres began drifting in. A smaller yellow transparency floated out of a section wall. Reed blasted at it with his caradine. The wall was all that suffered—the globe floated on toward him.

Reed finally decided that his imagination was too vivid. "Let's go, Draper! Take off!" He blasted an indigo Sphere. The Sphere drifted down at him unharmed, but an aggie plate in the ceiling went out. "Take off, Draper! Take off!" and he turned and ran toward the control room.

The comical look of mirth on Draper's face stopped Reed cold. A huge round film of violet light clung to the pilot's head. Draper giggled and beckoned. Reed turned in time to see De Koven run through a doorway toward the engine room. He started after De, but Venus cut in front and grinned at him, fiendishly. The back of Venus' bald head was tinted green. De Koven reappeared, chuckling, and wearing a yellow cap inside his space helmet.

The indigo Sphere hovered above Reed as he backed into a corner, horror on his face. He didn't think of it, but he was experiencing some of the same emotions that Sleepy had when Sezzy climbed him. The three men grinned and giggled with awful eagerness as they closed in on their chief. Reed's spinal cord froze as though dipped into liquid hydrogen. Then all his nerves crystallized into little slivers of ice.

De Koven laughed like an open grave. Reed's crystallized nerves shattered. His caradine came up jerkily, but withheld its death. Reed felt an amusing sensation enter his brain. He became interested. Why, everything was funny. Why should he hurt those smiling creatures coming toward him? They just

wanted to have fun. Why not? Everything was funny, wasn't it?

Reed smiled at his former blindness. He saw it all now. There was no hate or agony; no greed or despair; no selfishness or unhappiness. There was only joy and laughter. Laughter and humor—that was it. It was all so ridiculously funny! That's it—laugh! Laugh! Laugh and never stop laughing!

And Reed did just that. He laughed at the others and he laughed at himself. He laughed at the ship and he laughed at the beautiful Spheres drifting through everything in sight. He danced and played with Draper and Venus and De. Then he danced through the air lock with them and joined the other two on the asteroid. And all six of them drove around over its surface laughing like sleepwalking comedians.

AND THERE were only six who played. Sezzy and Blacky lay on their only back ten feet off the asteroid—laughing. And how they laughed! A roar and a giggle and a howl and a gurgle—two half-wits laughing from one cell. And they didn't laugh with the situation—they laughed at it. For the Spheres didn't fasten into Sezzy's consciousness, although the uninitiated were continually trying.

Singly and doubly they tried, only to quiver away from what they found. A lovely yellow Sphere wandered through Sezzy, but bounced away from his mind and floated nearby, shivering. A dark-green globe followed, with the same result. The yellow floated over to the green and into it. Colors shaded and changed. Then, half in and half out of each other, they dropped into Sezzy's head. Apparently the findings of this committee were no more pleasing than had been those of the

individuals. They broke it up and shot away in opposite directions. And still Sezzy laughed.

SEZZY SMILED happily as he went about the task of blasting and loading caradinite. The Spheres were ever in attendance, penetrating everything. They played about, singly and in groups. They intermingled to form brilliantly colored patterns and designs. Their joy was so obvious that Blacky's conscience hurt him while he stole chunks of their planet. This was the thing over which he and Sezzy always fought.

The life of a Sphere appeared to be only a few hours long. It would come out of a caradinite streak as a small red bubble, grow slowly into a huge violet globe, and finally collapse swiftly down the spectrum of both size and color. The collapsing Sphere always raced into the rock as though afraid of being late to an important date.

The Spheres were not selfish. They shared Reed and his crew like kids would so many footballs. And the men were happy, for now they felt no restraint of convention or self-consciousness. Gratification of subconscious desires became their most important concern. Although Sezzy knew the Spheres to be essentially gregarious, he was very much surprised when a vague element of organization entered the men's games.

Reed was the first to settle into a recognizable pattern of insanity. He wedged his feet into a crack and began to sway gracefully, his face turned toward the immense half-moon of the satellite's primary. His expression would have made a saint feel like a sinner. An emerald Sphere formed a background for his beatific smile.

Sezzy was starting away from the

ship when he saw Reed. He watched the tall chief sway for a moment; then he drove over to investigate, grinning.

"Hey, fella, you stuck? I'll yank you out so you can have more fun," and Sezzy started to do it.

"No-no-no!" cried Reed. "Please don't uproot my bulb, for then I, the lily, will die."

Sezzy goggled; then he caught on. This was part of some game that Reed was playing with himself. "A lily! He's a lily, Blacky! Can you imagine?" Sezzy howled.

"And he's got a bulb and a stem and a blossom!" Blacky wedged a few laughs among Sezzy's many.

The smile of purity that Reed turned on Sezzy-Blacky should have whitewashed their one not-so-pure soul. "Yes," he said, "I am a lily, tall and graceful, and with a bloom of unearthly beauty." Reed had always considered himself to be the fairest of the foul sex.

"A wild lily in the breeze, huh?" Blacky shoved Reed. "I get it—a lonely, lovely lily of the wilderness." And he moved back to watch the inverted pendulum swing.

"Aw, Blacky, you don't know your floriculture," objected Sezzy. "He looks like the hothouse variety to me. You know . . . artificially stimulated into abnormal growth."

"Yeah, Sezzy, maybe you're right. He does look like he grew too fast," gurgled Blacky. "He's just a hothouse lily with a long stem and a big blossom, and swaying gracefully in the breeze of a fan."

THE OLD MAN shook with laughter. He gave Reed another shove and started off, but he didn't go far. Draper came fluttering down from above, trying hard to catch a dancing yellow bubble. He banged into

Sezzy and flapped like a bird trying to recover.

"Pretty yellow. Pretty, pretty," Draper stretched his arms toward the bubble. A sapphire Sphere backed his face.

"What're you, fella? A bull with a beauty complex?" Sezzy untangled himself.

"It's pretty and everything's so beautiful," answered Draper, dreamily. "I'm prettiest, though. Look, aren't my wings the most beautiful things? I'm just a butterfly fluttering from flower to flower. You're pretty, too, and have the sweetest smell." Draper grabbed Sezzy's helmet and clicked his own against it.

"Hey, guy, we don't smell that good," denied Blacky. "Look over there . . . that's a beautiful lily. Fly away, butterfly, and look it over . . . it's got ears!"

"Oh, a lily? Wonderful! I'll sip the nectar of purity," and Draper went flapping away to satisfy a long-hidden love of beauty.

Sezzy grinned, muttered something about a head full of butterflies, and went off for another load of ore. When he returned, his prediction that he would put the monkeys on a real stage had come true. The whole crew was there, enjoying life to its fullest.

De Koven's longing for the ability to express himself was finding outlet in flights of what he thought was oratory. Sleepy was the subject of his discourse at the time Sezzy picked it up on No. 3 audio. But Sleepy was no longer such. A deep-rooted admiration for sparkling eyes and flashing smiles had transformed him. The blanket that draped from his shoulders lifted and flowed and fell in the slight gravity. Sleepy considered it to be a veil behind which he could tantalize the desires of men with his vivacious femininity. He

was not conscious of his huge amethyst headdress; nor interested in the golden topaz crowning De Koven.

"My child," De was saying to Sleepy, "such boldness is unbecoming. A young lady of your age should be more careful of her attire. Such a condition of disreputable dishabille might very easily be misconstrued."

Sleepy gave a light laugh. "What a man! What a fighter!" He whirled his blanket seductively and sidled up to De Koven.

"Child-woman, your sins shall multiply and become even more multitudinous than the joints of yon snake," orated De. "Never since the garden has man doubted that it was the snake, not the apple, that was eaten by the woman. Woman's wiles are of the viper; her tongue is piercing venom. Your kind, child, is behind you."

Sleepy turned to see Venus wriggling toward him. A screech and a kick shot him up like a rocket. His wild scramblings for the drive belt were finally successful enough to halt his departure and char big holes in the blanket. Sleepy came down giggling at Fox, who was barking at Venus.

Fox was even smarter than a fox—he was a fox terrier, so he thought. He circled Venus and yapped wildly, for Venus was a snake with individuality and distinction. Like Fox, Venus had half a ruby Sphere in the middle of his forehead; but, unlike him, he had his hair on the outside of his helmet. Apparently Venus' deficient stature had something to do with his admiration of snakes; therefore, he was now a snake. His deficiency of hair had been more laboriously remedied by plastering the back of his helmet with grease and shredded waste from the generator

room. A snake with hair was the picturesque result.

SEZZY LAUGHED and got off the stage. The show was in full swing and its audience of two-in-one didn't want to miss anything. Over all and through all bubbled the colorful Spheres.

Fox jumped over Venus and came in again, wary of a sudden strike. "Snake-snake-snake!" he yapped. "You're just a limber hole chaser!"

"Is-s-sat s-so?" hissed Venus. "Well, that's better'n being a mud-sniffing, night-howling hound!"

Draper flew over, graceful as a lame bat. "Snakes and dogs make lakes and logs," he trilled.

Fox switched ends, crouched to spring, and barked: "And flutter flies make Spanish pies."

Venus saw his chance. He struck and sank imaginary fangs into Fox's doggy rump. The dog went up yelping, bounced off the butterfly, and came down near the lily. Driven by that immortal instinct of his kind, Fox immediately became interested in the upright obstacle. He trotted up to Reed and around him, sniffing.

Reed moaned: "I beg of you, animal of the twitching nose, foul not the purity of my stem."

"Oh," growled Fox, "just a lily, huh?" He ran his nose up and down Reed. "Yep, you're right. You smell just as sweet and fresh as an unused cork."

Sleepy was trying to charm Venus. His hips moved in a bulky imitation of sinuous undulation. Venus' head shifted rhythmically as he watched the fascinating motion.

"Sleep, snake, sleep, sleep, sleep," commanded the charmer; "relax and sleep so that my feminine touch will not wake you to vicious attack."

"He sleeps," spouted De Koven. "The blood of the limbless reptile

has congealed; his spirit lies dormant; he is at rest. You may touch the impotent poison packer without the slightest uncertainty or feeling of doubt as to his condition of complete and utter immobility."

"That's right," interpreted Venus. "There ain't a wiggle left in me."

"Splendid!" chirped Sleepy. "As my beauty and charm do bind you, about my neck I wind you," and he suited action to words.

De went at it again: "With no intentions, either deliberate or otherwise, of disparaging the unquestionable quality and incomparable exquisiteness of your ligament-strung necklace of reptilian skeletal ossifications, may I draw your youthful attention to a gorgeous insect of brightly colored wings which would, if pinned to your dark curls, enhance your maidenly loveliness no end?"

Sleepy looked up. "Oh," he exclaimed, "a butterfly! Gimme!" Action and reaction sent Sleepy flying toward Draper and Venus bouncing toward the ship.

As Sleepy struggled to pin the giggling Draper to his helmet, De discovered a tragedy in progress. Fox was scraping at the ground with his "forelegs" near the lily's feet. When De arrived in the flower bed, Fox grinned like a little kid caught pulling the forbidden lily. The expression on Reed's face showed sorrow and wisdom, but no longer did it show purity.

De shoved Fox away. "Foul-minded specimen of the animal kingdom, be off with you! Do you not realize that such an act will cause the lily to wither and die?"

"Don't kid yourself," yapped Fox. "He'll be a spotted tiger lily on the prowl now." He trotted off with his nose up.

Sezzy was so convulsed from

laughing at the burlesque that the hysterical Blacky had to help him toward the stage.

"I can't stand it!" screamed Sezzy. "It's killing me!"

"And me!" Blacky choked on a cackle. "We're dying of a dislocated sense of humor. We'd better drive as soon as these monkeys can load us."

But the request for help seemed to be funnier to the monkeys than their antics were to Sezzy. Not even Reed, whose interest in caradinite had been greatest, would relinquish a moment's pleasure. Sezzy did the job himself, smiling sadly the while.

THE ACTORS were still at it when Sezzy came in with his final load. He fastened it down with a thought for the ship's owners: "Of all the insane ideas—hunting ore with no outside lockers! I'm tired of working that damned air lock; you'll have to do it when we move the stuff over to our ship. And will I be glad to slam this wreck back into the Buckle? Yeah, man! That's one job I'll do with pleasure!"

"That reminds me," answered Blacky; "we've got one more job to do before we drive. Remember what I was telling you?"

"What? Oh, yeah, that's right . . . not a bad guy. Come on, let's pin him down."

Sezzy got outside in time to see De Koven yank Sleepy's scorched blanket so hard that a big piece ripped off.

"I warned you, my little one," leered De. "Now, see? Your maidenly veil has at last come to the parting of the ways."

"And so have we, my funny ones," added Sezzy. He headed toward Draper, who was flapping about near Reed. But Reed wasn't tall and

swaying now; he was crouching along like he had a bellyache.

"Hey, butterfly!" Sezzy hailed Draper. "What's the matter with the pretty lily? Did you sip all the honey out of it?"

"No," complained Draper, "it's running around so much I can't light."

"I can't stop," yowled Reed. "A rooting dog with instincts of a hog, doomed me to eternal motion. I'm a tiger lily on the prowl!"

"Never mind, butterfly; let the lily go," Blacky spoke soothingly. "Come with us; we know where flowers bloom eternally with a most delightful fragrance."

"Where, where? Please tell me," begged the tough, husky Draper.

"Come, pretty butterfly; we'll show you." Blacky and his pal led the trusting insect into the ship, shoved the poor thing into the toilet room, and locked the door.

"LISTEN to him flutter," laughed Sezzy. "Why, you'd almost think he doesn't appreciate all the beauties in there."

"Yeah, but he'll appreciate our thoughtfulness when that beauty in his head turns him loose. Remember what happened the time you got smart and came after caradinite while I was sleeping?" kidded Blacky. "Even after I woke up and the Spheres turned you loose, the joke was still on you . . . and it stunk for days!"

"Oh, lay off and tell your potbellied pets good-by. There's an apposition coming up soon."

"I hope they like the souvenirs we're leaving 'em."

"It sure looks like they do. I'll bet those colored bubbles haven't had so much fun since they can remember." Sezzy strapped into the pilot's seat.

"That's true of the souvenirs, anyway," answered Blacky. "This is one time those monkeys will be tickled to death to be left behind."

A short time later, Sezzy moved the ship around the asteroid in preparation for the hop. "Well, Blacky, your pet Spheres didn't seem to mind this visit after all."

"How the hell do you know? Just because they can make people laugh is no sign they like to see their planet stolen. I still think it's the way they have of defending their world."

"It may be; but why don't they make those guys kill themselves. It'd be quicker than laughing 'em to death."

"You're stupid, Sezzy. How could the Spheres possibly understand or use an emotion they've never known? I'll bet that the emotion we call happiness is their only one. That's all they have to fight with. It's not their fault that we do crazy things when we're happy."

"Well, you'd better take a good

look at your happy fighters, because it'll be your last."

"If it hadn't been for you," growled Blacky, "we'd have quit stealing from them years ago."

"Stealing or not, we've got enough this time for several good sprees. We can even cut the butterfly in for a share if you want to."

"Sure thing, Sezzy; good idea. And we'll make it a real spree this time . . . with plenty of pretty gals to relax our space-hardened soul."

"Our soul, Blacky?"

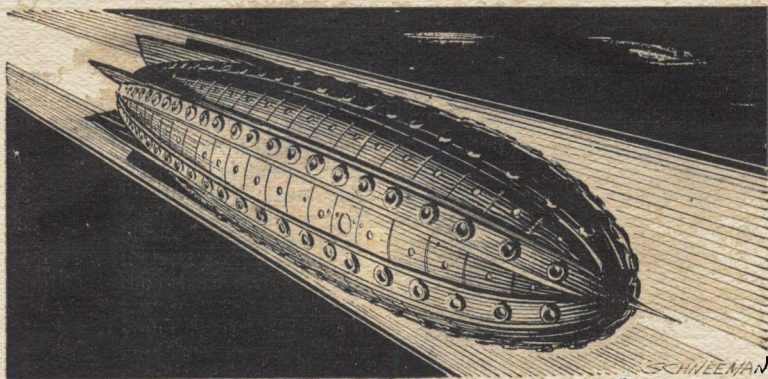
"Well . . . yeah, Sezzy, our soul! You know . . . that thing that's a man's most precious possession."

"What burns me up, Blacky, is that we have to share it. We've got two feet, two hands, two ears, and two eyes . . . but only one soul!"

"You said it, Sezzy! Why the hell couldn't we have two of 'em? We've got two of everything else!"

With it's dual-pilot lamenting his deficiency, the battered ship lifted toward the stars.

THE END.



JUSTINIAN JUGG'S PATENT

By L. Sprague de Camp

How to get a patent—and what you can't get. All necessary details to discourage villainous persons who think a patent can be stolen, in fact. It might be—but it'd fake some doing!

Illustrated by Schneeman

JUSTINIAN JUGG invents atomic power. He not only invents it, but brings it to a state of commercial practicability without blowing himself and the State of Illinois, where he lives, to kingdom come.

O. K., what next? Few people will mail checks to Justinian Jugg merely out of gratitude to such a public benefactor. So Justinian looks to the patent laws for protection in enjoying the fruits of his labor.

And here, according to the science-fiction author, begins the downfall of Justinian Jugg. For what reader of science fiction can doubt that the patent laws were hatched in Hell by a coven of cackling fiends for the express purpose of grinding the faces of inventors into the dust?

Probably Justinian's villainous assistant, Virgil Vampyre, steals Justinian's model. This causes Justinian no end of grief until a lucky break enables him to steal the model back again, so he can get his patent. Of course, he never suspects Virgil until it's too late. Fictional inventors somehow never do suspect their assistants, though the reader has been put on his guard by the news that the assistant has "shifty eyes" or a "sensuous, too-red mouth." (Personally, I never took any stock in the theory that such physical features reveal a man's character; the fanciest liar and biggest crook I ever

knew was a little round man who fairly oozed bluff honesty and sterling worth.)

When Justinian finally gets his patent, Virgil Vampyre reveals the secret to Gillespie & Ghoul, Inc. These greedy industrialists steal the patent. So Justinian, broken by years of disappointment—gentle sob—commits suicide.

But right must triumph in the long run. At least that's what most editors think most readers want, and the editors are probably right. So twenty years later Justinian's son, Jasper Jugg, sets out to recover the patent and avenge his father. His efforts are probably complicated by the fact that he falls in love with Virgil Vampyre's daughter.

All of which, alas, is hogwash. People have lost their shirts through patents; inventors have been hornswoggled. But not *that* way. 1. You don't need a model to get a patent. 2. A patent is by definition a public document; hence Justinian's invention would not longer be secret once it was patented. 3. Stealing a man's patent is almost like stealing his citizenship; conceivable, but would take a bit of doing. 4. The longest a patent runs in the United States is seventeen years. So twenty years later it would have expired, and there would be nothing for Jasper Jugg to recover.

Well, what *would* happen if a real Justinian Jugg really invented atomic power? That's a long story, of which I hope to give you the gist in this article. To be original, I shall assume that Justinian is a man of prudence and foresight. Such a discussion is likely to be more profitable if the discussers know what they are talking about. So let's have some definitions.

FIRST, what is a patent? Several things: (a) The grant by the government to an inventor of the exclusive right to stop others from making, using, or selling his invention without his permission for—in the United States—a period of seventeen years, in return for which the inventor allows the government to make a public record of the invention so that anybody else can practice it after the patent expires. (b) The pretty be-sealed and beribboned document that the government sends the inventor to confirm this grant. (c) A printed copy of the specification and drawing of the patent—more properly called a patent copy—which anybody can get by sending ten cents and the number of the patent to the Patent Office. Of these three things that can be called “patents,” the first is the most important. Therefore, we shall restrict the meaning of the word to that legal grant of a qualified, temporary monopoly.

So far so good. But we have spoken of an “invention.” What is meant by that? (Maybe you know this one already; but maybe you only think you do.) An invention is a new plan or scheme for doing something, or for a thing to do something with, that somebody has thought up, contrived, or figured out. Just that. It is *not* a model or a set of drawings embodying or explaining this scheme. Neither is

it a legal right or privilege.

It is not even, strictly speaking, property of any kind; hence it cannot be owned, sold, stolen, or given away. It is possible, by applying for a patent, to acquire certain rights regarding an invention that can be treated as property. But please, let's not have any more confusion between “invention” and “patent.” The former, remember, is a thought-up idea for making or doing something; the latter is a contract between an inventor and the government: a license permitting the inventor to do certain things.

But suppose Justinian Jugg had thought up a new way of knotting his necktie. Would that be an invention according to the above definition? Certainly. Could he patent it? Certainly not. What, then, can you and can't you patent? To find out, the thing to do is to get down to fundamentals, which in this case means Section 4886 of the United States Revised Statutes:

Any person who has invented or discovered any new and useful art, machine, manufacture, or composition of matter, or any new and useful improvements thereof, or who has invented or discovered and asexually reproduced any distinct and new variety of plant, other than a tuberpropagated plant, not known or used by others in this country, before his invention or discovery thereof, and not patented or described in any printed publication in this or any foreign country, before his invention or discovery thereof or more than two years prior to his application, unless the same is proved to have been abandoned, may, upon payment of the fees required by law, and other due proceeding had, obtain a patent therefor.

This is the basic law under which all United States patents—except design patents—are granted. It has recently been amended; the two-year rule about patenting or describing in a printed publication before the pat-

ent is applied for has been changed to a one-year rule.

So, you see, the thing must not only be an invention; it must be "new" and "useful." It is considered "new" if it complies with the rules farther down about not being known or used by others in this country prior to the date when Justinian had his inspiration, and not having been described in print in *any* country either before Justinian's date of invention or more than a year before he applied for a patent. It is considered "useful" if the inventor claims to have a use for it, regardless of how impractical or absurd it may seem to others.

BUT Justinian's necktie knot may be both "new" and "useful," but still unpatentable. The reason is that it is neither an "art, machine, manufacture, or composition of matter." In the statute, an "art" is a process. But it is a manufacturing process wherein something definite is done to a raw material to convert it to a finished product. Hence the necktie-knotting process does not qualify, any more than a process of book-keeping or hat checking would. A "machine" in the law is just a machine; that's simple enough. A "manufacture" is an article of manufacture; a man-made object. A "composition of matter" is a physical mixture or chemical compound. Since the necktie-knotting method is none of these four, the inventor thereof is out of luck. (He *might* be able to patent the finished product, the ready-knotted necktie, as a "manufacture.")

Moreover, the thing must really have been "invented" in the legal sense. That means that if the inventor made only the kind of slight improvement in size, shape, color, efficiency, cheapness, et cetera, that

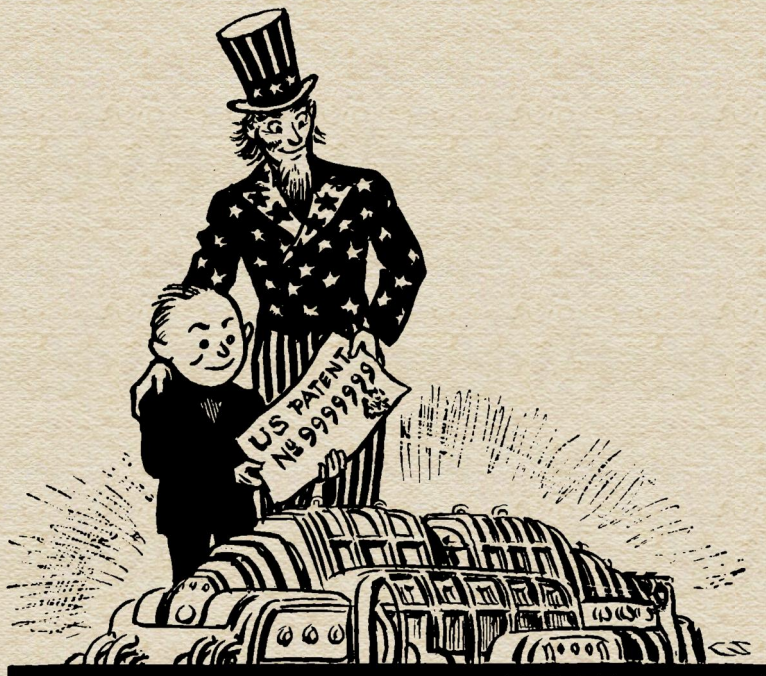
would supposedly be obvious to any competent engineer, he is not considered to have "invented" anything.

But we'll suppose that Justinian Jugg has cleared all these hurdles. What does he do next? Well, if he's really smart, he buys a copy of "Inventions and Their Management," by Berle and de Camp, Scranton: International Textbook Co.—but at this point my better self, if I have one, tells me that it's not decent to start pushing my own book so early in the article. So we'll forget about it until we come to the bibliography.

Very well, then, Justinian buys a book on elementary patent law and practice. The first thing he learns is that in his business you can't have too many records. He makes detailed engineering drawings and a typewritten description of his invention. He establishes the dates of these by notarization, or by having witnesses sign them, or by sealing them up and mailing them to himself. The first method is usually the best. Then he puts the papers in the safe-deposit box where Virgil Vampyre can't get his lustful fingers on them. Moreover, he repeats this whole process every time he gets an idea for a minor improvement on or a new application of his invention. If he has a regular laboratory, he keeps a journal which he and Virgil sign and date at the end of every working day.

Then he hunts for a patent attorney. Does he fall for a "protect your invention without patenting" gag? Oh, no, he knows that copyrighting a description of an invention gives him *no protection whatever*; all it confers on him is the right to stop others from *copying the printed description*. It does nothing whatever to stop others from making, using, or selling the invention described therein.

Does he get in touch with one of



these Washington attorneys who are far from him but near the patent office? No. He lives, say, in Chicago; he looks up the Chicago Patent Law Association in the phone book, gets a list of their members, interviews several of these, and picks one he likes. Or he could write the American Patent Law Association for a list of members; if he lived in a small town without a local patent-law association he would probably have to.

THE ATTORNEY'S first reaction to the mess of drawings and description that Justinian dumps on his desk is: "What the devil's this all about?"

Justinian Jugg says innocently: "Atomic power. My description tells about it."

"That's what I'm talking about!" cries the attorney. "I can't make head nor tail of it. You assume that I know all about atomic physics, but I don't."

So Justinian, wondering at the unfathomable ignorance of the non-technical mind, explains in more detail. He forgets that no one man could possibly be an expert in each of the many technical fields wherein a patent attorney is required to work in the course of a single month.

"Ah," says the attorney at last. "Ah. I begin to see. You've really got two inventions here. One is your vest-pocket gamma-ray shield; the other is your mixture of the oxides of thorium and uranium. We'll have to order separate searches on

them." Which, disregarding Justinian Jugg's wails about the extra cost—probably fifteen dollars per search—he does from his correspondent attorney in Washington.

A word about searches: Countless inventors have been astonished, nonplused, and chagrined to learn that some bird they never heard of invented and patented their own pet idea back in 1905. Which, of course, means that their invention is not "new," and hence not patentable. (Somebody, for instance, invents a rubber glove with webbed fingers for swimmers at least once a year.) This discovery is especially painful when the inventor has spent all his spare time and cash over a period of years on his invention. And the percentage of inventions that turn out to be anticipated by some prior patent is more than you probably think. I once counted over a lot of inventions submitted by amateurs for advice as to what to do next. Those that either were obviously impractical, or were anticipated by the prior art—a technical way of saying that somebody else thought of it first—amounted to ninety-eight percent of the total. So it's best to do your searching first, and go in for expensive experiments and model work last if ever.

It transpires that a man named Woofhong patented a gamma-ray shield almost identical with Justinian's two years before. The attorney recommends dropping the shield idea. Justinian protests: "But his isn't *exactly* like mine. Can't you get some sort of patent?"

"Maybe," says the attorney "And maybe not. If I did, the claims would have to be so narrow—since they could cover nothing but the *difference* between your shield and his—that it probably wouldn't be worth anything."

Justinian is not convinced. He asks: "What about a design patent?"

"Utterly useless as far as you're concerned. The design that you get a design patent on is an *ornamental* design; it's the appearance, and not the mechanical features, that is protected. They're cheap, and they don't run for very long, and don't give much protection even on the looks. They're used on style goods, like women's shoes and those things they're wearing on their heads—you know, sort of like slices of cantaloupe."

Justinian asks: "Isn't there such a thing as a plant patent? My invention can be used to run power plants."

The attorney chuckles. "*Plant* in the statute means a member of the vegetable kingdom. A flower, like an erythema— No, that's a disease."

JUSTINIAN JUGG finally subsides. At least, says the attorney, he can still file an application on the oxide mixture as a composition of matter.

"But," says Justinian, "I have another idea. Couldn't I get a patent on the use of my mixture to drive a spaceship? They aren't getting anywhere with those liquid-fuel rockets they've been experimenting with, because the thing has to be over ninety-five percent fuel at the take-off. And if you try to give it enough initial velocity by shooting it from a gun or catapult, the acceleration flattens your passengers down to a thin layer of protoplasm on the floor. With my—"

"Just a minute," says the attorney. "Have you got a set of plans for this ship worked out, or just an idea that your oxide mixture *would* work if such a set of plans had been drawn?"

"Just the idea," says Justinian

Jugg. Whereupon the attorney explains that a bare idea is not an invention. It would be nice to have a mechanical translator which, when you talked one language into it, would automatically write or speak your message translated into another. (For translation into German it would need a verb strainer, to strain out the verbs so they could all be piled together at the end of the sentence.) It would be nice to be able to send people by wire. But the knowledge that such things would be nice is not invention; it is necessary to draw up a plan for, or build a model of, a machine that will actually do one of these things, even though inefficiently, before you have a patentable invention. This doesn't contradict my previous definition of "invention." The model, or drawing, or description, is not the invention, even though it is a necessary part of the inventive process. The invention is the idea or plan embodied in the drawing, or what have you.

Justinian being, as I said, a man of prudence and foresight, knows that to prepare a patent application you have to be a combination of engineer, lawyer, and expert on semantics all in one. So he wisely leaves this job to his attorney. The preparation of the application costs Justinian about one hundred and fifty dollars including the initial government fee. If all went through smoothly, the remaining expenses would probably be between fifty and one hundred dollars. But I'm not going to let Justinian Jugg off so easily. It will be more instructive, as well as better story technique, to put him through some grief before right finally triumphs.

Justinian devotes himself to working out a practical spaceship drive, and the attorney sends the application to the Patent Office. There it

is given to the assistant examiner who specializes in radioactive mixtures, or whatever is the name of the subclass into which this invention falls. This official writes the attorney, citing a dozen reasons why the application is unacceptable. He would probably *not* object to it on the ground that it wouldn't work, as he would a perpetual-motion machine. He's pretty familiar with the field; probably more so than Justinian Jugg and the attorney put together. And he is probably quite willing to concede the possibility of atomic power. As to whether Justinian's design is actually practical, he doesn't worry about that.

The attorney buys from the Patent Office copies of the patents cited by the examiner against the Jugg application, studies them, makes changes in the application, and answers the examiner's objections. This goes on for months, or even years. If Justinian wants his patent promptly, he may be able to get it issued in a year and a half or two years. But it may be more profitable to stall along for decades.

IF JUSTINIAN is really the first man to produce an effective method of getting atomic power, he has a *pioneer* invention. If his attorney knows his business, he will get a *basic* patent on it. Every United States patent has a lot of little numbered paragraphs at the end called the *claims*. These define the *scope* of the patent; that is, they determine what the patent covers and what it doesn't. If a thing is accurately described by one or more of the claims, it is *dominated* by the patent, and nobody can practice it without the patent owner's permission. A basic patent ought to contain some broad *generic* claims, which will sew up the whole art as long as the patent is in

force. It will also contain some narrower *specific* claims, to cover specific variants of the invention and serve as a second line of defense in case the generic claims are declared void by a court as the outcome of an infringement suit.

Other things being equal, the breadth of a claim varies *inversely* as its length. If it says: "A wrench comprising a shank having spaced ears at one end, a block pivotally mounted on the ears, a socket head having a pair of ears pivotally connected with the block, and a sleeve slidably mounted on the shank adapted to embrace both pairs of ears and lock the socket head against movement," a wrench with the ears on the block instead of on the socket head would not conform to the above description, and hence would not be dominated by the claim. Such a wrench would *circumvent* the claim. If the claim read simply: "A wrench comprising a shank, a socket head movably connected with the shank, and a sleeve slidably mounted on the shank and adapted to lock the socket head against movement," this much shorter description would dominate the wrench no matter what sort of universal joint or flexible connection is used between the shank and the socket head. Reading and interpreting patent claims is a feat of mental gymnastics with the same sort of fascination that the solving of cryptograms has for some people.

Justinian Jugg might have found either that his invention was altogether unpatentable, or that the only patent he could get would have such narrow claims that anybody with half a brain could circumvent it. Such a patent might not be worth the paper it was printed on. That fact would not prove that all patents were worthless, or that the

United States patent system was no good. A patent is merely a license to do certain things, which the government will give you if you convince it that you have a right to it. Whether those things will be worth doing after you get your license is a matter with which the government doesn't bother its pretty little head.

If Justinian couldn't get a patent, he could still practice his invention without one—provided some other person did not own a patent, still in force, that dominated the invention Justinian thought was his. The assorted searches ought to have given him a pretty good idea of how things stood in this respect. If he practices the invention, he may—if he can—try to keep it secret, if the nature of the invention admits of secret exploitation.

In actual practice, it is almost impossible either to keep a valuable invention secret for many years or to make much from its secret practice. The law gives very little protection to the possessor of such a secret, since a secret does not have well-defined property rights attached to it. Remember, an invention is not property. Once a secret gets out there is no way of stopping it, and unless the inventor applies for his patent within a year of the first public use, or sale, or description in print, the invention becomes free for everybody to use.

FOREIGN patents are usually more headache than profit. But Justinian Jugg would probably have to consider them seriously, with an invention as important as this one. Most of the nations of the world have patent systems. But these vary greatly from country to country, and a patent in one country gives no protection in any other. Some countries insist that you apply for a patent in

their country as soon as you apply for one anywhere else, or they won't give you one at all. Some of them have rules requiring the patent to be worked—that is, the patent owner has to practice the invention in that country—within a certain time, or the patent will be forfeited, or the owner has to grant a compulsory license to anybody who applies for one. Some of them tax patents.

Generally speaking, patents in foreign countries are easier to get and cost less than American patents, but they give less protection to the patent owner and are harder to enforce. The United States Patent Office examines applications very carefully and allows only such claims as it believes describe the new features of the invention. At the other extreme, the French Ministry of Commerce and Industry will give anybody a patent on anything whatever—the wheel, for instance—provided the application is in proper form. The question of what, if anything, the inventor has added to the prior art, and hence what the patent legally dominates, is left for the courts to decide when the patent owner sues an alleged infringer.

Some day, perhaps, the question of an international patent system will become something more than a pious dream. But it would take a masterly job of reconciling to get the American and French systems together, not to mention the others from Argentina to Zanzibar inclusive. (Yes, Zanzibar grants patents, though I don't know what you'd do with one when you got it.) The possibilities of interplanetary patent protection, or the rights of a patent owner against a man who is committing an infringement in interstellar space, are a bit too speculative for profitable discussion just yet.

But suppose some bright engineer

for Gillespie & Ghoul, Inc., has also discovered the properties of Jugg's oxide mixture. Maybe Virgil Vampire sold out to the corporation. But this is not necessarily so; cases of independent and nearly simultaneous invention happen all the time. One fine day Justinian's attorney is notified that there are two applications pending for patents on the same invention. Note that nobody can steal anybody's patent at this stage, because no patent yet exists.

The Patent Office declares an *interference*, which is a kind of investigation to determine which man is the true and first inventor. Here records are all-important. If Justinian did all the things he ought, he may win out even against a big, wicked corporation.

But Justinian will probably find that his attorney won't work for nothing, the cad. The costs of the interference run up into hundreds of dollars, and Justinian fears he'll go broke before the thing is decided. So he takes his application to the Specific Electric Co. Being, as we said, a man of prudence and foresight, he doesn't wait that he's got to have the money. They'd know they had him by the short hairs. Neither is he fiercely adamant in demanding a few million spot cash or a fifty-percent royalty. If Specific Electric Co. take the risk of developing atomic power, they're going to be paid accordingly or they won't play. And there is simply nothing the independent inventor can do about it.

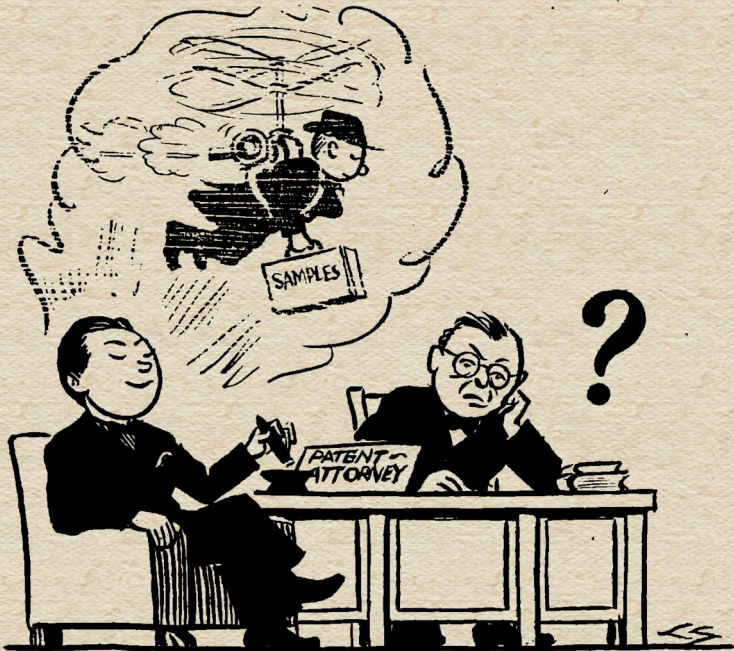
JUSTINIAN JUGG finally enters into an exclusive license with them for a royalty of 1½% of the retail price of the oxide mixture. (There are all kinds of licenses.) One thing he never, never does is to own a part interest in a patent. That is prac-

tically fatal. Remember that a patent is a license—like a dog license. Either you have or you don't have the right to keep a dog. You can't have one tenth of the right to keep a dog. It's that way with patents; either you have the right to stop others from practicing an invention or you don't. To say you own fifty-one percent of a patent is to make a meaningless noise. Unless there is a specific contract between the co-owners of a patent, either of them can do what he likes with his share, and he may very easily destroy the value of the entire patent without the other co-owner being able to stop him.

A United States patent *must* be taken out in the name of the true inventor, all the true inventors, and nobody but the true inventors. The

inventor, or inventors, must sign the application, the only exceptions being that the executors of dead inventors and the guardians of insane ones sign. If there are co-inventors, they should agree ahead of time to have all the part interests assigned to one of them. If they are partners, the assignee may agree to pay the assigners a percentage of any money made from the exploitation of the invention. Justinian, if he is as prudent and foresighted as I have said, would have made Virgil Vampyre sign a contract of that sort when he first hired him. Only a hired assistant doesn't normally get a rake-off on the profits.

The Specific Electric Co. takes the responsibility of prosecuting the application. Note that Justinian Jugg



did *not* disclose his invention to any interested party before the application was filed. There is *no* way of safeguarding your interests adequately in doing this. It is a justifiable procedure only when you either (a) can't afford even to file an application, or (b) the invention is of such slight or doubtful value—most inventions are just that, though the inventors will seldom believe it—that it's not worth risking the cost of a patent application. (I've made inventions of that kind; I never profited from them, but on the other hand I never spent good money for a patent with the commercial value of a secondhand alley cat.) Trying to sell the rights while the patent is pending is not entirely safe, but the risk is often worth taking.

WELL, the patent is finally issued to Justinian Jugg with the Specific Electric Co. as assignee. The Patent Office sends Specific Electric Co. the pretty document; publishes one figure from the drawing and one claim from the specification in their weekly *Official Gazette* (along with one thousand others); and lays in a supply of patent copies to mail to anyone who wishes to buy them. Now all Specific Electric Co. has to do is to sue an infringer or two—the suits cost around ten thousand dollars apiece—and make the suits stick. The judge may decide that (a) the patent doesn't dominate whatever it was the infringer was practicing. Maybe there was one word too many in a claim. Infringement of one claim is infringement of the whole patent, but it is necessary to infringe an *entire* claim. Infringement of part of a claim doesn't count. Or (b) that the patent claims some of the prior art, or wasn't taken out in the name of the

true inventor, or has something else wrong with it, and so is invalid. In either case Specific Electric Co. and Justinian are out of luck. On the other hand, one successful suit will usually bring the other infringers to terms. Maybe they can make the infringers climb down by mere threats of suit—but they don't want to count on that.

If Specific Electric Co. is really interested in atomic power, they may offer Justinian Jugg a job as a research worker. They would require him to sign an employment contract agreeing to assign all his inventions to them, not only while he worked for them, but for six months or a year after he leaves their employ. (That last little wrinkle is called a *trailing clause*.) If there were no contract between Justinian and his employer, he would own all the rights to any invention he made, but if he used any of the company's time or facilities in developing his invention, they would have a *shop right*. That means that they could practice his invention without compensation. Similarly, Justinian Jugg would have had a shop right to an invention that Virgil Vampyre developed in Justinian's laboratory, in the absence of any definite contract between them.

Justinian is likely to find that while the way of the independent inventor is hard, the way of the corporate research worker is no tub of butter, either. He's expected to get to work on time like ordinary mortals. He's told to direct his researches in directions in accordance with the company's commercial policies, whether those happen to interest him or not. He's told to produce something profitable and not take too long about it.

If you see him after he's been at it ten years, he'll swear that if one of his inventions goes sour, he's

blamed, but if it's a success, the sales and advertising department grab all the credit. But if he is really such a prudent and foresighted man, he'll probably let his love of the weekly check overcome his hatred of the time clock.

He'll be galled by the sight of the company making millions out of his improvements in the atomic-power field, of which he gets nothing beside his salary. But in fairness to the company, he may remember the money they lose in developing thousands of inventions that don't go, and the fact that, lacking the company's resources and business knowledge, it would take an independent inventor an interminable time to put a revolutionary thing like atomic power on a profitable basis. (Really revolutionary inventions are, in fact, seldom profitable; it's the golf tees and toys and toothpicks that bring in the money.)

LET'S SUPPOSE that, while the Jugg patent is still in force, another inventor named Quintus Quinine discovers that the addition of a little osmium sulphide to the uranium-thorium-oxide mixture greatly improves its qualities as a source of atomic power. Can he patent his improvement? Certainly, if it complies with good old Section 4886. But his patent would be *subservient* to the Jugg patent. Can he practice his invention? Not without Specific Electric Co.'s permission. Specific, through its exclusive rights under the Jugg patent, can stop anybody from making, using, or selling their uranium-thorium-oxide mixture. That includes Quintus Quinine, no matter how important his improvement. Adding a little of another substance to the mixture would not circumvent the Jugg patent unless its claims were badly drawn.

On the other hand, Quintus can forbid Specific to practice his improvement, though he can't stop them from making, using, or selling their original, unimproved mixture. Each has prohibitory rights as regards his own particular addition to the art only. If both Quintus and the heads of Specific Electric Co. are reasonable men, they'll probably get together with some sort of agreement; for instance, a cross-licensing agreement. The same sort of reasoning applies to patents taken out on spaceships using the Jugg mixture for power.

Specific Electric Co. will undoubtedly try to round up all the patents it can in the field of atomic power. If it achieves its aim, it will have what is called a *network* of patents. After the original Jugg and Quinine patents expire, there will be so many improvement patents still in force that no competitor will quite dare to try to thread its way through this legal mine field for fear of bringing an infringement suit upon itself.

Specific Electric Co. will keep on taking out patents in the field of atomic power, and will try to maintain its patent position as long as it can. If it gets too ambitious and tries to use its patents to control the trade in some unpatented article, the Federal government may slap it down for violation of the antitrust laws. Eventually all the basic patents will expire, and the improvement patents will become so narrow that the competitors are no longer afraid of them. Then the monopoly breaks up.

THE OBJECTIONS that are raised to the United States patent system are very often not founded on a real knowledge of what the system is or how it works. Many of the objec-

tions come down to an argument that a man with money has an advantage in business, legal, and political matters over one who hasn't. But we know that already, and it is certainly not the fault of the patent system. Patent pools and cross-licenses are usually not, as is sometimes supposed, monopolistic devices, but means for freeing an industry from mutually paralyzing monopolies. The shelving of patents by companies who buy them and then don't want to practice them for fear of endangering an existing investment, does occur. But it is not frequent enough to be very important.

The real trouble with the patent system is that the Patent Office often O. K.'s weak or poorly prepared patents that are later invalidated by the courts when the patent owners try to enforce them. The remedy for this is, as you might guess, more money for the Patent Office. As it is, this is one of the few government departments that shows a profit. But it is not allowed to keep its receipts; it turns them over to the treasury, and has to get an appropriation from Congress each year for its expenses.

If our authors want to reconstruct the patent system from the ground up, they're welcome to do so. But I suspect that when, and if, we have an international or interplanetary system, it will be modeled on that of the United States. This is not a mere bit of nationalistic pride; the system has an excellent record. (Note: The patent system has nothing to do with the United States copyright system, which is perfectly terrible.)

But unless the author is prepared to reconstruct the patent system,

let's not have any more twaddle about secret patents, or the theft thereof, the next time some noble Justinian Jugg discovers how to drive a battleship across the ocean with a teaspoonful of Nujol for fuel, or how to send people by wire. If you want further details of this very detailed subject, I refer you to the bibliography, so you can use your own judgment. There is a voluminous literature on patent laws and practice; a much longer bibliography is given in—ahem—most good textbooks on the subject.

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FOG

By Robert Willey

***What a revolution in a major nation is really like—
by one who has lived through five of them. They're
not mad action—they're maddening uncertainty.***

Illustrated by Schneeman

"History of the Second World War." 12 vols., published by the International Historical Society; New York, Toronto and London. Vol. X "History of the Nonbelligerent Countries During the Period from 1953—1965."

From the Introduction to Part II of Vol. X.

Even though the most important country of the Western Hemisphere maintained its neutrality all through the war the economic situation of the Western Hemisphere in general and that of the United States in particular could not remain unaffected. During the first years of the war the United States, supplying at first mainly airplanes, airplane engines, light and heavy trucks but soon other kinds of military equipment as well, furthermore foodstuffs and fuels of various descriptions, enjoyed a fair degree of prosperity. The Cash and Carry basis was maintained for a comparatively long period. But when a few South American countries were drawn into the war—beginning with Brazil's struggle against a "Fifth Column"—it became necessary to extend credits at least to countries in the Western Hemisphere in order to enable them to arm themselves strongly enough to repel possible invasions of American soil. The steady and rapid increase of the production of war materials and war needs, like foodstuffs and fuels, was accompanied by an even faster decrease of the sales of peace time goods—some of which accumulated in considerable quantities. The cessation of hostilities in Europe—due to complete exhaustion of all belligerent powers and for many years without official restoration of

peace—led to a complete disappearance of all world markets for any kind of goods. This naturally resulted in a severe economic depression in the United States. While that depression did not arrive wholly as a surprise and while its development had been watched with some anxiety by economists, it assumed staggering proportions rather suddenly. A few months after the depression had reached its lowest ebb certain elements succeeded—

I.

"LONG distance. It's Central Office," the switchboard operator had announced when that call had come in. And the manager, even after that long and somewhat difficult conversation, still had the peculiar inflection in his ears the girl had given to that routine announcement.

He lifted the receiver again.

"Yes sir?"

That sounded different.

"Come in for a minute."

The girl came promptly, pad and pencils in readiness, expecting dictation.

"Please sit down. Miss Harter, I noticed that you listened in on my call."

"No sir, I didn't, really—"

The manager smiled, a friendly smile that made the girl feel foolish for having tried to lie to him.

"I knew that you wouldn't admit it, of course. I'd do the same. Now let's forget about that aspect of the matter. I knew you'd listen in and I know you did. And in this particular case I don't mind. You may even spread the news around in the office if you want to and as you probably will. I'm going out for lunch now—will be back at two. Allison will come in at 2:15. Tell my secretary, when she comes back,

that she has to keep everybody out as long as he is with me. Switch all telephone calls over to her desk, except a possible long distance from Anna—my wife I mean. I don't expect her to call today, but just in case."

The manager smiled again when he rode down in the elevator. There would be excited and joyful gabbing all over the office by now and all the time the Harter girl would try to puzzle out how he had known about her eavesdropping. He had done it very expertly. No clicking sound to betray her, no office noise from the others, but she had put all her emotion in two short announcements; anxiety and fear in the words "Central Office" and immense relief into the "yes sir." Even without such a clue it had been evident that she would listen in. Calls from Central Office near the end of the month and at an unusual time were portentous. They might mean that one third or even a full half of the personnel was to be discharged. These employees would not be missed as far as the amount of work to be done was concerned, but they would miss their jobs; there was no chance of finding another. And they were not yet weary enough to close their eyes and ears to bad news.

Central Office did make that request, but he had been in a position to refuse. Business had been satisfactory till about three months ago, they could well afford to keep their men some time longer. Mass discharges would not help to overcome the sudden expansion of the depression that had been approaching ever since the remnants of the armies in Europe had ceased fighting and gone home instead—some with, some without and some against orders. As for his own branch office, he saw the Allison deal on the horizon. It was

well above the horizon, in fact. Under normal circumstances he would have said that it was as well as concluded. Now he could only say that it would take another two or three weeks and that the chances of failure were slim indeed. And, he had added, after all we don't make diamond rings or fancy millinery people can do without. Our products are a necessity of daily life. People might scrimp for some time, but then they would have to buy again.

Central Office had sounded doubtful, but he was the manager for that district and he should know his markets and the general situation. Unless his balance sheets showed steady and prohibitive losses, they would not interfere with his decisions. They were reluctant to lay off themselves. They had expected the branch offices to begin with it so that they could show a reduction of cost *somewhere*. All right, ring up as soon as that Allison deal of yours is a reality and don't wait for the 3:00 p. m. routine call.

And all the relief that the switchboard operator had felt had been expressed in that "yes sir."

THE MANAGER did not go to his customary restaurant for lunch. Everybody knew him there and he did not feel like discussing business that did not exist and theorizing about a situation that could not be bettered by just talking about it. All those things the newspapers were full with, increase of home consumption, reduction of the cost of government, cuts in army and navy appropriations, "constructive relief," land development program, birth rate and Lord knows what else were all right, possibly, but they would not create prosperity. Increase in the volume of business alone could do that, care-

fully planned long-term business, not carefully planned speeches analyzing real or imaginary "situations."

He went to a small lunchroom, found an empty table and gave his order. Two men at the next table were arguing eloquently. He could not help but hear every word.

"The trouble is that nobody dares something new. If somebody has a good idea, somebody else is apt to find that idea mentioned in some foreign book. And then its out. Alien isms they call it then. Meanwhile we're getting deeper and deeper into the mud, because we reject good, workable ideas only because they were hatched somewhere else in the world."

"We should have joined the war. Then the Allies would have won quickly and everything would be better now."

"As wrong as possible," the first speaker was furiously trying to re-light a badly crushed half cigarette. "If we had joined one side, Russia would have joined the other and it would be worse. As it is the two best countries are left. Russia, one of the biggest and most progressive, with a really good government and we, who have most of the natural resources and the best people that ever lived on this Earth—even if they are dumb enough to elect a stupid government."

"Hey, wait a minute. Where is your Russia? They got entangled in their East in spite of their really good government and for the last year or so they have disappeared from view like all the others in Europe. Nobody even hears from them."

"Don't worry; you will. And listen, I tell you this because I like you, don't say much against them. There may be no time for regrets."

"I have the right of free speech."

AST—6

"That's one of those contemptible bourgeois prejudices you cannot forget. Free speech in political questions should be reserved for those with political schooling."

"There are those who agree with you."

"Listen, Jack. I repeat I like you. But *you* don't have political schooling. Now answer one question. Would you argue about the construction of Clemens Tower with an engineer? Would you argue about the treatment for gastric ulcers with your doctor? No. I say you wouldn't. You would realize that they have special training and you haven't. But you still go ahead and argue politics. Am I right?"

"Well . . . but there are several political theories."

"There can be many calculations about the construction of Clemens Tower, but only one is the right calculation. If you only thought without prejudices for one moment—"

The manager hurried his rice pudding and coffee. He wondered—as he had done occasionally in business meetings—why Nature had not provided some mechanism to close one's ears as one could close one's eyes. He paid and left, just when Clemens Tower was under discussion again. The manager also belonged to those without political schooling, else he would have recognized Karl Marx's recurrent "ten yards of cloth." As it was he wished that an earthquake would ruin that building beyond repair, he did not like its curving lines and turretlike corners anyway. And that man would have to find something else for comparison.

II.

ALLISON was waiting for him.

"No you aren't late," he said, when the manager looked at his watch. "I

was early, didn't mind waiting, nothing to do anyway. Your office boy supplied me with magazines and newspapers. *The Worker* was put on top so that I wouldn't overlook it."

"He is a good boy," stated the manager, "and I think one day he will be efficient and useful. But sometimes it looks hopeless. Every kind of advice is considered old-fashioned and treated accordingly. I tell him that a man must work and plan ahead. He says that is a thing of a dim capitalistic past that did not last long as geologic periods go. A natural man conforms politically to Nature, he says—don't ask me what that means—and the only worry one can have is to show revolutionary discipline if, as, and when transition periods come along. I wish times would improve quickly; steady jobs, with decent salaries, are to radical germs of politics what quinine is to malaria germs."

"And that brings us down to business." Allison sat up. "Remember, I once told you that I prefer to be a minor but independent manufacturer. For the present I take that back and wish I also were an executive in a big corporation. You are fairly independent yourself and it is likely that your salary checks will last longer than my profits. Well, that was incidental, now about that deal. I cannot give you your order yet because I didn't get mine. It's certain, only it won't go through in a hurry. What I want to talk over with you is the question of payment and notes. You know to whom I sell. They are good for twenty times the amount. But they drag, probably short of cash—"

When Allison left, almost two hours later, they both felt better. They had reached a tentative agreement that would work out all right.

Only time was needed, "—it seems that we'll have to outwait the depression," Allison had said. It was true enough, but the trouble was that some people couldn't afford to be patient and others wouldn't.

Miss Ryan, his personal secretary, came in, after Allison had left.

"Any calls?"

"None. I brought the mail." The girl hesitated for a second and then added: "Nine letters."

The manager nodded. "I know. Tell the others to go home. Only two volunteers to stay, one for the switchboard and one for important mail if I can think of some. Find out who is not in a hurry to go home."

"I'll stay. Not much sense in sitting around with people who are either gloomy or excited."

That's it, thought the manager, they are either gloomy or excited. Resigned or radical, to put it in more precise terms. And both were just exaggerations of the two possible normal reactions—waiting or planning for possibilities. Like those army staffs who in peace time sat around figuring all sorts of possible and impossible international complications and preparing for every one of them so that they were not delayed when an emergency arose and had not wasted their time. Of course, his office boy would probably tell him that such planning led to war. Oh well, if that were true then his business planning might lead to business, and that was what he and everybody else needed.

III.

THE EVENING was just what evenings very early in March are supposed to be, slightly chilly but otherwise all right. The manager, riding home on the subway—he disliked using his car in town, there was never

any parking space to be found—realized that he had forgotten to change trains. It did not matter much, he'd leave at another station and walk cross town. It was a walk of only fifteen blocks or so and nobody important expected him; there was no hurry. He wondered what his wife might be doing at this moment. Anna was out of town, helping his sister to expect her baby. Nature rarely suffered from depression, didn't show it at least, and always found a balance of some kind.

It was a bit chilly in the street, one of those nights with a very clear sky. The streets in that section were crooked, but he knew his way, there was only one turn where he would have to ask somebody. A few people were walking his way too, talking occasionally, mainly about news or movies. "I wish they'd shoot some straight love stories, without war in them." "Or detective or fantasy yarns, I don't mind pretty girls in them, though." "Without European refugees if it can be managed. I'm sick and tired of seeing starved Europeans gain weight in three days. The hell they do." "I can't even stand the word 'Europe' any more. They'll show up by themselves one day. If not, we can colonize backward if we feel like it."

Now, here was a difficult corner; several streets branched off from an irregularly shaped "square." The manager looked for a likely person to ask about the shortest route. People who walked dogs were apt to know all corners. But there was a policeman, which was just as well—two of them. They were looking in the opposite direction and did not see him approach. When he addressed them they whirled around, as if surprised, making a peculiar movement. Then their faces seemed to relax. One of them answered his questions,

politely but curt—and somewhat absent-mindedly. He sounded as if those answers were not part of his duty but only an interruption of some other job that was infinitely more important. Slightly dazed the manager walked along the street indicated by the policeman.

And then, quite suddenly, he began to wonder.

Normally those men would have been more explicit, more talkative. They might have walked with him for a block or so to make certain that he did not miss his way. Not that it was necessary, he was in a familiar street now, that big neon sign of the Dixie Hotel was unmistakable. There were two more policemen standing in front of the hotel entrance. Why two? Then he noticed that they wore pistol holsters, and he realized what the peculiar movement of the others had been. They had gripped their pistol butts on hearing his voice.

What was the reason for all this? There was no election of any kind in sight; there was no strike going on in town, partly because those who still held jobs were careful to keep them. And the others had been promised that they would get theirs back, as soon as there were jobs. The manager tried to think of somebody who might deserve the name of Public Enemy No. 1 and for whom the police might be hunting. But, if there were such a person, the newspapers and the radio did not know about his existence either. He followed all news closely, there was so much spare time.

If there was no American Public Enemy No. 1—how about foreign spies? Or simply foreign criminals. Some of them might have managed to escape their wars—civil and revolutionary—and go to the Western Hemisphere. To enter the United

States, legally was very hard, even though immigration still existed theoretically. From time to time a small steamer from some remote corner of the world landed in an American port with refugees aboard. They were very carefully sifted by the immigration inspectors. And the fact that—if averaged out—each inspector had to examine but one case a week did not make it any easier for doubtful elements to cross that barrier. Undesirable aliens might cross the Mexican or Canadian border—those borders were watched but were a bit too long to be watched inch by inch twenty-four hours a day.

Foreign spies might get in—but a spy had to work for somebody, and there were no recognizable governments left in Europe. There was hardly anybody to spy for and not much to spy on. The few military secrets not released in the war trade were of no use to countries that had ceased fighting, not because of an armistice but because fighters, equipment, money and credit were gone. Even if there were a superweapon that would help the remnants of one army to defeat the remnants of all others, the country that got the plans could not manufacture that weapon. Most probably the raw materials would be lacking and there were no precision machine tools left, except in the United States and in neighboring countries.

STILL PUZZLED, and farther away from any conclusion than he had been at the outset, the manager arrived home. The colored housemaid had dinner waiting for him, and there was an air-mail letter from Anna. He ate and began reading the long letter. Before he had finished even the first page he laid it down and wondered. He could not concentrate, but there was nothing wrong with

that letter. Consequently something must be wrong with him.

The maid asked whether she was still needed. He sent her away without really knowing what he said. It was a long and loving letter from his wife whom he loved. The letter was full of details about herself, about his sister, family matters in general and about close friends. Ordinarily those facts alone, even if related by somebody else, would have interested him enough to let callers wait until he had finished reading it. Now he was alone and undisturbed—and he did not read the letter. He felt preoccupied, absent-minded. That letter was as if it were spoken to him, while he wanted silence to listen—for what? Like those policemen, the thought came to him. They had been irritated by his question. They had been standing there in a fairly silent and entirely normal street, listening—for what?

Tomorrow, he thought finally, tomorrow he would feel different. He had no reason to be gloomy, in fact he wasn't. He was just waiting for Anna's return. Yes, that was it. He just missed her; his sister might hurry up with her baby. It would be at least another week until Anna would come.

He looked out of the window for a moment before retiring to his bedroom. The sky was cold and clear, and halfway up to the zenith there was a very bright star—Venus, or maybe Jupiter. He could never tell them apart.

In bed he turned on the radio. There was a nightly hour of music on his favorite station, an hour entirely uninterrupted by talk of any kind. Listening to the melodies his mind reverted to normal. After that Allison deal was concluded he would start outlining the campaign he had been planning all along. It was use-

less, of course, to bombard people with advertisements at a time when everybody was hoarding what money he had, but he had a few selling ideas that fitted the situation, even though they might not be entirely new.

IV.

THE DOORMAN, Joe, was not at his usual place when the manager left the house the next morning. Or maybe he was—Joe's "usual place" was not at the door anyhow but at the corner newsstand and cigar store, owned by Alexander Segal who had a very pretty daughter. But Joe wasn't there either when the manager stopped for his *Daily Post*.

"Good morning, sir," the pretty girl said. "Excuse my asking, but have you seen Joe?"

"No. I didn't see him at the door but I was sure I'd find him here."

"He hasn't been here yet. I wonder—"

"Don't worry—all the other pretty girls in the neighborhood are married. He'll show up."

"Well sir, you know, it isn't that. A cop was here asking for him."

"A cop—a policeman? What has Joe got to do with the police? Does the super need help to get rid of a tenant, or did he find a couple of bums again in the boiler room, like last Christmas?"

All the while the radio had been going with the news report, telling in great detail about a rather unimportant fire at Ninety-seventh and Third. "That's all for now, folks. I'll be back with more news at twelve sharp—"

"They certainly don't have much news this morning. Well, so long and don't worry about Joe."

It was a beautiful morning and the streets looked nice and clean. But something was wrong. There was

so very little traffic and more pedestrians than usual. The manager caught himself thinking he was still nervous. Moments without traffic occurred every day. Why should he think about that at all.

He walked the three blocks to his regular subway station.

The gates at the entrance were closed.

"Gee," said a girl, "I never knew they had gates on them."

"Can't be a breakdown in the power plant," stated a young man, "my electric shaver was running."

"Don't be a dope," said his companion, "the subway has its own power plant."

The manager thought vaguely that this would have been a bigger item for the news broadcast than the fire. Maybe it had been the first item and he had missed it. Well, he could take a bus to the office. Usually he didn't, busses were slow and crowded. They would be even more crowded today. But he did not want to walk all the way and he did not like to be late. Nothing he would miss, but it was a bad example.

The busses were so crowded that they did not stop. And the few taxis that passed were all occupied. He decided to wait for one more bus and then walk to the garage and get his car out. The next bus did not stop either, but, when he turned to leave, a taxi stopped in front of him. He saw it was occupied and that the light was green. He had the feeling that he would grip the butt of his pistol if he wore one. Then he recognized the man in the taxi.

"Oh it's you, Max. Mind if I come along? We're on the same route."

"I figured that much when I saw you waiting. I was pretty lucky to get a taxi myself. How's Anna?"

"Expect her back in a week or so.

Say, do you know anything about that shutdown in the subways?"

"No. Nobody knows anything. Hope it will be all right."

"Of course it will, no breakdown can be so bad that it cannot be fixed. They'll have the trains running in a couple of hours, I'm sure."

"I'm not so sure. Breakdowns of other things than machinery would be bad to repair. Maybe I'm wrong."

"Why . . . what do you mean?"

"I wouldn't want to scare children, but I know what kind of weather I fear."

The manager was not certain, but it seemed to him that the driver's head jerked a bit without apparent motivation, and he seemed to study the faces of his customers in the rear-sight mirror. Besides, the glass panel between the driver's seat and the rear compartment should have been closed.

"I don't understand you."

"I didn't say I do. I'm apprehensive and dislike the looks of things. Sorry I talked. Now you go on your way. Driver, stop at the next corner. So long. Best of luck."

THE MANAGER decided to forget Max's dark remarks. Those foreign-born people had queer reactions once in a while, especially in things that had to do with politics. Max, for example, outraged whole gatherings in stating that there was no difference between Republicans and Democrats. He said the most decided advantage of life in America was that people could vote *voluntarily* for one of the two wings of the only party, and that we should be grateful there were no other important parties. Parties that *were* different.

The car stopped. There were two policemen outside. One of them said something to the driver, but the man-

ager did not hear what it was.

"Sorry, mister," the driver said, "that cop won't let me go on. Do you want to walk, or shall I take you somewhere else?"

It was only five blocks from the office, so the manager paid the fare and left. The two policemen, who had stopped his taxi, looked at him. One of them approached—the other kept at a distance. The manager did not know that he could be covered with a pistol that way. He had never taken any lessons in street fighting. But he did see that there were more policemen, forming a cordon.

"I'm sorry sir, but you'll have to go another way."

"But my office is over there."

"Oh I see, do you mind telling me the name and address?"

Another policeman approached, he had evidently heard the manager's answer because he said:

"The firm is at that address."

"All right, sir, you may pass."

"What is going on here?"

"Sorry. Just orders. I am not supposed to hand out information. Besides I haven't any. Please move on."

The manager tried to reason things out for himself while he walked on. What buildings were behind that cordon? Mainly office buildings—the Radio Corporation, the *Daily Post* and the Union Building. Then there was the Air Terminal, with its flat roof for autogiro shuttle service between the building and the airport outside the city. And, last but maybe not least, the main post office. The police were evidently trying to protect one of these buildings. Which, why and against whom?

There was another cluster of important buildings a mile farther downtown, including Western Union, police headquarters, a railway station and the telephone company. They

might be surrounded too—he could easily find out in telephoning around a bit. At least he had something to do when he got to the office, even if it could not be called business. The thought made him walk faster.

“What’s the hurry mister?”

A second police cordon.

“Thought you could slip by, did you? Where you going?”

The manager repeated the name of the firm and address.

“Have you got any identification on you?”

“My driver’s license.”

“Let’s see it.”

“Hm-m-m. So far it’s all right sir. Now how can you prove that you are employed by that corporation?”

The manager remembered that he had a letter somewhere, addressed to him personally but “c/o” his firm. It had contained the air-line tickets for his wife. He had used the strong envelope to keep some confidential letters from Central Office that he did not care to file in the office with a lot of curious and by no means busy people around. The policeman looked at the return address. “Northern Air Lines. Planning to leave town?”

“No, my wife did two weeks ago, if you must know!”

The policeman examined the post-mark. “All right sir, sorry to have bothered you. Orders, you know.”

“Say, officer, that’s the second time in five minutes. Whom are you trying to catch?”

“You are at liberty to pass on sir. I’m sorry sir.”

“If nothing else, they are disciplined,” thought the manager. “Can’t get a word out of them, or maybe they really do not know.”

Next corner there was a third cordon. This time the manager saw them and decided to finish the argument quickly, now that he knew

what was required. “I am—” he began.

“Not interested. If they let you pass, it’s all right with me. My job is to see that nobody gets out. Please move on.”

The manager could think of at least six friends that would be close to the boiling point by now. In fact it surprised him that he was not. But he had the strange feelings that things had to be this way.

V.

MUCH to his surprise, the manager found most of his employees in the office—though not at their desks—when he finally got there. Hardly anybody noticed his arrival, they were grouped together talking excitedly.

“I’ll bet anything there were anti-aircraft guns under those canvas covers.”

“Nonsense, the forty or fifty planes left in Europe wouldn’t be able to cross the Atlantic.”

“Canada has some and they are a lot closer.”

“Ah, come again, why should the Canadians invade us? We didn’t menace them, and they can’t say they haven’t enough room.”

“Invasions would be a job for the army, not for the police.”

“Maybe the unions are planning a hunger march or something.”

“Then they would have announced it and I saw nothing in the papers. My brother is a member of Local 119 and he said nothing, either.”

“What if it is supposed to be a surprise demonstration?”

“Surprise demonstrations usually accomplish nothing. The men for whom they are staged might not be in town. And this certainly didn’t surprise the police.”

Miss Ryan furiously rang the bell of the telephone on the manager's desk. "The police wish to talk to you."

"Yes . . . yes, this is the manager."

"Lieutenant Gallazzini speaking. There is a man here who claims he works for you. I have my doubts. He has a French accent. He wants to speak to you."

After a few seconds there came the voice of his correspondent for Canada: "Monsieur, good morning, zis is Jollet. Ze police, zey do not let me pass. Zey say I have no proof I work wiz you. So I make him call you to identify me by phone. You know my voice, don't you, monsieur?"

Jollet burst into the office fifteen minutes later, perspiring and exhausted. "I zink zis is *la révolution*. Oh I always prayed ze dear Lord zat I like to die before I see zis happen to zis beautiful cuntry. Oh, *mon Dieu, quelle tragédie, quelle tragédie. Merci, monsieur*, for rescuing me. Zey may have locked me up, shot me as a spy maybe."

Before the manager could answer, along the general lines Jollet expected him to follow, the telephone rang again.

"Allison. Morning. Have you any idea what has happened? I tried to see Grant in the Air Line Building, but they wouldn't let me pass. You are in that district, you probably know. You don't? Greenbaum here talks of a German invasion, but the others have concluded that they have caught some big gangsters in your district. The police won't let anybody out and they let as few people as possible in so that they have less combing to do. I think that's reasonable, don't you? Explains the secrecy and all that stuff.

Well, I'm stuck now, have to wait till the police go home."

Ferguson, the boss of the office on the next floor, came in.

"I just want to make certain," he apologized, "you heard the news report on the radio. The police commissioner announced that, for reasons he'll explain later, a few districts had to be surrounded by cordons. He requested that everybody residing in those districts carry an identification and that those employed there get letters on office stationery stating the office hours."

"Thanks a lot," said the manager. "I didn't listen to the radio. Just arrived myself and had some telephone calls. Looks as if they are going to keep these cordons up for quite some time. Did the commissioner say anything about the subways?"

"No—perhaps they are not ready yet for a public statement. I have to get back to my office. I just wanted to make sure you know about the commissioner's request."

The manager called his secretary and dictated a short note.

"Have one made for every employee at once. Put the girls to work. You can sign them yourself, including mine. I'll sign yours. And when you hand them out make a list of the 'casualties' that did not get here."

"ALL THOSE who use the subways or live out of town," Miss Ryan announced when she came again some time later. "Miss Harrison just got here; she walked all the way from Wilson Hills to Riccr Bend and got a bus. She says that Wilson Hills is ringed by police. She heard a few explosions late in the night. She went to bed late and the explosions woke her up. It must have been at least three o'clock. She thinks it was

the subway power plants; they are out there. She saw a lot of trucks with police and machine guns, and other trucks with canvas covers followed the police trucks."

"Thanks for telling me. Send Miss Harrison in after she has recovered."

Miss Harrison could not tell more than the secretary had related. She only added some minor detail. Those columns of trucks looked like those reinforcement columns she had seen in war newsreels. And people in Wilson Hills said there was sabotage in the subways.

When the manager was alone again he tried to find out. He dialed police headquarters.

"Identification number?"

"No, I am a private citizen."

"Sorry." *Click!*

He dialed the *Daily Post*. No answer.

What did it mean? Hunting for bank robbers, or spies, in the business district was logical, if the activities around his office were considered separately. But the subway shutdown, the police trucks and all the goings-on at Wilson Hills did not make sense.

Something was happening on top of the Air Lines Building. Men were busy working at something near the rim of its flat top, which reminded the manager that he had not seen any autogiros coming or going. He called the Air Terminal.

"When is your next shuttle giro coming in?"

The operator had a well-trained and very sweet voice:

"I am sorry, sir, the shuttle service is not operating today."

"But the airport is operating, isn't it?"

I am sorry, sir, I have no information. May I suggest that you call the airport?"

"I will, thank you— Oh, say, I take it that the shuttle service is suspended because the roof top is under repair?"

"I am sorry, sir, I don't know." *Click.*

Half a dozen other telephone calls ended in much the same manner. Most people interrogated were apparently genuinely ignorant and harassed by a constant stream of questions they could not answer. Others must have orders not to divulge any information and not to admit that they had such orders.

When he called for Miss Harrison again he was told that she was out, trying to find a lunch plate inside the zoned area. He realized that it was well after lunch time, and perhaps it would be a good idea to go out and see what information he could pick up. So far he had heard all kinds of rumors, beginning with a large scale robbery in the post office—with sabotage in the subways to keep the police busy elsewhere—to a revolt in the United States army, secession of the State and a few other things. Since the rumors covered all possibilities one of them at least had to be true. But which one?

THERE WERE no discussions in the lunchroom today. At least none he could overhear. Only a very few tables were occupied and the people either ate silently or were whispering to each other. The manager then tried to question the police lieutenant of the innermost cordon. The lieutenant was friendly, even though somewhat weary, but his answers were perfectly clueless. The patrolmen had orders not to give out any information but to refer all questions to their superiors. The only bit of evidence that could be gathered was the fact that quite a number of po-

licemen were now armed with very new Thompson rapid-fire guns.

He returned to the office just in time for the 3:00 p. m. routine call from Central Office. It did not come. At 3:25 the manager instructed Miss Harter to call Central Office after another ten minutes. At 3:26 Miss Harter almost cried into the microphone: "Long distance has suspended operations."

At 3:30 it started to rain—but it was not real rain, more like a fine spray which lasted for only a few minutes. And after it was over the sky was aglow with a deep, deep red. It looked like the reflection of a distant fire against the darkening sky, but everybody knew this deep, deep color from the movies. It had been used at least once in every war movie: the Jenkins Radio Dome—propaganda antidote extraordinary—invented around the middle of the war. It was an electric field inside of which all wave lengths beyond the red end of the spectrum ceased to operate. The effect started with the longest heat waves and was in full operation in the region of the shortest micro waves and anywhere above. The field shortened those waves. They were shortened to heat and red light just at the borderline of visibility. The shortening effect was irregular and as a strange by-product all water vapor in the air was condensed suddenly when the field was switched on. Radio had suspended operations, too.

Somebody opened the window to see the glow better and noises came in that were only too well known from the movies. The sharp cracking sound of pistols, the rattle of machine rifles and some heavier explosions, hand grenades or even artillery. And there was the sound of very heavy motors running full

speed. The roof of the post office was visible from the windows facing away from the Air Lines Building. There were machine guns on top of that roof now, blazing away at some invisible target in the streets.

A few of the girls started crying and the others looked as if they were going to. The men were pale, even in the deep red light of the Radio Dome.

"*C'est la nuit rouge,*" whimpered Jollet.

"Shut up," said somebody else. "Whom are they fighting?"

"The Radio Dome was the signal."

"And both sides knew that. Who put it up? The generator is a small thing that fits into a car."

"The police never had them."

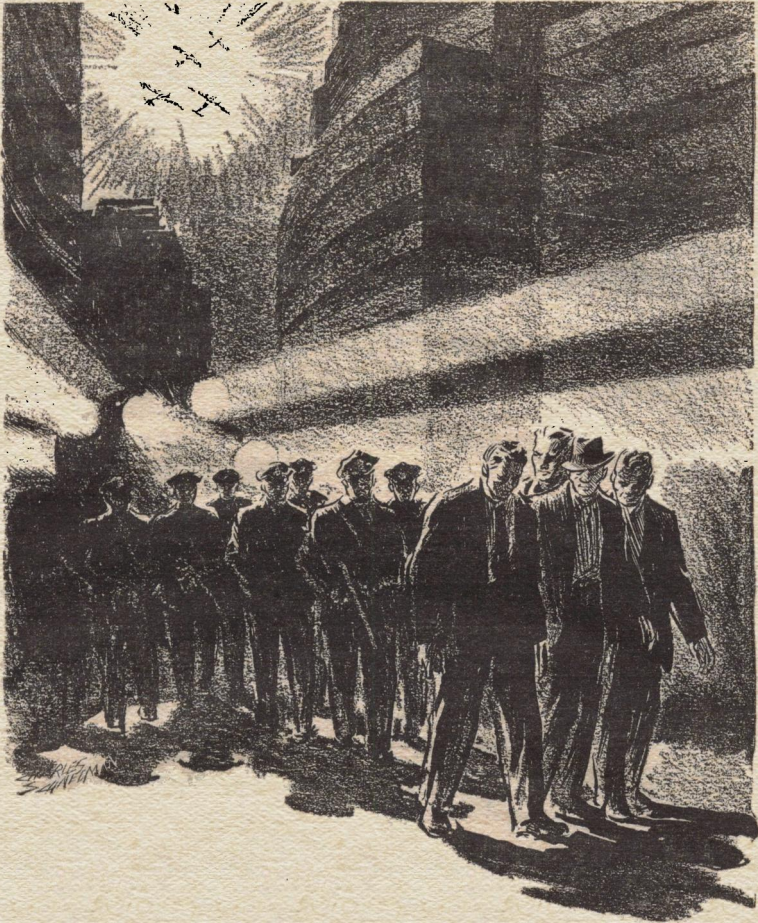
"Well, then it's the other side. Who is it?"

A raging burst of violent fire from the other direction eliminated all other sound. Chicago Pianos thought the men, probably said it too, but nobody could hear it. The guns were mounted on the roof of the Air Lines Building, firing at some dark spot in the red sky. The spots disappeared and firing stopped.

And then it was very quiet. No other sound had been audible while the thunderous crackle of the Chicago Pianos had ruled. No one had been aware that all other sounds had ceased meanwhile. It was very quiet and everybody was grateful that Miss Harrison fainted and, in falling, crashed a desk lamp to the floor. That crash told them they were not deaf; in addition it gave them something to do.

When Miss Harrison came to, Miss Harter, who had stationed herself as an observer at the windows, announced: "People are going home."

It was true, there were people in the streets and they were not in uni-



Under the spotlights of a rumbling tank, a squad of soldiers was marching off some prisoners. To trial—to jail—or to some wall?

form. In fact not a single policeman could be seen.

"It seems," said the manager, "that there is quiet now. Nobody knows how long it will last. Let's try to get home while it lasts. Are you all right Miss Harrison?"

"I'll see la 'Arrison home," offered

Jollet. And the other men offered to go with the other girls. Some of them, fortunately, had cars parked somewhere near by. They hoped to find them in running condition.

The manager had expected to hear excited arguments in the crowds that left the tall buildings. He didn't.

Everybody was just hurrying home, not wasting a single breath on a useless word. Some were crying quietly, but they hastened on just the same. Aside from privately owned cars there were no means of transportation. The manager had been offered rides by various men from his building but had refused. It was an hour's walk, but he wanted to be alone. Everybody seemed to feel that way. The only remark he heard on the way was a young man saying rather cheerfully: "It ain't going to rain!" No, it wasn't; it never could rain in the area of a Jenkins Radio Dome.

VI.

JOLLET must have been right with his impulsive shout: "That's revolution." The manager saw signs of it later on. He was standing near the window in his darkened apartment—the electric light was dead. His dinner had been cooked by the light of candles and had been eaten in candlelight. But there were only five candles in the house and the store was sold out. He could not call the bigger stores farther away; the telephone did not work at all. Loud-speaker trucks had passed several times, manned with police and ordering everybody to stay indoors.

Soon after, trucks with searchlights mounted on them had come and played their beams over the façades of the buildings, particularly along the roofs. Once a machine gun had fired for half a minute and a few hand grenades had crashed around the corner. The manager knew that it was an odd reaction, but he had wondered how much louder these sounds were in actuality, if compared with their movie versions.

Far in the distance the tower of the

Radio Corporation stood dark against the deep red sky. But sometimes it was illuminated by splashes of light and then searchlights had played over it and the faint sound of machine guns had come.

The city was very dark and very quiet under its red Dome. Far in the distance there was shooting. The manager went to his window to see whether it was connected with the sounds of the truck engines he heard from the street. It was not. There was a searchlight truck moving slowly, its beam of light playing on a group of policemen and four or five prisoners that were marched along. To prison? Or to execution?

Thus it continued the greater part of the night.

Distant fire, occasionally dull thuds, once the sound of an airplane motor and the roar of the Chicago Pianos. Darkness under the red Dome. And then suddenly like knives the blinding beams of searchlights and shouts: "Close the windows or we'll fire." And shots and the tinkle of broken windowpanes falling in splinters into the street.

The manager finally did fall asleep, to wake up again three hours later—his usual time. Keeping to the routine seemed the safest way to keep sane. He bathed and shaved, dressed and went downstairs. The corner cigar store was closed, with a piece of cardboard stuck into the door. It bore the blue penciled inscription: NO PAPERS TODAY. There was a big printed notice pasted to the wall, imploring all residents to stay indoors until further notice, by order of the police department.

Nobody called all day long. No mailman came, no caller of any kind, not even a brush salesman. There were a few books the manager had laid aside to be read whenever he got

around to it. He remembered them and tried to read. After reading a hundred pages or so he decided that that famous novel was the dullest book ever printed. The day was just a repetition of the previous night, occasional shooting—who shot at whom? Once in a while a bigger explosion—where? Then the *rat-tat-tat* of machine guns. For a second it seemed as if the Radio Dome flickered, but it remained. The telephone was still dead. So was the electric light. Strange happenings, strange and at first terrifying sounds, but no news of any kind, complete mental blackout.

At four o'clock the manager could stand no more. He went downstairs. The stores were all closed. The manager walked to the next corner; he could hear his own steps strangely enough. Some distance away there was shooting and yet he could hear his own steps.

Suddenly bullets whined past and somebody shouted at him: "Back into the house."

He jumped backward, stumbled and fell against a door that gave way. He did not fall completely and when he regained his balance he found himself in Alexander Segal's cigar store. Mr. Segal himself was behind the counter and looked at him with friendly and unsurprised eyes.

"Good Heaven," gasped the manager, "you could open your store at a time like this?"

"Vy not," said Mr. Segal with a friendly movement of both hands, "vy not? The gentlemen are all home, they'll smoke more than usual. They might run out of tobacco. Somebody has to serve them."

"But . . . but there seems to be a revolution going on."

"Yes, there seems to be. The

revolutionaries will also smoke, I believe. Nobody will rob me, and if they do, there is not much to rob."

"And you are not afraid of the shooting."

"I am, I am, but what good does it? A bullet goes *zimm* through a closed door like through an open door. If it hits, it's God's will. What can I do about the bullets? It shoots here, it shoots there. It will shoot as long as they have bullets. Tomorrow will be another day and God can make it a better day if he wants to. What shall it be?"

Mr. Alexander Segal would never have believed that his private philosophy, gained through hundreds of generations of experience, restored the manager's mental equilibrium. Neither would the manager have believed it. But it did. He bought cigars, twice as many as usual and, finding the maid asleep, made himself black coffee and sandwiches. Then he actually started reading, thinking occasionally of the friendly old voice saying: "It shoots here, it shoots there." Even though the firing increased in intensity around midnight, he went to bed. And he slept very soundly after one almost sleepless night.

VII.

THE TELEPHONE woke him up the next morning. He answered but had to repeat his name three times. "Wrong number" said the voice and broke the connection. The manager needed another five minutes to realize that it had been the telephone. To make sure he took the receiver and thinking along various lines simultaneously, did not know whom to dial. Then he dialed TIME-222. "When you hear the signal," a sweet recorded voice answered, "it will be exactly eight fifty-two and a half."

The manager shook his head, cautiously he went to the window. The streets looked normal, a small truck passed by. For a short time he seriously believed that it had all been a dream. People did dream whole years in one night, he knew. They dreamt occasionally of transatlantic crossings and sleeping twice and dreaming. It was possible.

Various lamps in the room went on, flickered, went out, on again, out, stayed on. They were the lamps that had been left switched on when the power had failed. The power plants were working again. It had not been a dream. He called the office. No answer. Hm-m-m! The thing to do was to go out and have a look.

Joe, the doorman, was at his place, this time. He wore a red necktie and a red armband and looked at the street with pride and dignity. Then he saw the manager.

"Good morning, citizen," he said very formally. "The people have won and the Change is made. Now good times are here for everybody who works."

"I hope you're right."

"Oh, undoubtedly, sir . . . citizen, I mean. Now the government is in the hands of trained masters, not elected amateurs. There will be a Victory Parade on Red Square, starting at eleven. It is advisable to be punctual."

"Red Square?"

"In capitalistic times it was called Washington Square."

"I see. And what have you been doing?"

"I belonged to the guards defending the people's government in Clemens Tower."

"You are not wounded, I see."

"Oh, no, only amateurs lose fights. We were so heavily armed that the

police did not dare attack, that's how we won."

Mr. Segal's store was, of course, open for business. The manager found his newspaper at the customary place and the girl told him that the subways were running. For some unknown reason there were no buses and the radio was, of course, still out—rather, the Dome was still on.

The subways did run, but not on schedule. While waiting for a train the manager opened his paper and thought that he had taken a wrong one. It was *The Red Flag*—underneath in small type: "Formerly *Daily Post*."

The manager had no experience with the making of newspapers, but even so he could see that it was heavily censored. Reports did not show blank spaces, but they showed gaps just the same. Boxes announcing the Victory Parade filled what would have been holes, the editorial page was crowded out by an article—reprint from a fifteen-year old "*Jurnahl Politicheskoye-Ekonomitcheskoe Institut, Moskwa*"—"The Tactics of Street Fighting in Revolutionary Uprisings." The paper hardly told anything, only some of the more obvious omissions did.

THE OFFICE building was closed.

A man with a short gray canvas jacket—evidently in lieu of a complete uniform—red armband and high boots leaned against the wall. His head was bare, but one of his boots rested on a tin hat. He carried a rifle, slung over his shoulder, muzzle pointing down.

"Today is revolutionary holiday," he volunteered. "Better go to Red Square. Reorganization begins tomorrow."

"Thank you, soldier," said the manager. "Don't you go, too?"

"I'd like to. But I got that damn watch. Not even a cigarette left."

The manager understood. "I don't smoke cigarettes, but if you'll accept a cigar—"

"Better than no smoke," the soldier agreed and reached out.

"What does the citizen want?" interrupted a voice. Another half-uniformed man had approached, silently, since he wore canvas shoes. He did not carry a rifle but an automatic pistol, and wore a narrow yellow armet underneath the wide red one. Evidently a superior.

"Said he wanted to watch the parade on Red Square if there is no work. That's what he said, Comrade Lieutenant."

The lieutenant looked a bit more friendly for half a second.

"Lemme see your hands, citizen."

The manager thought that the man wanted to make certain he was unarmed.

"Gloves off! Wears a ring. Bourgeois. May have to be liquidated later on. Move on."

There was nothing to do but to go—and since he was expected to go to nearby Washington Square he might as well do it. Around the corner a few "soldiers" watched men pasting large posters to the walls of buildings and to show windows. That little group and the manager were the only people on the street. Well, that one soldier had been friendly, and those posters might contain information. The manager had always been able to get along well with anybody.

"Good morning, citizens. Are you out of smokes, too? I've got some left."

He was mentally ready for any kind of reply. But he got—none. The soldiers treated him as if he did

not exist, stared through him without the slightest emotion. The workers had finished their job, rolled up the remaining posters and left, followed by the soldiers.

The manager was left alone to read:

PROCLAMATION

Workers! Soldiers! Citizens!

This country has been taken over by the Workers' Council (Soviet) and will shortly be incorporated in the Union of Socialist Soviet Republics of the World. Meanwhile all power rests with the Amwosov (American Workers' Soviet). Everybody is ordered to resume his usual work. Failure to do so will result in trial for sabotage before the Revolutionary Tribunal. All political parties, society groups and corporations of any description have ceased to exist, save as executive branches of the Amwosov. Their property is now property of the Amwosov, that is, of the people.

Weapons are to be turned over to the Amwosov within twenty-four hours, offenders will be tried by the Revtri.

Travel is temporarily forbidden. Nobody is permitted to leave the city or to change his place of residence. Postal, telephone and telegraph services have been temporarily suspended, except within the city limits. Banks and the Stock Exchange are temporarily closed, the courts of law are suspended, their rooms serving for the Revtri.

Unemployed workers will report within twenty-four hours at the places specified below. Non-working members of the former so-called leisure class are ordered to stay at home for purposes of a special census.

The use of electric power or illuminating gas is permitted only between the hours of 7:00 a. m. and 9:00 p. m. It is forbidden to use other kinds of illumination except in rooms where the light produced cannot be detected from outside or from the air. Lighted windows will be fired at.

Appearing in the streets or on public squares is permitted only between 7:00 a. m. and 9:00 p. m. Offenders may be fired at without warning. Everybody is at liberty to call for additional information at the Revtri courts. Directions will also be issued by Red soldiers whose orders have to be obeyed under any circumstances.

Red soldiers in possession of badge 23-14 are exempt from all these rules.

By order of the
AMWOSOV

O'Hannigan, Curtiss, Wilkins,
Kulawanoff, Tereshtshenko.

THE PARADE had just started when the manager arrived. Red Square was less than half as crowded as he had imagined it to be.

"Mind if I keep you company?"

"Max! How did you get here?"

"By car, of course. Might as well use it as long as I have it."

A band, composed mainly of professional musicians who had "volunteered," played the "Washington Post." A group of soldiers carrying a large number of flags were followed by two large trucks, full of Red soldiers and bristling with machine guns. Some soldiers trundled a few antitank guns along—it was uncertain whether as trophies or as weapons. Half a dozen medium-sized police riot tanks followed and then a regiment of Red soldiers.

Max bent forward and down, looking along the lines with one eye closed:

"Is that supposed to be a marching formation? A flock of scared sheep is orderly by comparison."

"Why do they carry their rifles inverted?" asked the manager.

"Probably because they are afraid that they cannot get the muzzles lined up."

"Citizen, it would be better for you if you learned not to use destructive criticism!"

Max looked at the Red captain, behaving as if the man who directed the spectators by waving a huge pistol were an interesting animal. He looked into the air and uttered, addressing no one in particular:

"I am just wondering what Tereshtshenko would say if he knew that I am criticized in public."

When the manager looked to see the captain's face he did not find him at all.

"You never told me that you knew Tere . . . well you know who I mean."

"I don't," whispered Max, "and I did not claim I did. I just wondered about him aloud. I know this kind of weather, I told you that before. And now I think we had better remove ourselves quickly. For all I know Comrade Tereshtshenko may come over to shake hands with an old friend. My car is over there."

"Shall we go to my place, or do you want me to come to yours?"

"And get overheard? No, you probably want to talk about this and as long as we do that we better just cruise around."

"But if somebody stops us?"

"Lucky I got an out-of-town license plate. Lost. Can't find Red Square."

"Now tell me what happened?" demanded the manager when they were on their way.

"You did read the posters, I suppose. Well, I've spent eighteen hours every day since the morning I saw you to collect rumors and facts. Weeding out all the evident nonsense, you can draw two pictures. One is that portrayed on the posters. Incidentally, if you comply with those demands nothing will happen to you. They never get violent the first few weeks; that comes later, sometimes to break opposition, sometimes to keep the population scared, sometimes only because rival groups want to show off and keep themselves busy. One thing more: remember that every telephone call may be overheard and that the only safe place to talk is in a car with running motor.

"Now that other picture. It is



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important the police were not caught napping. There was not much damage done in the fighting—only a few dozen old buildings on the outskirts seem to be really wrecked. There were only a few barricades, built mainly from overturned street cars. I was all over town but did not see a bus and they aren't in their depots either. Many of the privately owned heavy trucks are gone—the police requisitioned them. I did not find their wrecks. The jail was opened and hasn't been refilled yet. And a good many people who belong to the National Guards, the American Legion and similar organizations are just gone. They cannot be found, no matter how hard you look."

"What do you suppose happened to them?"

"I believe—and hope—that the police just withdrew and that they are with them. But it is just as possible that they are dead, locked up somewhere or simply hiding. You never know in a revolution."

VIII.

THE SUBWAYS were running, but not on schedule.

There were still no busses.

The electric power frequently failed and reappeared without warning.

The faucets in the kitchen failed to give water.

The city telephone service, being automatic, usually worked.

The stores were open, but if an article was sold out it stayed sold out. The papers appeared regularly, reduced to eight pages. Advertisements were sadly lacking; they were the only reliable reading matter. Otherwise the papers carried proclamations and "explanatory articles"—sometimes a bit of local news.

The renaming of the public squares progressed on schedule.

The only absolutely reliable feature was the unwavering Radio Dome.

The office was run by the manager, supervised by Sam Collins, the office boy, who had been assigned to his usual working place. He had to read all incoming mail—it was marked "censored" anyway—and stamped all outgoing letters. He listened to all telephone calls and made one daily speech to the office force and wrote one daily report to the Amwosov. Speeches as well as reports grew shorter every day.

The manager was indignant at first, then he smiled at Citizen Collins' sincere busyness, but very quickly he became genuinely grateful. Collins' existence prevented suspicion of sabotage from forming in somebody's mind. His very presence prevented the assignment of other guards who might be harder to please. Citizen Collins only demanded to be addressed as Citizen Collins and to be recognized as a representative of the Amwosov. Well, he was. And he was always willingly finding reasons why the corporation could not attend this or that meeting or parade in full force. Usually one or two representatives were spared—what with all the work of reorganization going on.

Bad news is unpleasant. No news is worse. But rumors are really enervating: Mr. Davis is out of town. I'm sorry, I don't know when he'll be back. Mr. Davis is not at home. He is not in his office. He is not in jail. He has not been shot; of course not. But he is not there and nobody knows. Machine guns rattle and small cannons bellow. Are there still regular troops left across the river as rumors insist? Were there ever

regular troops across the river? Or are there opposing forces right in the city, hiding out on some roof top. Maybe its only target practice. Or, maybe, executions.

People are arrested occasionally. Sometimes they come back and tell that it was all a mistake. Nobody even questioned them after their identity was established. They were released at once. With solemn apologies. Or they don't come back. In the middle of the night you hear heavy boots on the staircase—the elevators cannot run at this time for lack of power. A revolver that was in the house has been surrendered against a receipt, to be kept as proof of willingness to co-operate. But they may regard the ancient saber as a weapon. Better drop it out of the window—careful, open it just enough to push the saber through. It rattles on the pavement and shooting starts. Next morning everybody insists that nothing happened at all during the night.

One night the firing does not cease for hours. Artillery joins with the terrible crash of heavy trench mortars. There are star shells in the sky and the ghostly hot gas trails of heavy rocket projectiles. At dawn everything quiets down and at nine o'clock everything looks quiet and normal. *The Red Flag* is on the newsstands and does not mention a syllable. The subway lines are not pulsating with trains but jerking spasmodically. But trains are running.

TOM GRAHAM, who lives close to the airport, says that, while he could not see anything, he heard airplane motors roaring through most of the night. And when he walked to the subway station he saw everywhere the deep marks left by the caterpillar treads of heavy tanks.

The air is filled with a deep whistling whine, like a steam whistle about ready to blow. And the highest buildings reflect a pale, yellow light from somewhere. Nitrogen tanks—tanks equipped with generators that activate nitrogen and spout it from metal nozzles. Thirty feet long yellow tongues that disrupt all chemical compounds, whether they are alive or not. Only solid metal stands up against them.

Another whistling sound forces itself through the distant whine of the nitrogen activators. Some of the men who had been soldiers recognize it. "Those are heavy rifles—railway I guess. And I do mean heavy." It feels like a distant earthquake. After ten minutes the ground shakes again. And again after another ten minutes. Some say it shook a bit more. They are right. The third 16-inch was a direct hit and Clemens Tower collapsed.

Three, four, five autogiros appear and land on the roof of the Air Lines Building while fast pursuits flit back and forth. The Chicago Pianos remain silent. Tanks rumble through the streets, a hand grenade drops from one building and explodes. Antitank guns rake the rim of the roof. "It shoots here, it shoots there." To hell with that philosophy of surrender. It doesn't shoot—men do. But—*who?*

Some of the girls cry again, they always do when they hear explosions. They are not more afraid than the rest of them—its the sound that makes them cry. The clock says eleven fifteen. Some concentrated fire nearby and the whine of the yellow tongue of activated nitrogen that is a deadly poison for five seconds. Then silence again, only tanks hurrying along the streets.

At one o'clock they come back,

columns of them. They move slowly this time; go into position on corners. Somebody is knocking at the door, patiently. Nobody bothers to answer. Finally the door opens and Mr. Ferguson looks in.

"I beg your pardon, but one of my girls suggested that the Dome may be off so I tried. There is a record running on our station. I noted it down . . . oh yes, broadcasting will be resumed at 7:00 p. m. I have a powerful set so now I'll try to pick up a few out-of-town stations."

Men are emerging from the tanks. But they don't wear the gray canvas of the Red soldiers, nor the blue of the police—army!

Blue uniforms follow, disappear in the buildings, come back with down-cast-looking civilians. I think we'll hide Collins somewhere. Useless, they know that there was one for each office, and he can't get out of the building now. I don't want them to shoot the boy; get him upstairs.

The police are in the office before we realize it and they seem to know whom to arrest. They don't even ask.

"Excuse me officer, I'm the manager. I don't like to see that boy harmed. It is true he represented the Council but in reality he protected us."

"You'll have to speak to the lieutenant, sir. He's downstairs."

The manager went along. The lieutenant seemed to know what he was about to hear. "You are going to say that he was decent? Seems that a good deal of them were. Take him away. They'll all get what they deserve." And then, when Sam Collins was out of earshot: "In that case, six weeks I guess. Good-by, sir."

"HAS anybody got enough strength left to go and get sandwiches and coffee for all of us before those soldiers eat the stores empty? I'm willing to call them liberators and pay taxes, but starving is something else again."

The telephone was very busy, even though they were all private calls.

"For you, sir," shouted Miss Harter.

"Yes?"

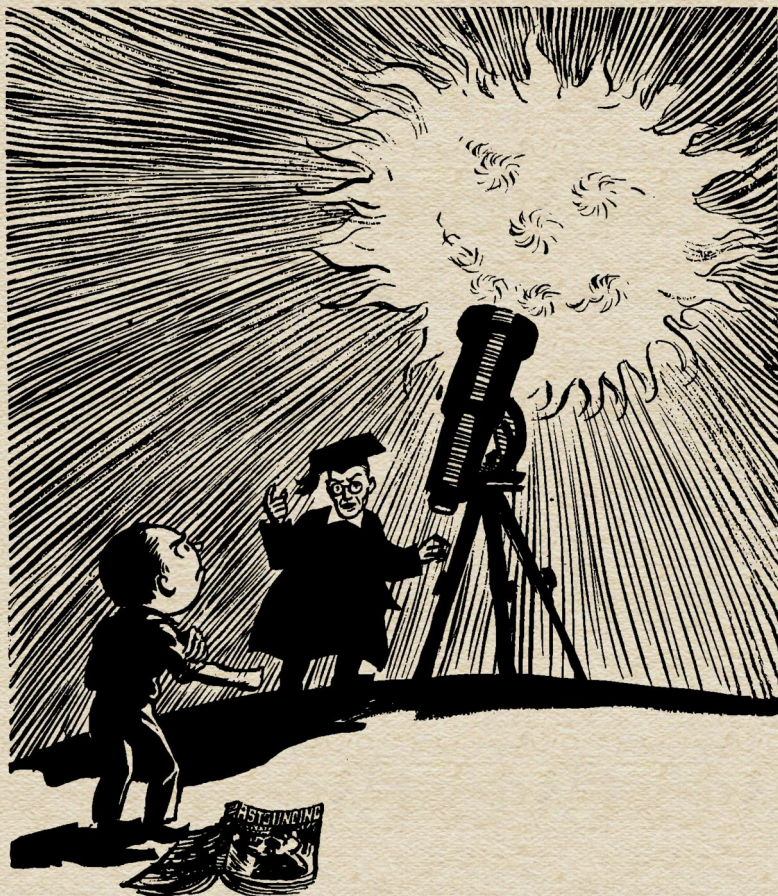
"Allison. Are you all right? Say, that crash shortly after ten was Clemens Tower in Wilson Hills. They forgot to put armor plate on. How about lunch tomorrow? Another thing I have on my mind—"

Miss Harter had been listening in as usual and saw no reason why she should not interrupt. The lunch would mean business resumed anyway.

"I am sorry, sir, but I have to interrupt. There is a long-distance call for you. Your wife—"

—in establishing local "Red" governments through surprise rebellions in a number of large cities of the United States. None of these local "governments" that failed utterly to maintain contact with each other lasted longer than two weeks. United States army regulars and army reserves quickly crushed the rebellions that had failed to find the popular support confidently expected. The rebels offered but feeble resistance after realizing that neither the army nor the country in general had followed the example of some of the big cities.

The presidential campaign of 1960 was of unusual violence on the issue of merging a number of States for purposes of simplified and less expensive administration. The reelection of President Miller—



WANTED: SUGGESTIONS

By R. S. Richardson

One of the world's acknowledged authorities on solar problems asks for suggestions—and has assured me he means just that. Suggestions are wanted.

BEING a solar man means that you occupy a unique position among astronomers. First and foremost, we necessarily work during the day like a normal human being should, instead of just getting a good start

along about bedtime. Second, night observers often check and recheck their positions for an hour, making sure they are set on the right star—something unknown in our job. No one yet has mistaken the Sun. And finally, our best seeing comes in the summer, while the stellar men must toil the longest—since the nights are longest—when temperatures are near freezing, and the star images look like balls of colored yarn.

But sometimes it grows a bit monotonous to be always observing the same star, and such an ordinary star at that. If the Sun were only a double or triple system, or even a giant M or supergiant B, there would be some variety to solar research. (I have a hunch a lot of those irregular variations in the long-period M's are caused by giant sunspots.)

Because our activities are so limited, I frequently suspect that we run a decided risk of getting into a rut, or at least into a single-track line of thinking. One trouble is the dearth of solar observers themselves. We don't get together and thresh out our problems the way we should. The extragalactic-nebulæ people gather around a blackboard and, fortified by sandwiches and beer, engage in violent disputes over the expansion of the Universe. But we who follow the Sun steer our separate courses, serenely unaware of what the other fellow is doing.

Now it occurred to me that a possible reason for writing an article about the Sun is that readers of such a magazine as *Astounding* might be able to offer some genuinely helpful advice if they knew where it is needed the most. Perhaps you will ask, "How can I be of help without a detailed knowledge of the facts in a highly complex field?" The answer is—for that very reason! You have no previous knowledge, no pre-

conceived ideas to hold down your imagination. Time and again, conversations with interested laymen have opened up new lines of thought on what seemed like a dead-end trail. And if doubters still remain, I need only call attention to the valuable discoveries made in radio transmission by amateurs, many of whom were pretty small fry, too.

Hence, this is going to be concerned with several little-known questions of the greatest significance that solar men have long wanted to have answered—by Einstein, or Chandrasekar, or Eddington, or Joe Doakes of Petaluma. Your name and past history aren't important so long as you have something fresh and illuminating to communicate.

These questions can be divided into two classes. There are the strongly fortified objectives that we can only hope to conquer after a long and intensive campaign, such as the internal constitution of the Sun, its source of heat, the origin of sunspots. They are the strong points on the Photospheric Line. But there are others not so formidable, yet of the greatest strategic value, in that their solution might open the way for a drive on the main line. To me these are far more interesting than problems of a broad general nature, for there is a fairly good chance of cracking them in the not too distant future.

And so here are some of the objectives on the "Little" Photospheric Line. We will start with a few that can be stated very quickly, followed by others that need more explaining.

1. Why is the difference in temperature between spot and photosphere always 1800K?

Small variations undoubtedly occur, but this figure is amazingly constant. But why not differences of

500, 1,000 or 5,000 degrees once in a while? Why is the degree of cooling always the same?

II. SUNSPOTS are generally believed to be funnel-shaped vortices, in which gases from the interior are pouring out over the surface. As the gases rise, they do work in pushing the overlying material out of the way. Thus the gas is cooled and looks dark compared to its surroundings. If this is the case, then—

Why are not these rising currents detected in the sunspot umbra by the Doppler effect?

Velocities of outflow have been found nearly parallel to the surface in the penumbra of the spot—Evershed effect—but none has ever been seen in the umbra where the cooling is greatest.

III. NEWSPAPER reporters and many people who should know better refer to sunspots as “great tornadoes, vast cyclones, sweeping over the solar sea. Electrons whirled in this vortex create the powerful magnetic fields in their centers.”

If the “powerful” magnetic field of about 3,000 gauss is produced by electrons moving in circular paths, then the polarity of the spot should be determined by the direction of whirl. Now, at the beginning of each eleven-year period, the spots of the new cycle have polarities opposite to those of the old. *Yet no reversal has ever been observed in the direction of whirl in the sunspot vortex.* But why not?

IV. ONE of the most fascinating jobs I know of in astrophysics is trying to identify strange spectrum lines in the Sun and stars. It is a form of detective work in which the lines correspond to fingerprints, and every possible clue and angle must

be thoroughly investigated if you expect to solve the case.

Out of the ninety known elements so far found on Earth, sixty-one have been identified in the Sun with varying degrees of certainty. The fundamental method of identification is, of course, the matching of lines of an element in its laboratory spectrum with those in the solar spectrum. But that is putting it much too simply. Uranium is listed as missing, and yet hundreds of its spectrum lines match with lines in the Sun's spectrum.

Back about 1856, when Kirchhoff first started comparing laboratory and solar spectra, there was nothing to it. You couldn't help identifying lines of sodium, iron, titanium and nickel because there were so many striking coincidences that the evidence was overwhelming. But one by one the easy cases were eliminated, until now it is harder to establish the presence of another element in the Sun than to obtain a passport.

For it is not nearly enough to show that many lines of an element agree with solar lines; you must show that the *right* lines agree and, moreover, the agreement has got to look convincing. The solar astronomer's bible, “The Revised Rowland Table of Solar Spectrum Wave Lengths,” lists 21,860 lines from the accessible ultraviolet beginning at wave length 2,975 out to the infrared at 10,200. This means you can shut your eyes, set the cross hairs of your micrometer almost anywhere, and stand a good chance of hitting a line of some element—especially if you choose a region in the blue or violet.

In searching for the lines of an element, it is a tremendous help if someone has been obliging enough to analyze its spectrum for us, for then we know precisely what lines to look for and where. Lines occur in family

groups—multiplets—of from one to sixteen, arising from transitions between the various energy levels of an atom. We shall naturally look for those multiplets that the atom produces most easily, and which, therefore, include the strongest or "ultimate" spectrum lines of that element. For elements we know are very scarce in the Sun, these will be the only lines we need bother about at all.

Another way in which an analysis into multiplets is of the utmost help is that it acts as an immediate criterion between real and accidental coincidences. Thus, suppose the strongest line in a quintet is known to have seven times the intensity of one of its mates. If in the Sun we find that the weak line agrees with a solar line but the strong one does not, the coincidence is obviously accidental. But if the strong one matches and the weak line also coincides with a solar line of about the right relative intensity, then the agreement is probably real. It tells us, too, what kind of solar lines to look for. We can rule out at once all those above a certain size.

LET US SEE how we might start out on an actual search for an element. Suppose we take the case of rubidium, which presents some features of interest.

Turning first to the analysis of its spectrum, we find that we are going to have just eight lines to work with—four doublets and only one where we can check on it immediately. This consists of two lines in the violet at wave lengths 4,215.56 and 4,201.82. Turning to these positions in "The Revised Rowland Table," a glance is sufficient to show us that we are stopped at once. The first line is hopelessly buried under a powerful line of ionized strontium, while

the second is equally lost under a strong iron line.

The other six are in the near infrared. We had better not rely on "The Revised Rowland Table" for wave lengths here, as it was gotten together in 1928 before this region had been thoroughly covered. Which means we have to go to the source itself and get plates of our own with the fast, contrasty emulsions now available for infrared photography.

So we open up our sun tower telescope, start the clockwork, and set the coelostat to feeding light through the slit of the spectrograph. We shall use the second order of a plane Michelson grating giving a dispersion of 0.35 angstroms per millimeter. By hypersensitizing the plates with ammonia we can cut down the exposure time to ten minutes even at this dispersion. Taking them in the dark room and developing for six minutes we turn on the green safe light and hope for the best. Yes, they look all right—plenty good enough for wave lengths, at any rate.

Next we make a trip back to the office for measurement. We calculate where the rubidium lines should be on the spectrograms and examine them with a microscope at these positions. Results? Not a trace. Not the faintest indication of the lines observed in the laboratory.

What to do? We dislike to give up so easily, as we have put in considerable time on this job and hate to see it go down with results negative.

SUPPOSE we have another look at the analysis of Rb. Suddenly a fact strikes us we should have caught right at the start. Its ionization potential is exceptionally low—only 4.16 volts. Other elements prominent in the solar spectrum have much higher I. P.'s than this: Ti is

6.8; Cr, 6.7; Fe, 8.2. No wonder Rb doesn't show in the Sun. With an I. P. as low as four volts, all its atoms are ionized—it never had a chance! At 6,000°K there simply aren't enough whole, un-ionized atoms left to make a perceptible line.

Is there any dodge we can use to get around this? Why, of course! See if the lines come up in the *sun-spot* spectrum. There the temperature is 1,800 degrees lower than in the photosphere. That means less ionization—and hence a better chance for lines of neutral Rb to appear.

We have to wait until a spot with a good black umbra comes along. And when it does, careful guiding of the telescope will be needed to secure a pure spectrum of the umbra free from the photospheric light all around it. But by patiently waiting until a morning when the seeing conditions are extra good we finally get exactly the plate we are after. And there they are without the slightest doubt—the *raies ultimes* of rubidium—perfectly plain in the spot, but all washed out in the spectrum of the photosphere alongside.

Yes, there is Rb in the Sun's atmosphere, tons of it, but mostly all in the ionized state. Unfortunately the lines of *ionized* Rb are clear out almost in the soft X-ray region, otherwise we should have looked for them at once. It is interesting to note that this was the scheme successfully used on thulium. It has a lower I. P. than Rb, so that none of its lines show even in the spot spectrum. But its strongest ionized lines are in the near ultraviolet, and most of them could be identified with weak solar lines.

FOR THE remaining thirty elements the outlook is not very cheerful. In some cases, we cannot put them

down as definitely absent yet, for lack of identification is chiefly due to lack of first-class solar and laboratory data. This is true for tantalum, terbium, neon, coesium, masurium, thulium, illinium, holmium, uranium, and strange to say, the lowly element tin. A few of these may be tentatively established, but at the best it is safe to say they will be represented by lines just on the limit of visibility.

Other elements possibly present in the Sun are arsenic, gold, mercury and selenium, but their ultimate lines are in the ultraviolet, and, if there, are drowned under the ozone absorption bands of Earth's atmosphere.

It is significant that many elements among the missing are heavy metals, such as bismuth, radium, actinium and polonium. Their high atomic weight keeps them low in the solar atmosphere, where their atoms would be at a great disadvantage in producing an absorption line.

And now we arrive at the chief question in No. 4. The elements still missing are in almost every case exceedingly rare on Earth, and we feel certain that if they exist in the Sun, can produce only weak lines. The prominent lines in the spectra of the sixty-one known elements have all been measured and catalogued long ago. *And yet there are one hundred and seventy strong lines in the solar spectrum that cannot be identified with any element, despite the work of a corps of experts who have combed the literature for clues.* The blank space opposite the wave lengths of these lines in "The Revised Rowland Table" is a continual challenge, a constant reminder of our ignorance of even the nearest of all stars. And remember we are dealing here with atoms emitting and absorbing at ordinary temperatures and pressures; we cannot blame it on un-

usual conditions of excitation, such as prevail in the corona or the gaseous nebulae.

V. ONE of the oldest theories to explain the origin of sunspots is that they are caused by planetary tidal action, Jupiter being the chief suspect because of his great mass and eleven-year period.

But did you know that at least one planet—our little Earth—instead of stirring up spots, actually seems to annihilate them? This is the so-called "Earth effect," discovered in 1907 by Mrs. A. S. D. Maunder at the Greenwich Observatory. After thirty-three years it is as much a mystery as it was on the day her paper was communicated to the Royal Society. In substance it amounts to this: *Apparently more spots are born on the side of the Sun that happens to be turned away from Earth than on the side facing us.*

The matter deserves the closest examination. Let us project an image of the Sun onto a sheet of white paper so that the disk is oriented like a map, with the north pole at the top, and the east and west limbs on the right and left sides, respectively. Owing to the Sun's rotation, the east limb will be approaching and the west limb receding, at such a rate that a spot carried into view at the east limb requires thirteen or fourteen days to pass across the disk and disappear around the west limb.

Next, divide the Sun's visible hemisphere into fourteen lunes, each lune being 13.2 degrees of longitude wide. There will be seven east of the central meridian and seven west of it. We number them from one to fourteen going from east to west, in the same direction that the spots move.

Now, if we keep a count of the areas of all the spots found in these lunes for several years, a most pe-

culiar state of affairs comes to light. For each lune on the eastern side of the disk will be found ways to have a greater spotted area than the one corresponding to it on the western side. Thus Lune 1 will have a larger area than Lune 14, Lune 3 more than Lune 12, and so on. The ratios are not small either, ranging all the way from 2/1 to 4/1, with the least difference for Lunes 7 and 8 at the center of the disk.

Remember that everything has been kept strictly symmetrical. Any error due to foreshortening must affect one side as much as the other. Spot areas are determined from direct photographs, and a careful investigation of the methods of measurement used at Greenwich has failed to show that the differences could arise from personal equation, or in the form of the micrometer.

In place of areas, let us use only sunspot numbers. A systematic error might conceivably creep into the measurement of areas, but there can hardly be any doubt about the numbers—a spot group is either there or it isn't. Yet this scheme yields precisely the same result as the other: for both the northern and southern hemispheres the eastern lunes invariably show an excess over the western.

These differences are too persistent and much too large to be ascribed to chance. *Yet they are absolutely without significance as far as the Sun is concerned. Their only significance is with respect to Earth.* Put it another way. In the cycle from 1889 to 1901 which Mrs. Maunder used, 947 spot groups came around the eastern limb, and 777 passed around the western limb into the invisible hemisphere. In other words, it would look as if Earth were responsible for the destruction of 170 spot groups, or one sixth of the whole

number brought into view by the Sun's rotation!

But our common sense tells us it is absurd to think Earth could really have any such damping action. For if we can kill off sunspots at this rate, then other planets should be much better at it. Venus has a tide-raising force on the Sun 1.8 times that of Earth, and Jupiter's is 2.3. Yet no effect of this type has ever been traced to them; the phenomenon seems peculiar to Earth alone.

It may be we have here something of enormous importance whose significance will escape us for centuries. The attraction of the lodestone suffered such a fate. Or perhaps it is quite trivial, and will become clear to everyone, as soon as you, or I, or somebody in China shows us how it works. But they will have a real job on their hands. For later investigations have shown that the Earth effect holds not only for spots but for other solar phenomena of an entirely different nature, such the faculæ and prominences.

VI. TODAY cosmologists amuse themselves and bewilder the rest of us with the Universes they devise to explain the red shift of the extragalactic nebulæ. But there is a red shift right in our own back yard that has attracted relatively little attention, and which is just as incomprehensible as the expanding Universe.

In 1907, Halm announced the discovery of small displacements of lines in the solar spectrum independent of Doppler shifts due to rotation. The effect is such that lines in the spectrum of any part of the Sun's disk always show a shift to the red of their positions in the spectrum of the center of the disk. Also, the amount of the displacement increases with increasing distance from the center.

Without exaggeration, this steady shift in wave length as we approach the limb is one of the most perplexing things in the whole realm of astrophysics. There is no theory that satisfactorily accounts for all the facts of observation. The only one that comes close was advanced by Charles E. St. John in 1926, based on many years of research at Mount Wilson.

One of the consequences of the general theory of relativity is that the period of vibration of an atom in a massive body like the Sun is slightly longer than on the Earth. The difference is minute—an atom on Earth radiating a line at 4,000.000 angstroms would produce one at 4,000.008 on the Sun—yet it is well within the error of observation of powerful instruments. For a highly condensed star like the companion of Sirius the relativity shift is about thirty times as great, but we can measure wave lengths in the solar spectrum a hundred times more accurately than we can in Sirius B. The relativity shift is the same for all parts of the Sun's disk; regardless of whether we take light from the center or the limb, it never varies.

Next, from a variety of sources, St. John demonstrated the probable existence of currents in the photosphere which are rising vertically and flowing outward over the surface. Of course, the old law that everything that goes up must come down still holds, but the upward currents are assumed to be light and in rapid motion, and on reaching the surface cool and grow heavy, so that they sink more slowly than they rise. The net result is that the Sun's atmosphere gives the impression of always moving outward, or toward Earth, at the center of the disk. Since this is opposite to the relativity effect, at the

center the two almost cancel out.

But if we point our spectroscope away from the center, the motion of the rising currents in our line of sight steadily diminishes, until at the limb it vanishes altogether. At the limb, therefore, the Doppler shift to the violet is zero, and the red shift of relativity attains its full value. And after many discouragements, St. John found it agreed very closely with the amount predicted by Einstein.

So far so good. The trouble comes when we try to measure the shift, not for the limb only, but for a whole series of points between the center and limb. Since the red shift is always the same, it should be a matter of simple trigonometry to find the percentage Doppler shift to the violet, and combine the two. But when we do so, the observations differ widely from the calculated ones, and no juggling with the variables at our disposal will make the fit any better!

Here again some unknown influence seems to be at work which we do not understand in the least. Many guesses have been made. It is caused by scattered sky light—the rising currents are not the same at all depths. An East Indian mathematician, Dr. Sir S. M. Suleiman, has advanced a new theory of light which he admits is superior to Einstein's, and although it does explain certain discrepancies in the positions of a few lines at the limb, it fails miserably when applied all the way across the disk.

So you figure it out. Now you know as much as the rest of us who are supposed to understand these things.

VII. SPEAKING of the limb effect naturally leads directly to another subject that has long baffled astrono-

mers, and which has received far more attention than the above. It is the spectroscopic determination of the Sun's velocity of rotation.

On the face of it nothing could look easier. We admit light through the slit of the spectrograph from the east and west limbs and the center of the disk. Then the displacements of the spectrum lines to the violet and red measured with respect to their positions at the center should give the velocity of rotation. It is about 2 km/sec at the equator.

The Sun is such an intense source of light that its spectrum can be photographed with a dispersion enormous compared with that possible for the brightest stars. The one-hundred-and-fifty-foot sun tower is made to spread the visible spectrum out to fifty feet, while the limit of the Coude spectrograph at the one-hundred-inch is about a foot. On this scale the Doppler shift due to the solar rotation is apparent at a glance. You can measure it roughly with a yardstick. Yet plates taken with the utmost care, measured on machines that read to a thousandth of a millimeter, by people with long experience, will give velocities all the way from 1.75 km/sec to 2.25 km/sec, another of those "intolerable" astronomical differences. Worse still, plates taken ten minutes apart under identical conditions will give values just as bad. These differences have been attributed to local currents in the Sun, and although the idea is reasonable enough, I never had much faith in it myself.

The grief that besets this problem unfortunately does not end here. The first spectroscopic rotation measurements were made in 1908, and by 1914 a considerable volume of data had accumulated. An analysis of results from all over the world revealed the astonishing fact that

during these six years the solar rotation period had apparently increased by a whole day. Some thought it might be real, that perhaps the period varied slowly with the sunspot cycle.

To test the idea meant determining the rotation every few months for at least eleven years. These long-range programs are always hard to follow, because men and machines will change with time. The apparatus keeps getting a little farther off each year, but the man who runs it keeps getting a little farther off along with it, so that at the end of the period he is allowing errors he would never have permitted in the beginning.

Two men, however, volunteered: J. Storey at Edinburgh and St. John. Storey measured the velocity at the

equator from 1914 to 1931, and St. John from 1914 to 1936. St. John's measures showed an increase in the velocity that became alarming by 1928, when, after some hesitation, it started to fall again. Storey's results, although differing considerably among themselves, showed no systematic trend either way. And so the matter is still undecided after a third of a century of the most painstaking effort. It is unlikely anyone will repeat this work for a long time, as there seems to be nobody left who believes anything can stay the same for the next eleven years.

Just one word more on this subject. The rotation period of the Sun, as determined from long-lived spots, has remained unchanged for over eighty years!

THE END.

DENTAL DECAY

TOBACCO

ONIONS

LIQUOR

UPSET STOMACH

WAS MY FACE RED

SEN-SEN
FOR THE BREATH

5c

THROAT EASE
VALUABLE TO
SINGERS AND SPEAKERS

when she
dodged
my kiss?

Don't Offend... Use Sen-Sen

BREATH SWEETENER... DELIGHTFUL CONFECTION

IN TIMES TO COME



"SLAN" ends this month; anyone around now who objects to its rating of Nova? With "Slan's" ending, we start a new yarn—one mentioned before; "Sixth Column," by Anson MacDonald. This one poses a rather lovely problem, and, finally, an even more fascinating answer. The problem: The United States is totally crushed under a blitzkrieg of a Pan-Asian force, crushed so completely that of all the armies and forces of the nation, the only remnant is the Citadel. That continues to exist because it was a scientific research laboratory established in absolute secrecy; every one of the half-dozen high army officers who knew of its existence is dead. And the Citadel's two hundred-odd keen research minds represents America's only remaining military asset when Major Whitey Ardmore is sent to it to tell them they're on their own now, sent just before the final collapse.

On arrival, he finds they now have a new military asset—a terrifically deadly thing. It's so deadly it has wiped out all but six of the Citadel's staff! Now there is the unhappy situation of a force of six men and a terrific weapon. A great military force—and no army or any way of raising an army in a crushed and enslaved country, to use it.

It's a nice problem—and an even nicer solution!

ANALYTICAL LABORATORY

A BRIEF explanation of the new rating calculation method may be of interest. As votes come in, we chart them against the stories, first place votes giving the story a unit score, third place a 3. Come the day of making up this department, the total scored on each individual story is added, and divided by the number of such scores to give the final rating. Thus if thirty-two readers voted a story first place, eighteen second place, seven third place, and two fourth place, the total points would be $32 + 2 \times 18 + 7 \times 3 + 2 \times 4 = 97$. Then $97 \div (32 + 18 + 7 + 2) = 1.645$ as the final score. This month's scores on the October issue were:

1. Slan	1.33	A. E. van Vogt
2. Farewell to the Master	2.25	Harry Bates
3. The Warrior Race	3.2	L. Sprague de Camp
4. Butyl and the Breather	3.22	Theodore Sturgeon
5. White Mutiny	3.6	Malcolm Jameson

THE EDITOR.



BRASS TACKS

Trick is this; did you ever before read a superman story in which you liked and felt you understood the superman?

Dear Mr. Campbell:

The September Astounding is the best issue you've put out in many months. The interior art work has improved to the extent of a mutant, while Rogers' cover work is the best since his work on "Gray Lensman."

As for the stories, I liked "Homo Sol," and I think that deserved the Nova term, rather than "Slan," which is not living up to all the advance publicity you have given it. "Quietus," by Rocklynn, would have taken first but for the superb piece of work by Asimov. "Blowups Happen" is tied for second with "Quietus"—Heinlein is doing a lot of good work these days. "Universes for Lenses," by our eminent astronomer, Richardson, was an excellent bit of informative writing, but gets no higher than third. "The Kilkenny Cats" gets a fourth, closely followed by the "Coronaviser"—a very good article, but one which I did not seem to understand in spots. "Emergency Landing" is in the cellar. 'Nuf said.

I liked "Slan," but where's the catch? You said that it was all done by a trick—please explain.—Edward Summers, 646 W. Beech Street., Long Beach, N. Y.

They're still seeing Astounding in England.

Dear Mr. Campbell:

Analytical report for August 1940 issue of Astounding:

1. "Crisis in Utopia."
2. "The Stars Look Down."
3. "Vault of the Beast."
4. "Rendezvous."
5. "Moon of Exile."
6. "Done Without Eagles."
7. "Clerical Error."

I see the longer stories have come out on top of the shorts again. I suppose that's because the author has more chance to create an atmosphere, and to build up his characters, in a novel or novelette. Norman L. Knight did a good job in "Crisis in Utopia." Parts of the plot were slightly reminiscent of his "Frontier of the Unknown," but it was a great novel, and written in that same powerful and descriptive style. "The Stars Look Down" is Del Rey's best yet, a very plausible story. Van Vogt has handed us another alien, and, contrary to E. F. McGill's expectations in July Brass Tacks, has got away with it; for "Vault of the Beast" is, I think, his best tale. He tells his tales of aliens with a style that is far superior to the blood-and-thunder type of alien story that was popular in the days of the Clayton Astoundings, and at the same time his tales are far more real, and

in a way, enthralling than those of the early '30s. "Rendezvous" tops the shorts as it is the only story that is not based upon the idea of one person sacrificing his—or her, as in "Moon of Exile"—self to save others; John Berryman should be good on a novel. Not much to choose between the others, but they were by no means bad, just average—for Astounding, of course.

As for the cover, it's superlative; the curtain of stars in the background might have been a color photograph of the Milky Way taken way out in space; Rogers gets better and better. He should be able to cope with the next astronomical cover, especially with the new format, which makes your cover even more outstanding and artistic than before. Surprise of the issue, so far as interior illustrations are concerned, is that Koll tops the line-up, with his two illustrations for "The Stars Look Down," especially the book jacket. R. Isip keeps up his good work on the serial and "Moon of Exile." While Kramer and Cartier share the lemon, or whatever they get nowadays, between them.

I must thank you very much for sending the May to August mags, which I received a week ago; as yet I have only had time to read August, reported above. In passing I must, however, note these points: consistently good covers by Rogers; excellent drawings by Schneeman, specially for "Red Death of Mars," also by the Isips in June issue; and not least, your own very interesting editorials. 'Fraid I'll have to say cheerio now.—D. J. Doughty, 31 Bexwell Road, Downham Market, Norfolk, England.

Now I rather liked Isip's collection of whackey-looking humanoids.

Dear Editor:

"Slan" starts superbly! A. E. van Vogt's excellent psychological treatment, so evident in his previous successes, is at its best in this novel.

Of the complete stories, I prefer "Blowups Happen" and "Quietus," but the margin of the latter over the other stories is slight. Heinlein's novelette owes its preference in part to two factors which have little to do with actual story quality—its excellent "fit" with the present status of research into the possibilities of atomic power, and its greater length. Given two stories equal in other respects, I always

enjoy the longer tale the most. Heinlein, it seems, can't miss.

"Quietus" is just a little different from any previous Rocklynn story, and gains by virtue of its novelty. "The Kilkenny Cats" partakes, as a result of being a part of a fine series, of some of the added interest which attaches to longer stories. Von Rachen kept me as much in the dark as to Galbraith's real intentions as he did Vicky. "Homo Sol" and "Emergency" are both good enough so that I would like to read the sequels which seem to be indicated by the endings of these stories.

The cover and article which it illustrates are certain to get plenty of praise, and deserve all they get. A lens four thousand light-years in diameter! That would make even the incomparable "Lensman" gasp with astonishment! Short's article deals with a tool which appears to be of much more immediate practical use, and is entirely welcome. Tarrant's letter on additional "unnamed sciences" really rates the rank of an article. And last, but far from least, the editorial "Full Cycle" is in a class by itself.

Not many brickbats in the above. The most I can say along that line is that I didn't care much for M. Isip's drawing for "Homo Sol."—D. B. Thompson, 3136 Q Street, Lincoln, Nebr.

We'll think about an article on plastics.

It's a huge field—too huge to be covered even lightly in an article.

Dear Mr. Campbell:

Once again you put out an issue with sufficient "power" to blast me into action—and here's my comment on the September Astounding.

I see what you mean by a "Nova" story, now. It has the savor—the memorable—of true literature." This first installment of "Slan" has the human interest of "Who Goes There." Which really should be considered the first of the Nova stories. We wait impatiently for the next chapter in the saga of the slans.

"Blowups Happen" was definitely an above-standard tale. You seem to be getting quite a few of these excellent novellettes—I'll long remember "Admiral's Inspection"—and this yarn by Heinlein—his best to date—really had thrills and suspense—and then some!

Among the short: "Kilkenny Cats" was unusually good; well-planned action. "Homo

Sol" is the first one by Asimov that I've liked; and good! The other two are passable.

The articles, as usual, were well written and interesting. I'm still waiting for some of you industrial chemists to give us that article on "theoretical and applied" plastics.

Imagine my leaving the cover until last! Too much like one of Willy Ley's orbit diagrams. O. K. to illustrate clearly a new and revolutionary idea, but not so decorative. By the way, the cover for August was another "bull's-eye" score for Rogers. Thanks for the neat lettering arrangement on covers.

Since I didn't comment on the August issue, I will say that the del Ray, van Vogt, Berryman and St. John stories were excellent. The issue, as a whole, was as good as this September number.

All interior illustrations are now uniformly "swell" and appropriate to the story.—L. M. Jensen, Box 35, Cowley, Wyo.

Does seem a peculiar way to try to make war popular.

Dear Sir:

I would also like to exclaim "Ye Gods" about St. Clair's statement that "Final Blackout" was pro-war propaganda. Does he think that three hundred thirty million corpses and two ruined continents are things tending to make people want war?

And about the Communists in Russia, does Mr. St. Clair really and naively believe that the Russian workers have the nerve to say how the industries and other forms of human effort should be carried on? The dictatorial rule in Russia is more complete than in the Fascist countries which at least allow some of their citizens to elevate themselves by honest effort. In Russia the higher types of people are ground down to the level of the peasants who, by brute force only, rule them. The Russian rulers, realizing their incapacities to become the sort of persons in any way that the upper classes were, satisfied their inferiority complexes by degrading their betters.

As regards the Mannerheim Line in Finland, disregarding the fact that the Finnish War was the same sort of brutal attack as that on Poland and Holland, the Russian troops, led by political officers, were decimated in attacks on the fort system, but when one of those militarists whom Mr. St. Clair so despises was called in from the farthest outpost of Russia, where the army and not the "great" Communist party was

the real ruler, the fort lines were cracked by intelligent use of the material at hand. The comparison of Gallipoli with the Mannerheim Line battles was rather ill-chosen, for there is a great difference between landing troops on a shore absolutely without cover where they must dig in instantly or die and then oppose a force their near-equal in numbers, equipment and training; and the storming of positions held by an army that was so greatly inferior in numbers and supplies, and almost entirely unprotected from attack from above. I'll bet, however, that losses judged by percentages will appear far different from the straight numerical record.

The B. C. P. in "Final Blackout" was indubitably stupid. Its military command fell for some of the simplest deceptions, probably due to the party's lack of that foresight which should have considered the possibility of attack and prepared for such an eventuality.

If Mr. Hubbard's military oligarchy was Hitler Fascism, and if that is the way Hitler treats the Communists, then Heil, Lieutenant!

If Mr. St. Clair thinks Russia is such a wonderful, enlightened country, I suggest he go there and stay there.

If all my plans for the next four or five years work out, I shall be a second lieutenant in the army of the United States, and I can think of no greater pleasure than to have Mr. St. Clair in a platoon under my command.

Analytical Laboratory
October, 1940

1. Slan
2. White Mutiny
3. The Search for Zero
4. The Warrior Race
5. Butyl and the Breather
6. Farewell to the Master

—S. Murray Moore III, 2717 Thirty-eighth Street, Washington, D. C.

England does not permit importation of magazines, so a special English edition—reduced somewhat by paper shortage—is printed over there.

Deat Mr. Campbell:

At last I have managed to pluck up courage to "write my first letter to any science-fiction magazine." I write chiefly to voice my appreciation for the new British-printed edition of good old Astounding. True, it has only ninety-six pages, but then,

the price is proportionately decreased, being only six pence (6d.—12 cents), in exact proportion, in fact, to the price of twenty cents for one hundred sixty pages. I wonder why the publishers couldn't produce a full-size, exact duplicate, of the American copy. Personally, I would much rather have it that way, and would be quite prepared to pay full price.

In the seven British editions already published, there has been a total of twenty-nine stories and four articles. Chief of these, I suppose, would be rated Dr. E. E. Smith's "Gray Lensman," no doubt super-epic, although I haven't had time to read it yet. I notice that a few sci-fi-war stories are now appearing—Harl Vincent's "Neutral Vessel" and "High-Frequency War" along with Norman L. Knight's "Bombardment in Reverse." All the last seven covers from the February 1940 issue back have been super-colossal, et cetera, though I didn't care for the July 1939 attempt. However, you certainly have a good artist in Graves Gladney. By all means hang onto him.

Now for my general likes and dislikes:

1. I prefer time-travel and space-travel tales to all others, but I am very partial to "a little bit of fourth, fifth, sixth, seventh, eighth, ninth, or what-have-you, dimension."

2. I am definitely not a professor of physics or any other sort of super-scientist, and, consequently, I do not want scientific treatises, whether they be actual fact or sheer bunk. With one exception: the only "super-scientific" author who seems to "invent" plausible machines and situations, is John Russell Fearn.

3. I am not averse to an occasional short fantasy such as "Wings of the Storm," published in the March 1938 issue.

4. Artists: Wesso, Schneeman, Thompson and Brown, in that order.

5. Authors: Dr. E. E. Smith, John Russell Fearn, Jack Williamson, Eric Frank Russell, Nelson S. Bond, Nat Schachner, L. Sprague de Camp, Lester del Rey, Don A. Stuart, Harl Vincent, Kent Casey, L. Ron Hubbard, Ross Rocklynne—but why go on? Those are my favorites, and I think I can honestly say that none of your regular contributors ever gives in absolutely unreadable junk.

6. I don't mind an outlay of one article per issue, but not more. I do not like highly technical treatise, while I especially enjoy ones like "Language for Time-Travelers," by L. Sprague de Camp, published in the July 1938 issue.

7. Covers: I am very keen on the astronomical cover plates and think Saturn, on the April 1939 cover is the best so far. The depiction of characters on the cover, as in the May, June and October 1939 instances, does not illustrate s-f. An exciting spaceship scene, a fight with a prehistoric animal, or an intricate piece of flashing machinery are the type that appeal to me.

8. The Question of Time-Travel: I do not think it is possible, at least physically. Of course, it all depends ultimately on that all-important question—what is time? Is it nonexistent? A mere mental illusion? Is it the fourth dimension? Is it an intangible torrent that flows past us? Or, conversely, do we move along in it, while "it" stands still? My argument against its possibility goes in the form of this little example:

In 1950, a man invents a time machine and, in it, goes forward into the year 3000. He returns to 1950 after staying in 3000 for some time. He lives the rest of his natural life and dies. When, in the course of natural time, 1950 rolls along to 3000, does the man find himself alive again? I hope you manage to unravel my rather tangled wording, but I think you'll understand.

I think I must now bring this tiresome epistle to a close, fervently hoping that it gets safely across the "pond" to you. Assuming that it reaches you, I should be sincerely grateful if you would give it a small space in *Astounding*, for I would like to record a request for a correspondent about sixteen years of age, interested in physics and chemistry, who could keep me informed of the latest developments in s-f "over there." Now, with best wishes for the continued prosperity of *Astounding*, and hoping that this war soon ends, so that *Astounding* may again be imported, as in "days of old."—D. Tucker, 93 Freemason Road, Custom House, London E.16, England.

Mr. St. Clair's remarks don't seem to have found any general agreement.

Dear Mr. Campbell:

My! my! such a passionate hatred for the army is displayed by Mr. St. Clair, and such a well of ignorance! Surely this hysteria has been brought on by expectation of being called into the army.

It would be interesting to know from

what source Mr. St. Clair acquired the information that the British and French armies were threatened with mutiny if they attacked last winter. The real facts are that they were unable to attack without invading neutral territory or storming the Seigfried Line which would have been suicide, also there was such a lack of mechanized equipment in the Allied camp that attack was almost impossible.

Our well-informed friend also condemns Hubbard's depiction of the Communist Party, which appears to his innocent mind to be the perfect democracy. Without doubt the military achievements of the Soviet are colossal, in fact they compare with Hitler's domination of Austria and Czechoslovakia; and how could all the generals of Europe expect anything else but the complete subjugation of Russia with her thirteen million soldiers and gigantic air force by brutal Finland with her mere handful of soldiers and no air force whatever. Without doubt, as Mr. St. Clair would have us believe, the Russians showed daring and bravery that is unsurpassed.

And as for the contemptible army and the foreign war, if the English air force and army are beaten and England falls, we'll all see how foreign the war is, for the Atlantic Ocean will be no more a barrier than the English Channel and it will take more than the Rocky Mountains to keep the enemy out of California and perhaps Mr. St. Clair's own back yard.—Donald Ward, Armdale, Halifax, N. S.

More—

Dear John:

Mr. St. Clair, who wrote the lead-off letter in the correspondence section of the October Astounding, is obviously one of the Comrades. Hence he possesses a remarkable amount of gullibility and a peculiar type of logic. Very peculiar. A person who holds an author responsible for his characters' political beliefs possesses an uncontrolled tendency toward extrapolation. Pay no attention.—J. D. Clark.

—and more.

Dear Campbell:

Mr. Ray St. Clair, in the October Astounding, let off a blast about "Final Blackout" that calls for an answer. He didn't discuss the story's literary merits, which, except in cases of illiterate writing, are an unarguable question anyhow, but

went off into history, sociology, and kindred topics where it's possible—and a pleasure—to take a few factual cracks at him.

Crack one: Investigation of the large existing historiographical literature—which is little known outside the profession—will show Mr. St. Clair that fallacy of assigning unique causes to historical events; e. g., fear of mutiny as the unique reason for the late Franco-British policy of defensive warfare, and likewise as the cause of the end of the War of 1914. Actually, the French army in 1918 was doing pretty well; they'd had their mutinies a couple of years before and had gotten over them. And the American army, far from being mutinous from losses and privation, if anything suffered from feeling of frustrated animosity because the war was over before most of them had had a crack at the enemy. Ask the boys who were there.

Crack two: Mr. St. Clair says the members of the Russian Communist party are not stupid and corrupt. I assume he means "all or nearly all." Presumably he means that they are intelligent, upright and loyal. Unfortunately we heard all that before, ten years ago. Then it transpired that a large fraction of these wonderful men—including a lot of the revered top-rankers—were in fact spies, wreckers, slimy traitors, vile Trotskyist-Rykhovist-Bukharinist-leftist-rightist deviationists, and had to be liquidated. Now again we hear what wonderful men the survivors are. But if the Communist claims for the probity of their leadership proved wildly overoptimistic before, Mr. St. Clair will have a bit of trouble proving that these claims may not be equally false this time. According to Communist theory, people are what their economic environment makes them. If fifteen years of Communism produced a horde of traitors, saboteurs, Fascist agents, et cetera, there's no reason on earth why the next fifteen years shouldn't produce another crop, despite the real but controversial advances in Russia cited by St. Clair.

Crack three: Mr. St. Clair could hardly have picked a worse example to prove the prowess of the Red Army than their heroic defense of Russia against the invading hordes of Finnish capitalists. The fact that, after months of trying, with an absurdly vast preponderance of man-power, artillery, airplanes and tanks, they finally broke through the Finns' modest little strip of barbed wire and blockhouses, does not prove them mighty warriors. It proves no more than that they were not utterly hopeless. The best that can be said for them

is that they were shown as better organized than the Ethiopians, better equipped than the Chinese, and braver than the Italians. The Red army did better in its brush with Chang Hsueh-liang's runaway Manchurians in 1929. But that was before it was discovered that a considerable part of its officers' corps was composed of foul traitors who believed in rapprochement with Germany, and had to be liquidated.

The rest of Mr. St. Clair's letter, with its use of terms of high emotional content, such as "professional murderer" for army officer, and its subtle identification of "the common people" with peace-at-any-price isolationists, does not seem to call for reply. His allegation that Hubbard's story was pro-war propaganda was adequately answered in the blurb. It would be interesting, however, to know whether St. Clair would be as firmly non-interventionist in the event of a war between Japan and Russia.

Finally, my spies inform me that Hubbard is not really a Fascist sympathizer. He's a kind of philosophical anarchist, with a naive belief to the effect that the military are a superior and altruistic lot who can be trusted to set things to rights when they've been bolixed up by the corrupt and craven civilians. On the fallacy of this last belief, at least, Mr. St. Clair and I can get together.—Caleb Northrup, 3708 Walnut Street, Philadelphia, Penn.

And yet more!

Dear Mr. Campbell:

This is the first time I have ever written to Brass Tacks, but this time I'm afraid Reader Ray St. Clair's letter set me off. It's about time I wrote anyhow.

In the first place, regarding the aforementioned reader, after reading his letter I have drawn the conclusion that he is one of two things: (a) a very poor judge of science-fiction literature, or (b) a (five words censored here).

"Pro-war propaganda" Pardon me while I snicker. L. Ron Hubbard's "Final Blackout," in my opinion, and also that of all my friends, was the best science-fiction story I have ever read. I might, and will, go so far as to say that it was undoubtedly the best story of any type I have ever read. Why didn't it get the Astounding Nova award? I doubt if there will be such a story in all the annals of science-fiction for a long time to come. It was really won-

derful. Congratulations to Hubbard and Astounding for printing it.

As to the October issue of Astounding: all the stories were swell. I don't believe I've ever seen such a good array of stories in one issue of a magazine. Usually there are some bad stories, but not this time. "Slan" is excellent. Thank you for the sequel to "Ether Breathers." "Butyl and the Breather" was very good; how about another one? I think the most outstanding story of this issue was Bate's "Farewell to the Master." Let's have more like that.

The only thing I ever found wrong, to any degree, in Astounding was the inside illustrations. Now they are getting much better. I especially like your new feature of printing more than one picture for each short story. Kramer is about your best inside illustrator. Rogers' covers never cease to astound me; Astounding is outstanding on every newsstand because of Rogers' covers.

Your articles are good, but sometimes rather long-winded and definitely repetitive. "Search for Zero" didn't affect me that way because of the way it was written. Ley usually writes good articles. How about more illustrations for the articles, especially one for the first page. The lack of an illustration for your articles on the introductory page makes them seem inferior to the stories, and this is certainly not the case.

I think I shall close now in saying that you ought to print "Final Blackout" in book form. I'm willing to bet that such a book would become a best seller. It would be very interesting to everyone, considering the times and conditions, and you would make a heap of money on it besides giving thousands of s-f readers the greatest thrill of their lives. How about it? —Jon F. McLeod (QX-1744), 1225 Willow Court, Jacksonville, Florida.

Collectors' item.

Scientifiction fans:

This is to announce the Imag-Index. It is a seventy-two page mimeographed publication, between stout covers, containing the table of contents—story, author, type of story, cover story, et cetera—of every science-fiction magazine professionally published from 1926 through 1938!

Price fifty cents. Stamps, up to three-cent denomination, accepted.—The IMAG-INDEX, 2532 Burnside Ave., Los Angeles, Calif.

SLAN

By A. E. van Vogt



SLAN

By A. E. van Vogt



Concluding the most powerful novel of a superman science-fiction has produced. And this fourth and last part is the most powerful part of the novel!

Illustrated by Schneeman

SYNOPSIS

Slans are a strange, superior race, resembling human beings, their only outward difference being the golden, thought-reading strands or tendrils in their hair. Inwardly, the difference includes a double heart, abnormal nervous and muscular strength and superhuman intelligence. Human beings and the dictator government of Kier Gray accuse them of every known crime, the most vile being the use of mutation machines on human mothers with a resultant crop of monster babies. Slans are hated so ferociously that they are either killed at sight, or captured and executed.

Tommy Cross, a slan youth, is convinced that all these stories are but products of propaganda. From his father, he has inherited the secret of atomic energy, the greatest weapon in the world; and with this to help him, he searches for other slans, determined to force better relations between slans and the human race.

He discovers that there is a second type of slan, who does not possess the golden slan tendrils which makes mind-reading possible. To his dismay, he finds that these tendrillless slans hate the true slans as violently as do the human beings, and that human beings do not even suspect the presence of the tendrillless ones, concentrating all their violence on his own kind. As the years pass, the vastness of the tendrillless slan organization impresses him more and more. They control Air Center, and from it the aviation industry of Earth. Unknown to human beings, they send spaceships to Mars on regular schedules.

Forced to escape, Cross captures one of these spaceships, but is in turn captured by Joanna Hillory, a tendrillless slan woman who was concealed on the ship. He and Granny manage to overpower the slan woman, and then discover that seven heavy cruisers—hundred-thousand-ton tendrillless

slan spaceships—are following them in the night.

By means of atomic energy, they escape this vast force of warships; and Cross gains several years in which to experiment with atomic energy. He discovers a superhard metal: ten-point steel; a hypnotism crystal made of atomically unstable glass. He refits the tendrillless slan spaceship he has captured with atomic energy and his new metal.

On a trial flight into space, he sees that Earth is entirely surrounded by tendrillless slan warships, and he runs into a space mine that nearly wrecks his ship. Realizing that he is not ready to face the might of the tendrillless slans, he goes back to Earth and resumes his search for true slans.

Previously, he had discovered that John Petty, chief of the secret police of the human beings, was plotting against Kier Gray; and that Petty intended to usurp the dictator's position by assassinating a slan girl called Kathleen Layton, who is held prisoner in the wonderful Grand Palace, which was built by the slans hundreds of years before but which, after the war of disaster and the nameless period, became the seat of human government.

The dictator is keeping Kathleen alive for study purposes; and, unknown to Cross, he foils Petty's plot, but the chief of police remains in power. As the years pass, Petty and the dictator actually become friends. The dictator also prevents one of his cabinet ministers from making Kathleen, who is seventeen when Cross is fifteen, his mistress. Tiring at last of his studies, Kier Gray decides to send Kathleen out of the palace; and she, who has long been weary of imprisonment, takes the opportunity to escape. She has discovered in Kier Gray's files some of the old hideaways of slans; she goes to one of them; simultaneously, Cross is directed to the hideaway by a Por-

grave thought broadcaster, set up in the long ago by the slans who have deserted the hideaway. They meet, and fall in love, but must wait till dark before they can leave in Jommy's car, which is made of ten-point steel, and is equipped for space travel although it is disguised as an ordinary, big automobile.

In the hideaway, they are surprised by John Petty, who shoots and kills Kathleen.

THERE was no thought in Jommy Cross, no hate, no grief, no hope—only his mind receiving impressions; and his superlatively responsive body reacting like the perfect physical machine it was.

His car braked to a stop; he saw the figure of John Petty standing just beyond Kathleen's crumpled body.

"By Heaven!" snapped from the surface of the man's mind, "another of them!"

His gun flashed against the impregnable armor of the car. Startled by his failure, the chief of secret police drew back; his lips parted in a snarl of fearless rage. For a moment, the dark hatred of man for the encroaching slan enemy seemed personified in his grim, merciless countenance, and in the straining tenseness of his death-expecting body.

One touch on one button; and he would have been blasted into nothingness—but Jommy Cross made no move, spoke no word. Colder, harder grew his mind, as he sat there; his bleak gaze stared impersonally at the man, then at the dead body. And finally the measured thought came that the possessor of atomic energy could have no heart, no love, no normal life. In all that world of men and slans who hated so savagely, there was for him only the relentless urgency of his high destiny.

Other men began pouring from the secret entrance, men with ma-

chine guns that chattered futilely at his car—and among them he was abruptly aware of the shields that indicated the presence of two tendrillless slans.

His searching eyes spotted one of them after a moment, as the man drew into a corner, and whispered a swift message into a wrist radio. The words ran plainly along the surface of his mind:

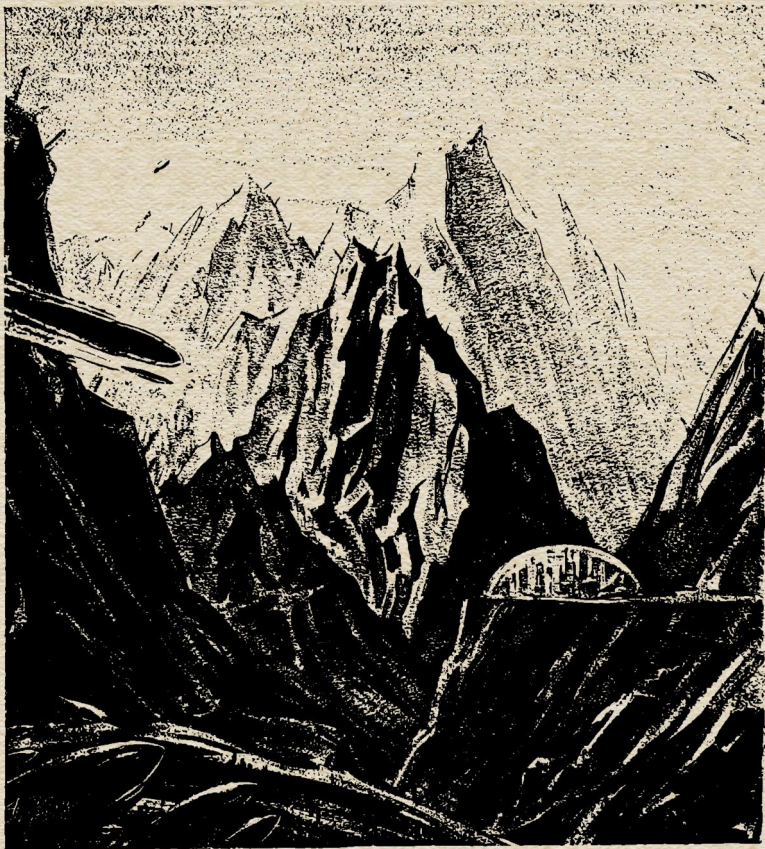
"—a 7500 model, 200-inch base . . . general physique type 7, head 4, chin 4, mouth 3, eyes brown, type 13, eyebrows 13, nose 1, cheeks 6 . . . cut!"

He could have smashed them all, the whole venial, ghoulish crew—but no thought of vengeance could penetrate the chilled, transcendental region that was his brain; in this mad Universe, there was only the safety of his weapon and the certainties that went with it.

His car backed, raced off with a speed their legs could not match. Ahead was the tunnel of the underground creek that fed the gardens. He plunged into it, his disintegrators widening Nature's crude bed for half a mile—then he turned down to let the water stream after him and hide his tunnel; then up, so that the water wouldn't have too much space to fill.

Finally, he leveled off, and plunged on through the darkness of the underground. Not yet could he head for the surface, for the tendrillless slans would have their cruisers waiting to meet just such a possibility.

BLACK CLOUDS hid a night world when at last Jommy Cross emerged from the side of a hill. He paused, and with meticulous care, undercut his tunnel, buried it under tons of crashing earth—and soared into the sky. For the second time, he clicked



A glass-domed city nestled on the one bit of level ground among those black, age-scarred rocks—and black, steel-armored, stupendous defenses.

on his tendriless slan radio; and this time a man's voice broke into the car:

“Kier Gray has now arrived and taken possession of the body.

“It appears that once again the snake organization has allowed one of its own kind to be destroyed without a move to save her, without even the sign of a move. It is time that

we drew the proper conclusions from their failures, and ceased to regard any opposition they might offer to our plans as an important factor. However, there is still the incalculable danger presented by the existence of this man, Cross. It must be made clear at once that our military operations against Earth must be suspended until he is destroyed.

"His unexpected appearance on the scene today was, therefore, one great advantage we gained from the affair. We have a description of his car and an expert's description of his physique. No matter how he disguises himself, he cannot change the bony structure of his face; and even immediate destruction of his car will not destroy the record of the car itself. There were only a few hundred thousand 7500 models sold. His will have been stolen, but it can be traced.

"Joanna Hillory, who has made a very detailed study of this snake, has been placed in charge. Under her direction, searchers will penetrate every district of every continent. There must be small areas on Earth where we have not penetrated: little valleys, stretches of prairie, particularly farming districts. Such localities must be closed, police cells set up in them.

"There is no way the snakes can contact him; for we control every avenue of communication. And from this day onward, our watchers will stop every person with his facial physique for X ray examination.

"That will keep him off the road; that will prevent chance discovery of the snakes, and give us the time we need for our search. However long it may take, we must trace this dangerous slan to where he lives.

"We cannot fail. This is Great Headquarters signing off."

The chill, rushing air whined and whistled against the hurtling car there beneath the swarming black clouds. So the war against the human world was now bound up with his own fate—an indefinite reprieve for both. They would find him, of course, these thorough-going slans. They had failed once because of an unknown quantity—his weapon—but that was known now; and be-

sides it was not a factor that could influence their remorseless search. His steel-hard mind contemplated that prospective invasion of his valley; and finally emerged with one fact that remained in his favor, one question: Yes, they would find him, but how long would it take?

XIV.

IT TOOK seven years; and Jommy Cross had been twenty-six for two months on that tremendous day when the tendriless slan organization struck with unexpected, unimaginable violence.

It was hot with a sultry, oppressive heat as he came slowly down the veranda steps and paused on the pathway that divided the garden. He was thinking with a quiet, gentle thought of Kathleen, and of his long-dead mother and father. It was not grief, or even sadness that swayed him, but a deep, philosophical sense of the profound tragedy of life.

But no introspection could dull his senses. With abnormal, unhuman clarity he was aware of his surroundings. Of all the developments in himself during those seven years, it was this marvelous perception of *anything* that marked his growth toward maturity.

Nothing escaped him. Heat waves danced against the lower reaches of the mountain twenty miles away, where his spaceship was hidden. But no heat mist could bar a vision that saw so many more pictures per split second than the human eye could see. Details penetrated, a hard, bright pattern formed where a few years before there would have been, even for himself, a blur.

A squadron of midges swarmed past Granny, where she knelt by a flower bed. The faint life wave of

the tiny flies caressed the super-sensitive receptors of his brain. As he stood there, sounds from remoteness whispered into his ears, wisps of thought, shadowed by distance, touched his mind. And gradually, in spite of incredible complexity, a kaleidoscope of the life in his valley grew in his mind, a very symphony of impression that rounded beautifully into a coherent whole.

Men and women at work, children at play, laughter; tractors moving, trucks, cars—a little farm community meeting another day in the old, old fashion.

He stared again at Granny; briefly his mind dissolved into her defenseless brain, and in that instant, so utter was his power of receiving thoughts, it was as if she were another part of his body. A crystal-clear picture of the dark earth she was looking at flashed from her mind to his. A tall flower, directly under her gaze, loomed big in her mind, and in his.

As he watched, her hand came into view, holding a small, black bug. Triumph squirmed a course through her brain as, with a sharp squeeze, she squashed the insect, then complacently wiped her stained fingers in the dirt.

"Granny!" Cross ejaculated, "can't you suppress your murderous instincts?"

The old lady glanced up at him; and there was a belligerent thrust in her wrinkled, kindly face that was distinctly reminiscent of the old Granny.

"Nonsense!" she snapped. "For ninety years gone now, I've killed the little devils, and my mother before me had it in for 'em too, heh, heh!"

Her giggle sounded senile. Cross frowned faintly. Granny had thrived physically in this semitropi-

cal, West coast climate, but he was not altogether satisfied with his hypnotic reconstruction of her mind. She was very old of course, but her constant use of certain phrases, such as the one about what she, and her mother before her, had done, was too mechanical. He had impressed the idea upon her in the first place to fill the enormous gap left by the uprooting of her evil memories but—well, one of these days he'd have to try again.

He started to turn away; and it was at that moment that the warning tingled into his brain, a sharp pulsing of faraway outside thoughts. "Airplanes!" people were thinking. "So many planes!"

YEARS now since Jommy Cross had implanted the hypnotic suggestion that everybody who saw anything unusual in the valley was to signal through their subconscious, without themselves being aware of the act. The fruits of that precaution came now in the wave after wave of warning from dozens of minds.

And then he saw the planes, specks diving over the mountain heading in his general direction; and like a striking mongoose, his mind lashed out toward them, reaching for the minds of the pilots. Taut-held brain shields of tendrilless slans met that one, searching glance.

He leaped forward in a single, flowing movement. In full racing stride he snatched Granny from the ground; and then, he was in the house. The ten-point steel door of that ten-point steel house swung shut—even as a great, glistening helicopter plane settled like a gigantic bird of prey among the flowers of Granny's garden.

Cross thought tensely: "A plane in every farmyard. That means

they don't know exactly which one I'm in. But now the spaceships will arrive to finish the job. Thorough!"

Well, so had he been thorough; and it was obvious that, now his hand was forced, he must push his own plan to the utmost limit, and with the uttermost determination. He was conscious of supreme confidence, and there was still not a doubt in him.

Doubt and dismay came sharply a minute later, as he stared into his underground visiplat. The battleships and cruisers were there all right, but something else, too—another ship. A *ship!*

The monster filled half the visiplat, and its wheel-shaped bulk sprawled across the lower quarter of the sky. A half-mile circle of ship, ten million tons of metal, floating down lighter than air, like a buoyant flattened balloon gigantic, immeasurably malignant in its sheer threat of unlimited power.

It came alive! A hundred-yard-beam of white fire flared from its massive wall—and the solid top of the mountain dissolved before that frightful thrust. His mountain, where his ship—his life—was hidden, destroyed by—

Atomic energy!

Cross stood quite still there on the rug of the steel floor of that steel laboratory. Wisps of human incoherency from every direction fumbled at his brain. He flung up his mind shield; and that distracting confusion of outside thought was cut off abruptly. Behind him, Granny moaned in gentle terror; in the distance above him, sledge hammer blows were lashing at his impregnable cottage, but the dim bedlam of noise touched him not. He stood there, in a world of personal

silence, a world of swift, quiet, uninterrupted thought.

Atomic energy! If they had it, too, why did they bother him? A thousand co-ordinating thoughts leaped up to form the simple answer: They didn't have his perfect type of atomic energy, only a crude development of the old type cyclotron. That alone could explain so much size.

A ten-million-ton-cyclotron, capable of a wild and deadly spray of energy—and by God, he'd have to hurry or they'd have him!

Muscles galvanized; his mind shield went down; he laughed coldly, and whirled toward the great instrument board that spread across the entire end of the laboratory.

A switch clicked, pointers set rigid; and dancing needles told the story of his spaceship out there under that dissolving mountain—the spaceship which they were obviously trying to destroy, to prevent his escape. But now the needles told of a ship aflame with life from nose to stern, a great machine automatically burrowing deeper into the ground, and at the same time heading unerringly toward this laboratory.

A dial spun; and a whole bank of needles in their transparent cases danced from zero to the first fractional point, and wavered there; and they, too, told a story. The story of glittering atomic projectors rearing up from the ground where they had been hidden so long; and as he grasped the precision instrument that was his aiming device, twenty invincible guns out there swung in perfect synchronization.

The hairline sights swung along the unmissable spread of that ship's bulk. Abruptly, then, for a bare instant, he hesitated. What was his purpose against these ruthless enemies?

After all, he didn't want to bring that monster machine to Earth; he didn't want to create a situation where slans and humans might launch into a furious war for the possession of the wreck. There was no doubt that the human beings would fight and fight with a fearless ferocity. Their great mobile guns could still hurl shells capable of piercing any metal in the possession of the slans; and if any of those ships with their superior armaments ever fell into human hands, then it would be no time at all before they, too, had spaceships; and the devil's war would be on. No, he didn't want that.

And he didn't want to destroy the ship because he didn't want to kill the tendrillless slans who were in it. For after all, tendrillless slans *did* represent a law and order, which he respected; and because they were a great race, and definitely kindred to him, they merited mercy.

BEFORE that clarification, hesitation fled. Straight at the roaring center of that immense cyclotron, Cross aimed his battery of synchronized weapons—his thumb pressed down the fire button.

Above him, the half mile of spiral-shaped ship recoiled like an elephant struck an intolerable blow. It rocked madly, like a ship in stormy seas; and briefly, as it swung sickeningly, he saw blue sky through a gaping hole—and realized his victory.

He had cut that vast spiral from end to end. In every turn of it was now a hopelessly diffusing leak. No stream of atoms, however, accelerant, could run that gauntlet unmul-tilated. The power of the cyclotron was smashed.

But all the implications of that immense ship remained. Frowning,

Cross watched the ship poise for a moment shakily. Slowly it began to recede, its antigravity plates apparently full on. Up, up it mounted, its size yielding with reluctance to the fading effects of distance.

At fifty miles, it was still bigger than the battleships that were nosing down toward that still green, still unharmed, valley—and now the implications were clearer, colder, deadlier.

Their possession of atomic energy, however crude, proved they must have instruments for detecting the presence of a machine using it *anywhere!* He had such instruments. They must have them.

That meant their instruments, poor though they must be—lacking as they did the minus energy principle—must have spotted his valley months ago.

Which meant they had waited until they could attack in one titanic, organized battle—with the one purpose of forcing him out where they could follow him night and day by means of their instruments, and by sheer weight of numbers and weight of guns, destroy him!

Dispassionately, Cross turned to Granny: "I'm going to leave you here. Follow my instructions to the letter: Five minutes from now, you will go up the way we came down, closing all the metal doors behind you. You will then forget all about this laboratory—every inch of it is going to be destroyed, so you might as well forget! If men question you, you will be senile, but at other times you will be normal.

"I'm leaving you to face that danger because I'm no longer sure, in spite of my precautions, that I can come out of this alive."

He felt a chill, impersonal interest in the knowledge that the day of

action had arrived. The tendriless slans might intend this attack on him to be but part of a vaster design that included their long-delayed assault on Earth. Whatever happened, his plans were as complete as he could make them; and though it was four years too soon, he must now force the issue to the limit of his power. He was on the run; and there could be no turning back—for behind him was swift death!

Cross' ship nosed out of the little river and launched toward space on a long, slanting climb. It was important that he do not go invisible until the slans actually saw that he was out of the valley before they razed it in mad, futile search. But first—one thing he must do.

His hand plunged home a switch; his narrowed gaze fastened on the rear visiplat, that showed the valley falling away below. At a score of points on that green floor—he counted them in lightning calculation—white flame blazed up a strange, splotchy-looking fire.

Down there, every weapon, every atomic machine, was turning on itself in a fury of destruction. Fire chambers were burning out, metal running molten in that devouring violence of tormented energy.

The white glow was still there, as he turned away a few seconds later, grimly content. Now, let them search through that ravaged, twisted metal; let their scientists labor to bring life to a secret they craved so desperately, and to obtain which they had come out where human beings could see some of their powers. In every burned-out cache in that valley, they would find—exactly nothing!

The destruction of all that was so precious to the attackers required a fraction of a minute, but in that mo-

ment of time he was seen. Four dead-black battleships turned toward him simultaneously—and then hovered uncertainly as he actuated the mechanism that made his vessel invisible.

He sped on faster, faster, to take advantage of their confusion. Abruptly, their possession of atom-energy detectors was shown. The ships fell in behind him unerringly. Alarm bells showed others ahead, closing toward him.

It was the unmatched atomic drivers that saved him from that vast fleet, so many vessels that he could not even begin to count them. And all that could come near turned their deadly projectors where their detector instruments pointed—missed because during the very instant they spotted him, his machine flashed out of the range of their most massive guns. All the driving strength of their crowded rockets had no chance against the full-driven thrust of the energy of energies.

Completely invisible, traveling at miles and miles per second, his ship headed for Mars! He must have struck mines; but that didn't matter now. The devouring disintegration rays that poured out from the walls of his great machine ate up mines before they could explode, and simultaneously destroyed every light-wave that would have revealed his craft to alert eyes out there in the blaze of Sun.

There was only one difference. The mines were smashed *before* they reached his ship. Light, being in a wave state as it flashed up, could only be destroyed during that fraction of instant when it touched his ship and started to bounce. At the very moment of bouncing, its speed reduced, the corpuscles that basically composed it lengthened accord-

ing to the laws of the Lorenz-Fitz-Gerald contraction theory—at that instant of almost quiescence, the fury of the Sun rays was blotted out by the disintegrators.

And, because light must touch the walls first, and so could be absorbed as readily as ever, his visiplates were unaffected. The full picture of everything came through even as he hurtled on, unseen, invisible.

His ship seemed to stand still in the void, except that gradually Mars became larger. At a million miles, it was a great, glowing ball as big as the Moon seen from Earth; and it grew like an expanding balloon until its dark bulk filled half the sky, and lost its redness.

CONTINENTS took form, mountains, seas, incredible gorges, rock-strewn and barren stretches of flat land; grimmer grew the picture; deadlier every forsaken aspect of that gnarled old planet.

Mars, seen through an electric telescope at thirty thousand miles, was like a too-old human being, withered, bony, ugly, cold-looking, drooling with age, enormously repellent.

The dark area that was Mare Cimmerium showed as a fanged, terrible sea. Silent, almost tideless, the waters lay under the eternal blue-dark skies; but no ship could ever breast those murderously placid waters. Endless miles of jagged rocks broke the surface. There were no patterns, no channels, simply a jangled incoherence of deadly sea that shared mile on mile with remorseless rock.

Finally, Cross saw the city, making a strange, shimmering picture under its vast roof of glass; then a second city showed, and a third.

Far, far past Mars he plunged,

his every motor dead, not a fraction of atomic energy diffusing from any part of his ship. That was caution pure and simple. There could be no fear of detector instruments in these vast distances. At last, the gravitational field of the planet began to check that mad flight. Slowly the long machine yielded to the inexorable pull; and began to fall toward the night side of the globe.

It was a slow business. Earth days fled into Earth weeks. But finally he turned on, not his atomic energy, but the antigravity plates which he had not used since he had installed his atomic drives.

For days and days then, while centrifugal action of the planet cushioned his swift fall, he sat without sleep, staring into the visiplates. Five times the ugly balls of dark metal that were mines flashed toward him; each time he actuated for brief seconds his all-devouring wall disintegrators—and waited for the ships that might have spotted his momentary use of that devastating force.

A dozen times, his alarm bells clanged, and lights flashed on his visiplates, but no ships came within range.

Below him, the planet grew vast, and filled every horizon with its dark immensity. There were not many landmarks on this night portion aside from the cities. Here and there, however, splashes of light showed some kind of habitation and activity; and at last he found what he wanted; a mere dot of flame, like a candle fluttering in remote darkness.

It turned out to be a small mine; and the light came from the out-house where lived the four tendril-less slans who attended the mine's completely automatic machinery. It was almost dawn before Cross re-

turned to his ship, satisfied that this was what he wanted.

A MIST of blackness lay like a black cloth over the planet the following night when, once again, Cross landed his ship in the ravine that led toward the mine head.

Not a shadow stirred ahead of him, not a sound invaded the silence as he edged forward to the mouth of the mine. Gingerly, he took out one of the metal cases which protected his hypnotism crystals, inserted the atomically unstable, glass-like object into a crack of the rock entrance—jerked off the metal covering and raced off before his own body could affect the sluggish thing. In the black of the ravine, he waited.

In twenty minutes, a door in the outhouse opened; the flood of light from within revealed the outlines of a tall young man. Then the door closed; a torch blazed in the hand of the shadowed figure, glared along the path he was following—and brought a flash of reflected flame from the “hypnotism” crystal.

The man walked toward it curiously, and stopped to examine it. His thought ran along the surface of his casually protected mind:

“Funny! That crystal wasn’t there this morning.” He shrugged. “Some rock probably jarred loose; and the crystal was behind it.”

He stared at it, abruptly startled by its fascination. Suspicion leaped into his alert mind; he pondered the thing with a cold, tense logic—and dived for the shelter of the cavern as Cross’ paralyzing ray flicked at him from the ravine. He fell unconscious just inside the cave.

Cross rushed forward; and in a few minutes had the man far down the ravine, out of all possible earshot of the camp. But even during those first minutes, his brain was

reaching through the other’s shattered mind shield, searching.

It was slow work, because moving around in an unconscious mind was like walking under water: there was so much resistance. But suddenly he found what he wanted, the corridor made by the man’s sharp awareness of the pattern of the crystal.

Swiftly, Cross followed the mind path to its remote end in the complex root sources of the brain. A thousand paths streamed loosely before him, scattering in every direction. Grimly with careful yet desperate speed, he followed them, ignoring the obviously impossible ones; and then once more, like a burglar who opens safes by listening for the faint click that reveals he has reached another stage in the solution of the combination—once more a key corridor stretched before him.

Eight key paths, fifteen minutes; and the combination was his, the brain was his. Under his ministrations the man, whose name was Miller, revived with a gasp; instantly, he closed the shield tight over his mind.

Cross snapped: “Don’t be so illogical. Lower your shield.”

The shield went down; and in the darkness the surprised tendrillless slan stared at him, astonishment flamed through his mind.

“Hypnotized, by Heaven!” he said wonderingly. . . “How the devil did you do it?”

“The method can be used only by true slans,” Cross replied coolly, “so explanations would be idle.”

“A true slan!” the other said slowly. “Then you’re Cross!”

“I’m Cross.”

“I suppose you know what you’re doing,” Miller went on, “but I don’t see how you expect to gain anything by your control of me.”

ABRUPTLY, Miller's mind realized the strangeness, the eeriness of the conversation there in that dark ravine, under the black, mist-hidden sky. Only one of the two moons of Mars was visible, a blurred, white shape that gleamed remotely from the vast vault of heaven. He said quickly:

"How is it that I can talk to you, reason with you? I thought hypnotism was a mind-dulling thing that made—"

"Hypnotism," Cross cut in without pausing in his swift exploration of the other's brain, "is a science that involves many factors. Full control permits the subject apparently complete freedom, except that his will is under absolute outside domination.

"But there is no time to waste." His voice grew sharper; his brain withdrew from the other. "Tomorrow is your day off. You will go to the Bureau of Statistics and ascertain the name and present location of every man with my physical structure and—"

He stopped because Miller was laughing softly. His mind and voice said: "Good heavens, man, I can tell you that right now. They were all spotted after your description came through seven years ago. They're always under observation; they're all married men and—" His voice trailed off.

Sardonically, Cross said: "Go on!"

Miller went on reluctantly. "There are twenty-seven men altogether, who resemble you in very great detail, a surprisingly high average—"

"Go on!"

"One of them," said Miller disconsolately, "is married to a woman whose head was absolutely smashed in a spaceship accident last week.

They're building up her brain and bone again but—"

"But that'll take a few weeks," Cross finished for him. "The man's name is Barton Corliss; he's located at the Cimmerium spaceship factory; and like yourself, goes into the city Cimmerium every fourth day."

"There ought to be an enforceable law," Miller said glumly, "against people who can read minds. Fortunately, the Porgrave receivers will spot you," he finished more cheerfully.

"Eh?" Cross spoke sharply. He had already noticed about mind-reading in Miller's mind, but it had not seemed applicable. And there had been other, more important things to follow up.

Coolly, Miller said, and his thought verified every word of it: "The Porgrave broadcaster broadcasts thoughts, and the Porgrave receiver receives them. In Cimmerium there's one located every few feet; they're in all the buildings, houses, everywhere. They're our protection against snake spies. One indiscreet thought and—finish!"

Cross was silent. At last he said: "One more question, and I want your mind to give off a lot of thoughts on this. I want detail."

"Yes?"

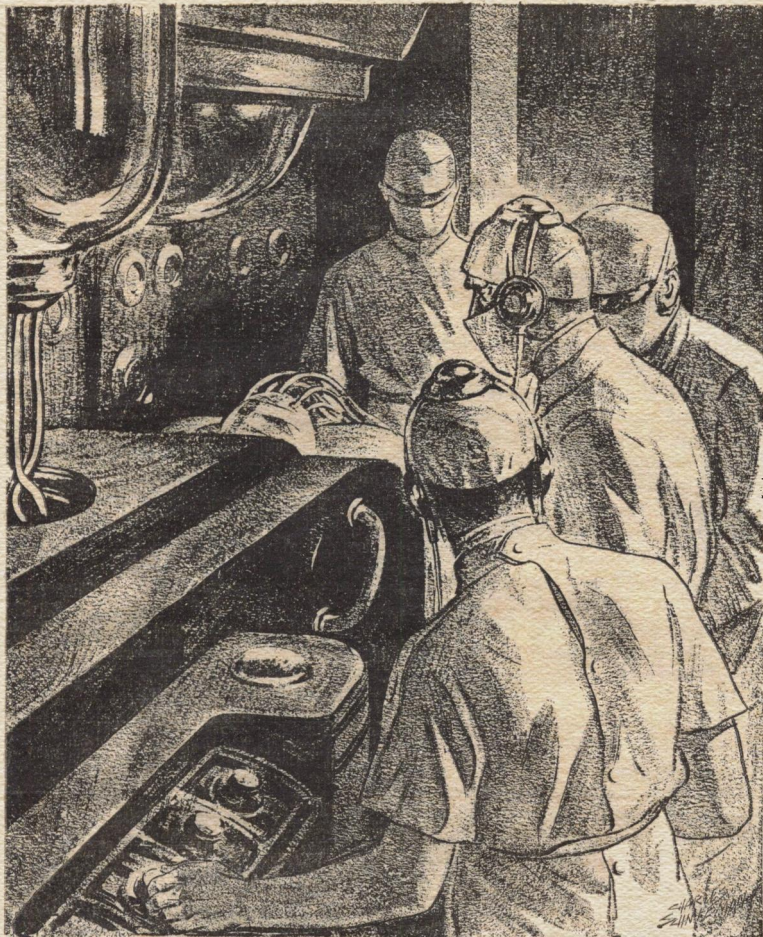
"How imminent is the attack on Earth?"

"It has been decided," Miller replied precisely, "that in view of the failure to destroy you and obtain your secret, control of Earth has become essential, the purpose being to forestall any future danger from anybody. To this end vast reserves of spaceships are being turned out; the fleet is mobilizing at key points, but the date of attack, though probably decided on, has not yet been announced."

"What have they planned to do with human beings?"

"To hell with human beings!" Miller said coolly. "When our own existence is involved, we can't worry about them."

The darkness all around seemed deeper, the chill of the night beginning to penetrate even his heated clothes. Instant by instant, Cross' mind grew harder as he examined the implications of Miller's words.



Cautiously Cross probed along the nerve channels of the woman with his thoughts, seeking to control her before the others suspected--

War! In a bleak voice, he said:

"Only with the help of the true slans can that attack be stopped; and there are but two places left that they can be—and I'm going to the most probable."

THE BLEAK morning dragged. The sun gleamed like a festering sore in the blue-black vastness of the sky; and the sharp, black shadows that it cast on the strange, deadly land grew narrow; and then began to lengthen again as Mars turned an unfriendly afternoon face to the stark, insistent light.

From where Cross' ship crouched in the great chalk cliff, the horizon was a thing of blurred ridges against the shadowed sky. But even from his two-thousand-foot height, the nearness of the horizon was markedly noticeable.

Twilight threatened—and then at last his patient vigil was rewarded. The small, red-striped torpedo-shaped object drifted up from the horizon, fire pouring from its rear. The rays of the sinking Sun glinted on its dull, metallic skin; it darted far to the left of where Cross waited in his machine that, like some beast of prey, lay entunneled in the swelling breast of the white cliff.

About three miles, Cross estimated carefully. The actual bulk of the intervening distance would make no difference to the motor that lay silent in the engine room at the back of the ship, ready to give forth its noiseless, stupendous power.

Three hundred miles, and that superb motor would vibrate on without strain, without missing a single beat—except that such titanic force could not be unleashed where its almost unlimited strength might touch ground, and tear a monstrous swath out of this already tortured, barren land.

Three miles, four, five—he made swift adjustments. Then the force of the magnetors flashed across the miles—and, simultaneously, the idea he had developed during his long trip from Earth took life from a special engine. Radio waves so similar to the vibrations of atomic energy that only an extremely sensitive instrument could have detected the difference, sprayed forth from a robot motor that he had set up five hundred miles away. For those brief minutes, the whole planet sighed with atomic energy waves.

Out there somewhere, tendrilles slans must already be plotting the center of that interfering wave; meantime, his small use of power should go unnoticed.

Swiftly, yet gently, the magnetors did their work. The faraway, still receding ship slowed as if it had run into an elastic net that yielded ever more stubbornly; and finally, the deceleration completed, flung its prey toward the chalk cliff.

Effortlessly, using the radio waves as screen for further use of power, Cross withdrew his own ship deeper into the cliff's bulging belly, widening the natural tunnel with a spray of dissolving energy. Then, like a spider with a fly, pulled the smaller machine into the lair after him.

He could have sliced the craft into a dozen sections, carved himself out a score of doors, sheared off the rocket jets, and so gain access. But he needed the ship intact. He waited.

In a moment a door opened; and a man appeared in it. He leaped lightly to the tunnel floor, and stood for a moment peering against the glare of the searchlight of the other ship. With easy confidence, he walked closer; and it was then his eyes caught the gleam of the crys-

tal in the dank earthy wall of the cave.

He glanced at it casually, then the very abnormality of a thing that could distract his attention even for a second penetrated to his consciousness. With deliberate action, he plucked it out of the wall—and Cross' paralyzing ray sent him sprawling.

INSTANTLY, Cross clicked off all power. A switch closed; and the distant robot-atomic wave broadcaster dissolved in the fire of its own energy.

As for the man, all he wanted from him this time was a full-length photograph, a record of his voice, and hypnotic control; and then—it took only twenty minutes before Corliss was flying off again toward Cimmerium, inwardly raging against his enslavement, outwardly unable to do anything about it.

There could be no hurrying of what Cross knew he must do before he could dare enter Cimmerium. Everything had to be anticipated, an almost unlimited amount of detail painstakingly worked out. Every fourth day—his holiday—Corliss called at the cave, going and coming, and as the urgent weeks fled, his mind was drained of memory, of detail. Finally, Cross was ready—and the next, the seventh holiday, his plan came to life. One Barton Corliss remained in the cave, deep in hypnotic sleep; the other one climbed into the small, red-striped craft and sped toward the city of Cimmerium.

It was twenty minutes later that the battleship flashed down from the sky, and loomed up beside him, a vast mass of streamlined metal ship.

"Corliss," said a man's clipped voice in the ship's radio, "in the

course of normal observation of all slans resembling the snake, Jommy Cross, we waited for you at this point, and find that you are approximately five minutes overdue.

"You will accordingly proceed to Cimmerium under escort, where you will be taken before the military commission for examination. That is all."

XV.

CATASTROPHE came as simply as that. An accident not altogether unexpected, but bitterly disappointing none the less. Six times before, Barton Corliss had been as much as twenty minutes overdue; and it had gone undetected. Now, five minutes of equally unavoidable delay—and the long arm of chance had struck at the hope of a world.

Gloomily, Cross stared into the visiplates as he mentally assayed his ravaged position. Below him was rock. Rock seamed and gnarled and unutterably deserted. No longer were the ravines like small arroyos. They slashed this way and that with the desperate incoherence of a wild beast at bay. Vast valleys snarled into life; gorges sheered off into depths; and then leaped up ferociously in ugly snags of mountain. This trackless waste was his way out, if ever he desired to escape—for no captured ship, however large and formidable, could hope to run the gauntlet that the tendriless slans could throw up between himself and his own indestructible machine.

Some hope still remained, of course. He had an atomic revolver, built to resemble Corliss' gun and which actually fired an electric charge—until the secret mechanism for the atomic energy blast was activated. And the wedding ring on his finger was as near a copy as he could

make of the one that Corliss wore, the great difference being that it contained the smallest atomic generator ever constructed; and was designed, like the gun, to dissolve if tampered with. Two weapons and a dozen crystals—to stop the war of wars!

Wilder now, grew the land that fled beneath his prison ship. Black, placid water began to show in oily, dirty streaks at the bottom of those primeval abysses, the beginning of the unclean, unbeautiful sea that was Mare Cimmerium.

Abruptly, there was unnatural life!

On a tableland of mountain to his right a cruiser lay like a great, browsing black shark. A swarm of hundred-foot gunboats lay moveless on the rock around it, a wicked-looking school of deep-space fish that partly hid the even deadlier reality of the land on which their hard bellies rested. Before his penetrating vision, the mountain became a design of steel and stone fortress. Black steel cleverly woven into black rock, gigantic guns peering into the sky.

And there—to the left this time—was another tableland of steel and time-tempered rock, another cruiser and its complement of pilot ships lying heavily in their almost invisible cradles, but ready to spring up with a weightless, malignant power, an immeasurable threat now that his own machine was beyond his reach.

The guns grew thicker; and always they pointed into the sky, as if waiting tensely for some momentarily expected and monstrously dangerous enemy. So much defense, so incredibly much *offense*—against what? Could these tendrillless slans be so terrifically uncertain about the true slans that no totality of weap-

ons could quench their fear of those mysteriously elusive beings?

That must be why they had finally decided to attack, rather than wait a move from their unseen enemies. But even fear was no excuse for an attack on human beings—an attack that had behind it no sane policy of pacification, but only the force of unlimited oppression and crude terror.

A hundred miles of forts and guns and ships! A hundred miles of impassable gorge and water and frightful, upjutting cliffs; and then—

His ship and the great armored vessel that was his escort soared over a spreading peak; and there in the near distance glittered the glass city of Cimmerium; and the hour of his examination was come.

THE CITY rode high on a plain that shrank back from the sheer-falling, ragged edge of a solid, dark tongue of sea. The glass flashed in the Sun, a burning white fire that darted over the surface in dazzling, vivid bursts of flame.

It was not a big city. Compared to the thirty million of population and eighty-mile spread of the grand city of the palace, it was tiny. But it was as big as it could be in that forbidding area of land. It crowded with tight-fitting temerity to the very edge of the appalling gorges that ringed its glass roof. Its widest diameter was three miles; at its narrowest point, it sprawled a generous two miles; and in its confines dwelt two hundred thousand slans. The figures were according to Miller and Corliss.

He saw the landing field where he expected it would be, a flat field of metal at one projecting edge of the city. The field was big enough to take a battleship, and it was

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streaked with shining threads of railway. Lightly, his small machine settled toward one of the tracks onto metal cradle Number 9977. Simultaneously, the great bulk of warship above him surged off toward the sea, and was instantly lost to sight as it passed the towering cliff-edge of glasslike roof.

Below him, the automatic machinery of the cradle rolled on its twin rails toward a great steel door. The door opened automatically, and shut behind him.

What his swift vision beheld in that first moment of entry was not unexpected—but the reality soared beyond the picture of it that he had seen in the minds of Miller and Corliss.

There must have been a thousand ships in the section of the vast hangar that he could see. From roof to ceiling, they were parked in like sardines, each on its cradle; and each—he knew—capable of being called forth if the proper numbers were punched on the section instrument board.

The machine stopped. Cross climbed casually down and nodded curtly to the three slans who waited there for him. The oldest looking of the three came forward, smiling faintly.

"Well, Barton, so you've earned another examination! You may be sure of a swift, thorough job—the usual, of course: Fingerprinting, X ray, blood test, chemical reaction of the skin, microscope measurement of hair, and so on."

There was a dark expectancy to the overtone of thought that leaked from the minds of the three men. But Cross did not need their thoughts. He had never been more alert, his brain never clearer, never more capable of distinguishing the

subtlest exactness of details. He said mildly:

"Since when has chemical reaction of the skin been a usual part of the examination?"

The men did not apologize for their little trap, nor did their thoughts show any disappointment at failure. And Cross felt no thrill at this first small victory. For no triumph at this early stage could hide the desperate truth: that he could not possibly stand a thorough examination.

He must use to the limit the preparations he had made these last several weeks when he had analyzed the information from Miller's and Corliss' minds. He must have time—or he was finished before he could start.

The youngest man said: "Bring him into the laboratory and we'll get the physical part of this examination over. Take his gun, Prentice."

Cross handed over the weapon without a word.

They waited then; the oldest man, Ingraham, smiling expectantly; Bradshaw, the youngest, stared at him with unwinking gray eyes. Prentice alone looked indifferent as he pocketed Cross' gun.

But it was the silence, not their actions, that caught Cross' mind. There was not a physical sound, nowhere even a whisper of conversation. The whole community of the hangar was like a graveyard, and for the moment it seemed impossible that beyond those walls a city hummed with activity in preparation for a monstrous war.

He actuated the combination, and watched his cradle and ship slide off soundlessly, first horizontally, then up toward the remote ceiling. There was abruptly the faintest

squealing of metal, and then it settled into position; and silence grew over the brief protrusion of sound.

SMILING INWARDLY at the way they were watching him for the slightest error of procedure, Cross led the way to the exit. It opened onto a shining corridor, the smooth walls of which were spaced at intervals with closed doors. When they were within sight of entrance to the laboratory, Cross said:

"I suppose you called the hospital in time, telling them I would be delayed."

Ingraham stopped short, and the others followed suit. They stared at him. Ingraham said: "Good Heaven, is your wife being revived this morning?"

Unsmiling, Cross nodded. "The doctors were to have her on the verge of consciousness twenty minutes after I was due to land. At that time they will have been working for approximately an hour. Your examination and that of the military commission will obviously have to be postponed."

There was no disagreement. Ingraham said: "The military will escort you, no doubt."

It was Bradshaw who spoke briefly into his wrist radio. The tiny, yet clear, answer reached to Cross. The speaker said:

"Under ordinary circumstances, the military patrol would escort him to the hospital. But it happens that we are confronted by the most dangerous individual the world has ever known. Cross is only twenty-six, but it is a proven fact that danger and adversity matures men and slans at an early age. We can assume then that we are dealing with a full-grown true slane, possessed of weapons and powers beyond compare.

"If Corliss should actually be

Cross, then the coincidence of Mrs. Corliss' return to consciousness at this important hour betokens preparation for all possible contingencies, particularly of suspicion at the moment of landing. He has already suffered a major defeat in that there is going to be an examination, the final determining portion of it by people other than those who now accompany him.

"Nevertheless, the very fact that postponement has been necessitated for the first time in our examination of men resembling Cross requires that experts trained to preliminary examinations be with him every second of the time. You will, therefore, carry on until further orders. A surface car is waiting at the head of elevator Number 1."

As they emerged into the street, Bradshaw said: "If he is not Corliss, then he will be absolutely useless at the hospital—and Mrs. Corliss' mind will possibly be permanently injured."

Ingraham shook his head. "You're mistaken. True slans can read minds. He'll be able to do as good a job of sensing errors of the surgical room as Corliss with the aid of the Porgrave receivers—"

Cross caught the grim smile on Bradshaw's face, as the slane said softly: "Your voice trailed off there, Ingraham. Did it suddenly occur to you that the presence of the Porgraves will prevent Cross from using his mind, except in the most limited way?"

"Another thing"—it was Prentice who spoke—"the reason for Corliss going to the hospital at all is that he will recognize when something is wrong because of the psychological affinity that develops over a period of years between a husband and wife. But that also means that Mrs. Corliss will recognize instantly

whether or not he is her husband."

Ingraham was smiling grimly. "We have then the final conclusion: If Corliss is Cross, the revival of Mrs. Corliss in his presence may have tragic results for her. Those very results will go far to prove his identity, even if all other tests we make turn out negatively."

Cross said nothing. He had made a very thorough examination of the problem presented by the Porgrave receivers. They constituted unmistakable danger, but they were only machines. Absolute care, together with his superlative control over his mind, should reduce that constant menace.

Recognition by Mrs. Corliss was another matter. Affinity between a sensitive husband and his sensitive wife was easily understandable; and it was unthinkable that he should contribute to the destruction of this slant woman's mind. Somehow he must save her sanity but—

Quite clearly, he saw that the danger was enormous and, worse still, it was immediate.

THE CAR sped smoothly along a boulevard that glowed with flowers. The road was dark, glassy in appearance, and not straight. It wound in and out among the tall, spreading trees that half hid the buildings that lined the far sides of the shaded walks to the left and right.

The buildings were low-built structures, and their beauty, the flowing artistry of their design brought him genuine surprise. He had captured something of the picture they made from the minds of Miller and Corliss, but this sheer triumph of architectural genius was beyond his anticipation. A fortress was not expected to be beautiful, gun turrets ordinarily were built for

usefulness rather than to serve as poems of architecture.

As it was, they served their purpose admirably. They looked like actual buildings, part of an actual city, instead of being merely a thick armored screen for the true city below.

Once again the vastness of the defense forces showed with what respect the true slants were viewed. A world of men was going to be attacked because of the tendrillless slant fear—and that was the ultimate in fantastic, tragic irony.

"If I'm right," Cross thought, "and the true slants are actually living in with the tendrillless slants, as the tendrillless slants in their turn live with the human beings, then all this preparation is against an enemy that has already slipped inside the defenses."

The car stopped in an alcove that led to an elevator. The elevator dropped as swiftly into the depths as the first elevator had come up out of the hangar. Casually, Cross took one of the metal "crystal" cubes out of his pocket and tossed it into the wastepaper receptacle that fitted snugly into one corner of the cage. He saw that the slants had followed his action. He explained:

"Got a dozen of those things, but apparently eleven is all I can comfortably carry. The weight of the others kept pressing that one against my side."

It was Ingraham who stooped and picked up the deadly little thing. "What is it?"

"The reason for my delay. I'll explain to the commission later. The twelve are all exactly the same, so that one won't matter."

Ingraham stared at it thoughtfully, and was just about to open it, when the elevator stopped. He put it decisively in his pocket. "I'll keep

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this," he said. "You go out first, Corliss."

WITHOUT hesitation, Cross stepped into the broad marble corridor.

A fine-looking woman in a white cloak came forward: "You will be called in a few minutes, Barton. Wait here."

She vanished into a doorway; and Cross walked slowly across the width of the stately corridor to a glass window, stared through it into the room beyond. Gradually, his muscles grew tense, his nerves taut. With uttermost fascination he gazed at an entire roomful of—

Monstrosities!

Dead babies lay on tables, row on row of them, stretching in even lines away from the glass through which Cross stared.

The nearest of that gruesome line was human in shape, but it had three legs. Small, golden slant tendrils lay flat on its head; two semihuman arms emerged from its shoulders, tapering off into boneless tentacles. Its eyes were lidless, and the glazed eyeballs that stared sightlessly up at him had no color, unlike a normal human baby, whose eyes at birth are invariably blue.

Cross' mind became very still, as he gazed at the *thing*. It was not human, and not slant. But he knew the answer. Horribly, it had tried to be a slant. Somewhere in the months before it was born or conceived, a true slant had turned a slant-controlling machine on its mother.

In all the years since he had first heard of these—creatures—here was his first sight of them, here the reality behind all the devilish accusations that he had, in his childhood, denied so passionately, and branded as the vilest of lies.

Genuine, intellectual horror coursed through him. Here were

some of the dreadful failures of slan attempts to make more slans. No wonder there were attempts at slan extermination. What manner of distorted mentality could go on committing such atrocities, prepared to accept such a criminally high percentage of failure.

He thought: Was he a fool to keep searching for beings capable of such scoundrelism, to think of aligning himself with them? Everywhere he turned the material evidence against them piled higher and higher. Before such silent witnesses as these babies, his theory seemed shabbier every minute. Here was nothing but evil and danger.

Danger! He grew aware of a surface thought from Ingraham. He turned as the older slan said:

"This business of Mrs. Corliss worries me so much that I feel, before we allow you in there, Corliss, we ought to make a simple test that we haven't used for years because of its lack of dignity, and because of other equally effective tests."

"What's the test?" Cross asked curtly.

"Well, if you're Cross, you'll be wearing false hair to cover your slan tendrils. If you're Corliss, the natural strength of your hair would enable us to lift you right off the ground, and you'd scarcely feel it. False hair, artificially fastened on, could not possibly stand pressure. So, for the sake of your wife, I'm going to ask you to bend your head. We'll be gentle, and apply the pressure gradually."

Cross smiled gently: "Go ahead! I think you'll find that it's genuine hair."

It was, of course. Long since, he had discovered a kind of answer to that dangerous problem—a thick fluid that, worked over the roots of

his hair, gradually hardened into a thin layer of rubbery, flesh-looking stuff, sufficient to cover his betraying tendrils. By carefully twisting the hair just before the hardening process was completed, tiny air holes were formed through to the hair roots.

Frequent removal of the material, and long periods of leaving his hair and head in the natural state had in the past proved sufficient to keep the health of the top of his head unimpaired. Something similar, it seemed to him, was what the true slans must have been doing these many years. The danger lay in the periods of "rest."

Ingraham said finally, grudgingly: "It doesn't really prove anything. If Cross ever came here, he wouldn't be caught on anything as simple as that. Here's the doctor, and I guess it's O. K."

THE BEDROOM was large and gray and full of machines, softly pulsing machines. The patient was not visible, but there was a long metal case, like a streamlined coffin, one end of which pointed toward the door; the other end Cross couldn't see, but he knew the woman's head was projecting from that far side.

Attached to the top of the case was a long, bulging transparent test tube affair. Pipes ran from it down into the "coffin," and through these pipes, through that bulbous bottle, flowed a rich, steady stream of red blood.

A solid bank of instruments sat almost stolidly just beyond the woman's protruding head. Lights were there, glowing with the faintest unsteadiness, as if now one, now another was yielding obstinately to some hidden pressure. Each time, the one affected fought stubbornly

to regain the infinitesimal loss of brightness.

From where the doctor made him stop, Cross could see the woman's head against the background of those whispering machines. No, not her head. Only the bandages that completely swathed her head were visible; and it was into the white pulp of bandage that the host of wires from the instrument board disappeared.

Her mind was unshielded, a still-broken thing; and it was into the region of semithoughts that flowed along in dead-slow time that Cross probed cautiously.

He knew the theory of what the tendriless slan surgeons had done. The body was entirely disconnected from nervous contact with the brain by a simple system of short circuit. The brain itself, kept alive by rapid tissue building rays, had been divided into twenty-seven distinct sections; and thus simplified, the enormous amount of repair work had been swiftly performed.

His thought wave sped past those operation "breaks" and "mends." There were faults in plenty, he saw, but all of a distinctly minor character, so superbly had the surgical work been done. Every section of that powerful brain would yield to the healing force of the "medical light," which was what the tissue-building rays were called.

Beyond doubt, Mrs. Corliss would open her eyes a sane, enormously capable young woman—and recognize him for the impostor he was.

Icily detached in spite of urgency, Cross thought: "I was able to hypnotize human beings without crystals years ago, though it took a great deal longer. Why not slans?"

She was unconscious, and her shield was down. At first, he was too aware of the Porgrave receivers,

and the immense danger they offered; and then he grooved his mind to the anxiety vibration that would be normal for Corliss—and hanged the consequences. All fear drained from his brain. He strained forward with frantic speed.

It was the method of the operations that saved him. A properly knit slan brain would have required—hours! So many millions of paths to explore, without a clue to a proper beginning. But now, in this divided brain, it was different. A mind split by master surgeons into its twenty-seven natural compartments; and one of them was the mass of cells comprising the will power.

In one minute he was at the control center; and the palpable force of his thought waves had made her his slave.

He had time then to place the earphones of the Porgrave receivers over his head, noting at the same time that Bradshaw already had on a pair—for him, he thought grimly. But there was no suspicion at the surface of the dark-haired young man's mind. Evidently, thought in the form of an almost pure physical force, completely pictureless, could not be translated by the Porgraves. His own tests were confirmed.

The woman stirred mentally and physically; and the vague, incoherent thought in her mind clattered as a sound in his earphones:

"Fight . . . occupation—"

The words fitted only because she had been a military commander, but there was not enough to make sense. Silence; then:

"June . . . definitely June . . . be able to clear up before winter then, and have no unnecessary deaths from cold and dislocation . . . that's settled then . . . June 10th—"

He could have repaired the faults

in her brain in ten minutes by hypnotic suggestion. But it took an hour and a quarter of cautious co-operation with the surgeons and their vibration-pressure machine; and every minute of the time he was thinking about her words.

So June 10th was the day of the attack on Earth. This was April 4th, Earth reckoning. Two months! A month for the journey to Earth and a month—for what?

As Mrs. CORLISS slipped quietly into a dreamless sleep, Cross had the answer, the tremendous answer. Impossible to waste another day searching for the true slans, especially now that they loomed larger than ever as supreme villains. Later perhaps that trail could be picked up again, but now—if he could get out of this damned mess—

He frowned mentally. What the hell was he making plans for? Within minutes he would be under physical examination by members of the most ruthless, most thorough-going and efficient race in the Solar System. In spite of his successful attempt at delay, in spite of his preliminary success in getting a crystal into the hands of one of his escort, luck had been against him. Ingraham was not curious enough to take the crystal out of his pocket and open it.

He'd have to make another attempt, of course, but that was desperation. No slan would be anything but suspicious at such a second try, no matter how the approach was made. He—

His thought stopped. His sensitive mind stilled to a perfect state of reception, as an almost inaudible

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voice spoke from Ingraham's radio; and the words flowed across the surface of Ingraham's mind:

"Physical examination completed or not, you will bring Barton Corliss immediately before me. That supersedes any previous order."

"O. K., Joanna!" Ingraham replied quite audibly. He turned: "You're to be taken at once before Joanna Hillory, the military commissioner."

It was Prentice who echoed the hard thought in Cross' mind. The tall slant said:

"Joanna is the only one of us who spent hours with Cross; and she was appointed commissioner with that experience and her subsequent studies in mind. She supervised the world-wide successful search for you, and she also predicted the failure of the attack that was made with the cyclotron. In addition, she's written four books outlining in minutest detail the hours she spent in your company. If you're Cross, she'll recognize you in one minute flat."

"I've read the books," said Cross quietly.

It was true; and he had known after the first volume that under no voluntary circumstances must he come under the calm scrutiny of that able and terrible young woman.

As Cross emerged from the case room, he had his first glimpse of the city of Cimmerium, the true, the underground city. From the doorway he could see along two corridors: one led back to the elevator down which he had come; the other to a broad expanse of tall, transparent doors.

Beyond the doors lay a city of dreams.

It had been said on Earth that the secret of the materials that made up the walls of the Grand Palace had been lost. But it wasn't. For here in this hidden city of the ten-drillless slants was all the glory of it

—and more. There was a street of soft, changing colors, and the magnificent realization of that age-old dream of architects; form-perfect buildings that were *alive*, as music was alive.

Here was—and no other word could apply because no word in his knowledge was suitable—here was the gorgeous equivalent in architecture of the highest form of music: polyphonic as distinct from symphonic.

Out in the street, he cut the unearthly beauty of it from his mind. Only the people mattered; and there were thousands in the buildings, in bustling cars and on foot; thousands of minds within reach of a mind that missed nothing, and searched now with a desperate intensity for one, just one, true slan.

And there was none, not a trace of betraying mind whisper; not a brain that did not *know* its owner was a tendrillless slan. Definitely, finally, the leaky brain shields gave of their knowledge. His conviction that they must be here was shattered, as his life would now be.

Wherever the true slans were, their protection was slan-proof, beyond logic. But then, of course, logic had said that monster babies were not created by decent folk. The facts, it happened, were otherwise. What facts? Hearsay? But what other explanation was there?

"Here we are!" Ingraham said quietly.

Inside the fine, long, low building, a few men and women moved in and out among row on row of great, thick, shiny, metallic plates. This, Cross knew, was the Bureau of Statistics; and these plates were the electric filing cabinets that yielded their information at the touch of a button, the spelling out of a name, a number, a key word.

No one knew—so Corliss' mind had informed him—how much information was in those cabinets. They had been brought from Earth, and dated back to the earliest slan days. A quadrillion facts were there for the asking; included no doubt was the entire story of the seven-year search for one, John Thomas Cross—the search that Joanna Hillyory had directed from the inner sanctum of this very building.

But that last didn't matter now. There was a great truth to be discovered, a cross reference that perhaps had never occurred to anyone else in all this world of tendrillless slans.

Ingraham was saying: "She'll have us in in a minute or so."

Cross asked: "Do you mind if I ask a few questions from the 'Stics?"

Ingraham shrugged: "Might as well while you're here."

NO ONE followed Cross, no one interfered with him. He stood very still for a moment, recollecting exactly what he had seen in Corliss' mind about the operation of this machine. Swiftly, then, he punched: "Samuel Lann" followed by "Natural Mutation." He touched the activating button, and read on the glowing plate:

Excerpts from Samuel Lann's Diary, June 1, 1971 to December 15, 2056—

Today, I had another look at the three babies, and of course there is no doubt that here is an extraordinary mutation. I have seen human beings with tails; I have examined cretins and idiots, and observed those curious, dreadful, organic developments that human beings are subject to. But this is the opposite of such horrors; this is perfection—

Two girls and a boy. What a grand and tremendous accident. If I were not

a cold-blooded rationalist, the exact rightness of what has happened would make me a blubbering worshiper at the shrine of metaphysics. Two girls to reproduce their kind, and one boy to mate with them. I'll have to train them to the idea—two girls and a boy. Oh, cosmic coincidence that such a birth should have happened to a scientist. It couldn't have happened better if I had planned it myself.

"June 2, 1971," began the machine, but Cross pressed urgently at the dissolver, manipulated the number key, and produced "June 7, 1973," followed by:

Some damn fool journalist wrote an article about the children today. The ignoramus stated that I had used a machine on my wife. Where the devil did he hear about them at all? I'll have to retreat to some remote, uninhabited part of the world. Anything could happen where there are human beings, superstitious, emotional asses. Thank Heaven, the present day human being is on his last lap. An end to stupidity and eternal wars and black lies—

Hurriedly, Cross punched at random "May 31, 1988":

Their seventeenth birthday. The girls thoroughly accept the idea of mating with their brother. Morality after all is a matter of training. I live in panic lest a meteorite fall and snuff us all out, or some other cataclysm destroy these precious lives.

It was "August 18, 1990" that produced:

Each of the girls had triplets. Wonderful! At this rate of reproduction the period when chance can destroy them will soon be reduced to an actuarial minimum. The children are fully alive now to the importance of their lives, and that their descendants are the future rulers of the Earth. I must see to it that the children of one marry only the children of the other. We must get away from inbreeding as soon as possible—

From behind him, Bradshaw called: "Come along, Corliss. Miss Hillory will see you now . . . alone!"

The floor felt strangely hard beneath his feet, as he walked the hundred feet to the open door. Sardonism was almost a physical weight on his mind. Eight hundred years of hell and death—perhaps more if the nameless, timeless period that followed the war of disaster was as long as some estimated; and now, a part of the simple truth rediscovered by a man on his way to death!

There was not—never had been—a slan-making machine. All slans were purely natural mutations.

THE INNER sanctum of the chief of statistics was large and cozy, and it looked like a private den rather than a business office. There were books on shelves; against one wall was a smaller version of the electric filing cabinets outside. There was a soft-toned chesterfield and multi-pneumatic chairs and a rug; and finally there was a great, gleaming desk behind which sat a proud, smiling, youthful woman.

Cross had not expected Joanna Hillory to look older; and she didn't. Another fifty years might put lines into those velvet smooth cheeks, but now there was only one difference, and that was in himself. Eleven years before, a boy slan had gazed at this glorious woman; now his eyes held the cool appraisal of maturity.

He noted curiously that her gaze was eager-bright, and that seemed out of place. His mind concentrated. The co-ordinated power of his senses abruptly dissolved her facial expression into triumph and a deep, genuine joy.

Alertly, his brain pressed against her mind-shield, probing at the tiny gaps, absorbing every leak of thought, analyzing every overtone—and second by second his puzzlement grew. Her smile flashed into soft

laughter; and then—just like that—her shield went down. Her mind lay before him, exposed to his free, untrammelled gaze. Simultaneously, a thought formed in her brain:

"Look deep, John Thomas Cross, and know first that all Porgrave receivers in this room and vicinity have been disconnected. Know, too, that I am your only living friend, and that I ordered you brought before me to forestall a physical examination which you could not possibly survive. I watched you through the Porgraves and, finally, I knew it was you. But hurry, search in my mind, verify my good will, and then—we must act swiftly to save your life!"

There was no credulity, no trustfulness, in his chilled, logical brain. The moments fled, and still he probed the dark corridors of her brain—searching for those basic reasons that alone could explain this wondrous thing. At last he said quietly:

"So you believed in the ideals of a fifteen-year-old, caught fire from a young egotist who offered only—"

"Hope!" she finished. "You brought hope just before I reached the point where most slans became as hard and ruthless as life in a hate-filled world can make them. Human beings, you said, what about human beings? And the shock of that and other things affected me beyond recovery. I deliberately gave a false description of you; you may have wondered about that. I passed it off because I was not supposed to have an expert's knowledge of human physiology. I didn't of course, but I could have drawn you perfectly from memory; and the picture grew clearer every day.

"It was considered natural that I become a student of the Cross affair; and natural, too, that I was ap-

pointed to most of the supervisory positions that had any connection with you. I suppose it was equally natural that—"

She stopped almost expectantly; and Cross said gravely: "I'm sorry about that!"

Her gray eyes met his brown ones steadily: "Whom else will you marry?" she asked. "A normal life must include marriage. Of course, I know nothing of your relationship to the slan girl, Kathleen Layton, but marriage to several women, frequently at the same time, is not unusual in slan history. Then, of course, there is my age."

"I recognize," Cross said simply, "that fifteen or twenty years is not the slightest obstacle to marriage among long-lived slans. It happens, however, that I have a mission."

"Whether as wife or not," said Joanna Hillory, "from this hour you have a companion on that mission—provided we can get you through this physical examination alive."

"Oh, that!" Cross waved one smooth, powerful hand. "All I needed was time and a method of getting certain crystals into the hands of Ingraham and the others. You have provided both. We'll also need the paralyzer gun in the drawer of your desk—and then call them in one at a time."

With one sweeping movement of her hand, she drew the gun from the drawer. "I'll do the shooting!" she said. "Now what?"

CROSS LAUGHED softly at Joanna Hillory's vehemence and felt a strange wonder at the turn of events, even now that he was sure. For years he had lived on nerve and cold determination. Abruptly, something of her fire touched him. His eyes gleamed:

"And you shall not regret what

you have done, though your faith may be tried to the utmost before we are finished. This attack on Earth must not take place—not now, not until we know what to do with those poor devils aside from holding them down by force. Tell me, is there any way I can get to Earth? I read in Corliss' mind something about a plan to transfer to Earth all slans resembling me. Can that be done?"

"It can. The decision rests entirely with me."

"Then," said Cross grimly, "the time has come for swift action. I must get to Earth. I must go to the palace. I must see Kier Gray."

The perfect mouth parted in a smile, but there was no humor in those fine, brave eyes.

"And how," she asked softly, "are you going to get near the palace, with its fortifications?"

"My mother spoke often of the secret passages under the palace," Cross answered. "Perhaps the 'Stics machine will know the exact location of the various entrances."

"It knows," Joanna Hillory said gravely, "and so do I. The best entrance for your purpose is located in the statuary section, two miles inside the grounds, constantly under brilliant lights, and directly under the guns of the first line of heavy fortifications. Also, machine gun emplacements and tank patrols control the first two miles."

"What about my gun? Would I be allowed to have it on Earth?"

"No. The plan of transferring the men resembling you includes their disarmament."

He was aware of her questioning gaze on him, and his lean, strong face twisted into a frown.

"What kind of a man is Kier Gray, according to your records?"

"Enormously capable for a human

being. Our secret X rays definitely show him as human, if that's what you're thinking."

"At one time, I did think about that, but your words verify Kathleen Layton's experience."

"We've got off the track," Joanna Hillory said: "What about the fortifications?"

He shook his head, smiling humorlessly: "When the stakes are great, risks must match them. Naturally, I shall go alone. You"—he gazed at her darkly—"will have the great trust of locating the cave where my ship is, and getting the machine through to Earth before June 10th. Corliss, too, will have to be released. And now, please call Ingraham in."

XVI.

THE RIVER seemed wider than when Cross had last seen it. A cold, turgid quarter mile of swirling May waters that glistened and shone in twitching, twisting patches of darkness and light in endless reflection from the incessant, changing wonder-fire of the palace.

There was late spring snow in the concealing brush where he removed his clothes; and it tingled coldly against his bare feet when he stood at last stripped for his grueling task.

He held his mind on the verge of thoughtlessness; only the thin realization came that one naked man against the world was a sorry tribute to the almost illimitable power of atomic energy. So many weapons he had had, and not used them when he could; and now this ring on his finger, with its tiny atomic generator, and its pitiful two-foot effective range—this was the end product of all his years of effort.

The sky was overcast, and the trees from the opposite bank made swirling shadows half across the

river. The darkness streaked the ugly swell of racing water, that carried him half a mile downstream before his long backstrokes finally brought him to the shelter of the shallows.

He lay there, his mind reconnoitering the glare of thought that came from the two machine gunners hidden in the trees.

Cautiously, he edged into a patch of concealing brush, donned his clothes—and lay patient as an old tiger stalking its prey. There was a clearing to be crossed; and it was too far for hypnotic control. The moment of their carelessness came abruptly—and he covered the fifty yards in a fraction over three seconds.

One man never knew what struck him. The other jerked around spasmodically, his long, thin face

strained and ghastly in the flicker of light that peered through the foliage.

But there was no stopping, no evading the blow that caught his jaw, and smashed him to the ground. In fifteen minutes of crystalless hypnotism, they were under control. Fifteen minutes! Eight an hour! He smiled ironically. That certainly precluded any possibility of hypnotically overpowering the palace with its ten thousand or so men. What he must have was key men.

He brought the two men back to consciousness and gave them his orders. Silently, they took their portable machine guns and fell in behind him. They knew every inch of the ground. They knew when the tank patrols rolled by in their ceaseless night rounds. There were no better soldiers in the human army

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than these palace guards; and in two hours there were a dozen trained fighters slipping along like shadows—working in a silent, swift co-ordination that needed only an occasional soft-spoken command.

In three more hours, he had altogether seventeen men, a colonel, a captain and three lieutenants—and ahead was the long cordon of exquisite statuary, sparkling fountains and blazing lights that marked at once his goal and the end of the first simple operation.

THE FIRST hint of the coming dawn misted the eastern sky as Cross lay with his little army in the shadows of shrubbery and stared across the quarter mile of brilliantly lighted area. He could see the dark line of woods on the other side, where the fortifications were hidden.

"Unfortunately," the colonel whispered, "there is no chance of tricking them. The jurisdiction of this unit ends right here; it is forbidden to cross to any one of the dozen fortified rings without a pass, and even a pass can be used only in the daytime."

Cross frowned. There were precautions here beyond his greatest expectations, and he saw that their strictness was of recent enactment. The slant attack on his valley—though no one believed the wild peasant tales about the size of the ships involved nor suspected they were spaceships—had produced a

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nervous tension, a flaming alertness, that might defeat him now.

"Captain!"

"Yes?" The tall officer slid up beside him.

"Captain, you look the most like me. You will, therefore, exchange your uniform for my clothes and then you—all of you—will return to your regular stations."

He watched them slip off, vanish. Then he stood up with the stiff carriage of the captain, and stalked out into the light.

Ten feet, twenty, thirty— He could see the fountain he wanted, a great, glittering shape with its sparkling streams of water. But there was too much artificial light, too many minds around, a confusion of vibrations that must be interfering with the one thought wave his mind was reaching for—if the damned thing was still there after all these hundreds of years. If it wasn't there, God help him!

Forty feet, fifty, sixty—and then to his tense, desperate brain came a whisper, the tiniest of tiny mind-vibrations, so weak as to be but a veriest caress:

"To any slan who penetrates this far—there is a secret passage into the palace. The five-flower design on the white fountain due north is a combination knob that operates on the secret door by radio. The combination is—"

He had known—the 'Stics machine had known—that the secret was in the fountain, but no more than that. Now—

A harsh, magnified voice smashed out from the far trees:

"Who the devil are you? What do you want? Get back to your commanding officer, obtain a pass and return in the morning. Quick!"

He was at the fountain, his swift fingers on the flower design, his body

and action half-hidden from the host of staring, suspicious eyes. And there was not an ounce of energy to spare from his intense concentration.

Before that singleness of purpose, the combination yielded; and a second thought came from a second Porgrave broadcaster:

"The door is now open. It is an extremely narrow tunnel leading down through dense darkness. The mouth is in the center of the equestrian group of statuary a hundred feet due north. Have courage—"

IT WAS NOT courage that was lacking; it was time. A hundred feet north, toward the palace, toward those menacing forts. Cross laughed curtly. The ancient builder of the secret entrance had certainly picked a hell of a spot to practice his ingenuity. He walked on, even as the harsh voice lashed out again.

"You out there . . . you will stop at once, or we fire. Return to your district, and consider yourself under arrest. At once!"

"I've got a very important message!" Cross called in a clear voice, that was as similar to the captain's as he could make it without practice. "Emergency!"

And still they didn't actually consider one man dangerous. Still he walked on. The answer blared back:

"No possible emergency justifies such a flagrant breach of regulations. Return immediately to your district . . . I warn you for the last time!"

He stared down at the little black hole, and a sharp dismay struck into him like a knife, a piercing claustrophobia, the first he had ever known, black and terrible as the tunnel itself. Intrust himself to that—rabbit's burrow—with its potentialities of suffocation, to be possibly buried

alive in some cunningly contrived human trap! There could be no certainty that they had not discovered this, as they had already discovered so many other slan hideaways.

Abruptly, it was urgent. A torrent of sibilant pulsations reached out of the trees ahead, little menacing whispers that breathed against his brain like soft physical things.

Somebody saying: "Sergeant, train your gun on him!"

"What about the horse group, sir? Be a bloody shame to nick them!"

"Aim at his legs and then his head!"

And that was that. With clenched teeth, body stiff and straight, and arms flung over his head, he leaped like a diver going feet first—and came down so perfectly in the tunnel that it was several seconds before his clothes scraped the vertical walls.

THE PASSAGE WAS AS smooth as glass, and it was only after Cross had fallen an immense distance that it started to tilt away from the vertical. Pressure of friction grew stronger; and after more swift seconds, he was sliding along at a distinct angle, that grew flatter by the instant. His breathless speed slowed measurably. He saw a glimmer of light ahead. Abruptly, he emerged into a low-roofed, dimly lighted corridor. His line of motion was still slightly downward, but it straightened rapidly. His journey ended, he lay dizzily on his back for a moment, his vision spinning madly.

A dozen revolving lights above him gradually tightened their circle and became a single, dim bulb shedding a dull refugence around it. A wan almost futile light hugged the ceiling and melted into darkness before it reached the door.

Cross climbed to his feet, and

found himself staring at a sign that was just high enough up on the wall for the ceiling light to touch it.

He strained and read:

You are now two miles below the surface. The tunnel behind you is blocked by steel and concrete shafts, which were actuated, each in its turn, by your passage. It will take several hours to get from here to the palace. Slans not on official business are forbidden from entering the palace. Take heed!

There was a tickling in his throat. He fought back the sneeze but it came, followed by a half a dozen more. The tears ran down his cheeks.

It was dimmer where he stood than when he had first come into the corridor. The long row of ceiling lights, that faded into the remote distance ahead, were not as bright as they had been. Dust obscured them.

Cross bent in the half-darkness, and ran his finger lightly over the floor. A soft, thick carpet of dust lay there. He peered ahead, searching for footprints that would show that this corridor had been recently used.

But there was only the dust, an inch at least—years of it.

Countless years since that order with its vague but once potent threat had been placed there. Meanwhile, there was more real danger. Human beings would now know where to look for the secret entrance. Before they discovered it, he must, in defiance of the slan law, penetrate the palace—and get at Kier Gray!

IT WAS a world of shadows and silence, and insidious choking fingers of dust that kept ever reaching for Cross' throat; and then—ludicrous paradox—tickled instead of strangled.

There were doors and corridors, and great stately rooms, like long-abandoned funeral homes, like the temple of the dead-lost Chiir-folk that stood through all eternity in the shadows of Mount Gog in the upper Saemones Valley.

And then, abruptly, there was another sign, which read:

Warning! This passageway leads to the secret elevator into the study of Kier Gray. Under no circumstances must any slan enter this man's apartment. The slan government has invoked penalty Number 26 for such infringement; Section 26 of the Criminal Code states: "—the punishment shall be removal by surgery of the slan tendrils.

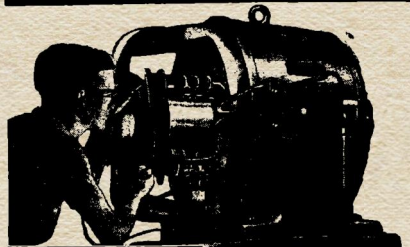
Take heed!

All around was dust. It coated the walls, clung gently to the sign itself. It lay intact, untouched, virgin on the floor ahead. But no layer on layer of dust could conceal the enormous menace of that warning. The very mention of Kier Gray proved that it had been placed there since the dictator's ascension to power as a young man—*less than thirty-five years before.*

Slan councils—removal by surgery of slan tendrils. Here, then, were the true slans. True slans who removed tendrils. Which made them similar to their tendriless cousins. Which meant they could penetrate into cities like Cimmerium. But they hadn't! The law of averages alone would have enabled him to find at least one true slan if they had been infiltrated through the tendriless slan world. That left him—where?

The first burning excitement passed. His mind grew cold; and he walked on thoughtfully. After all, he still must see Kier Gray. As for threats—let any slan, true or otherwise, threaten the master of atomic energy and hypnotism. Particularly the true slans, who had let matters get into an unholy mess by,

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first, scaring the tendrillous ones for hundreds of years; and then, having forced them into monstrous armament, standing by helplessly while those armaments conquered a world.

A soft metallic click behind him whipped Cross out of his reverie. He whirled, and saw that a solid sheet of metal door had flowed softly into the floor over which he had just passed, creating a smooth, hard wall.

He stood very still, and for a moment he was a sensitive machine receiving impressions. There was the long, narrow corridor, ending just ahead; the dim lights above, and the floor beneath him, the latter cushioned by a thick, yielding dust.

Into the silence a second click projected harshly. The walls creaked metallically and began to move, coming at a deliberate pace toward him, and toward each other.

Automatic, he decided; for there was not the faintest tendril of thought anywhere. Coolly, he examined the potentialities of the trap, and presently discovered at the extreme end of each wall a nook. Each nook was six feet four inches in height, a shallow space large enough to hold half a human body sideways. Even the contours of the body were grooved into those nooks. There was the curve for the shoulders to fit into, and a narrow space for the arm and hand.

CROSS SMILED grimly. In a few minutes, the walls would close together, and the only available space for him would be where the two nooks would then be joined. A neat trap!

True, the atomic energy of the ring on his finger could probably dis-

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integrate a pathway for him through the walls or the door, but his logic demanded that this trap be successful—up to a point.

He examined the nooks more carefully. This time his ring flashed twice in brief fury, dissolving the handcuffs that waited in the hand holes for the helpless, carving also enough space to give him freedom of movement.

When the walls were a foot apart, an inch wide crack opened the full length of the floor, and the small mountain of dust poured into it. Half a minute later the two walls met with a metallic bang.

A moment of silence! Then machinery whirred faintly, and there was a swift flow of upward movement. The movement continued for minutes on end. It slowed finally and stopped. But the machinery still whispered beneath him.

Another minute, and then the cubicle in which he stood began to revolve slowly. A crack appeared before his face, a crack that widened into a rectangular hole through which he could see into a room.

The machinery stopped whirring. There was silence again while Cross examined the room with swift, flashing gaze.

There was a desk in the center of the highly polished floor, and walnut paneled walls beyond. Some chairs and filing cabinets and the edge of a floor-to-ceiling bookcase completed what he could see of the spare, businesslike room.

Footsteps sounded. The man who came in and shut the door behind him was a magnificently built creature, grayed at the temples now, lines of age showing. But there was no one in all the world who would not have recognized that lean, dark, powerful face, those piercing eyes, the sheer, smashing, heedless

ruthlessness that was written indelibly in those thin nostrils, that lean line of jaw. It was a face too hard, too determined to be pleasant. But withal it was a noble countenance. Here was a born leader of men.

Cross felt himself dissected, his face explored by those keen eyes. Finally, the proud mouth twisted into the faintest sneer.

Kier Gray said: "So you got caught in spite of the warnings."

It was the words that did it. For with them came surface thoughts, and those surface thoughts were a deliberate screen held over a mind shield as tight as his own. No leaky tendriless slan shield this, but an enormous fact. Kier Gray, leader of men, was—

"A true slan!"

THAT one explosive sentence Cross uttered, and then the fluidity of his mind chilled into an ice of quiet thought. All those years that Kathleen Layton had lived with Kier Gray, and not suspected the truth. Of course, she had lacked experience with mind shields, and there had been John Petty with the same type of shield to confuse the issue, because John Petty *was* human. How cleverly the dictator had imitated the human way of thought protection!

Cross shook himself mentally, and, determined to get reaction this time, repeated:

"So—you *are* a true slan!"

The other's dark face twisted sardonically: "What did you expect? For hundreds of years we who knew the truth have existed for one purpose: to prevent the tendriless slans from taking over the world of men. What more natural than that we should insinuate our way to control of the human government? Are we

not the most intelligent beings on the face of the Earth?"

Cross nodded. It fitted, of course. His own deductions had told him that. Once he knew that the true slans were not, actually, the hidden government of the tendrillless slan, it was inevitable they would be governing the human world—for all Kathleen's beliefs and the tendrillless slan X ray pictures showing Kier Gray to be possessed of a human heart and other nonslan organs. Somewhere here was still tremendous mystery.

He shook his head finally: "I still don't get it all. I expected to find the true slan ruling the tendrillless . . . secretly. Everything fits, of course, in a distorted fashion. But why anti-slan propaganda? What about that slan ship which came to the palace eleven years ago? Why are true slans hunted and killed like rats? Why not an arrangement with the tendrillless slans?"

The leader stared at him coldly: "We have tried on occasion to tamper with anti-slan propaganda; one such attempt being that very ship to which you have referred. For special reasons, I was forced to order it down in the marshes. But, in spite of that apparent failure, it succeeded in its main purpose, which was to convince the tendrillless slans, who were definitely contemplating their attack, that we were still a force to be reckoned with.

"It was the palpable weakness of the silver ship that convinced the tendrillless slans. They knew we could not be *that* impotent; and so once more they hesitated and were lost. It has always been unfortunate, the number of true slans being killed in various parts of the world; they are the descendants of slans who, scattered, after the War of Disaster, never made connection

with the slan organization. After the tendrillless slans came on the scene, it was, of course, too late to do anything. Our enemies were in a position to interfere with every communication device that we possessed.

"We tried our best, naturally, to contact such wanderers. But the only ones who really got through were those who came to the palace to kill me. For them we provided a number of easy passageways into the palace. My instruments tell me that you came the hard way, through one of the ancient entrances. Very daring. We can use another bold young man in our organization. Though why you came on . . . knowing true slans ruled here . . . after warnings—

He finished curtly: "However, everything will be explained to you later. I shall now actuate the machinery that will transport your cubicle to the lower tunnels where, in due course, a slan will arrive to remove your tendrils, after which you will be released. This is in accordance with the law forbidding slans to enter my rooms."

CROSS STARED at the other coolly. Kier Gray obviously did not suspect his identity, nor did he know how desperately near was the hour of tendrillless slan attack. It made the moment a great one, as he said:

"Unfortunately, I have no intention of doing without my tendrils. In this case at least, I refuse to accept the jurisdiction of the law of the slans. That is final."

"They all object; that's why we do it forcibly . . . for their own protection of course." The older man finished dryly: "No doubt you will recognize the reality of our legal jurisdiction after the operation has been performed."

His smile faded abruptly. He said in a tight voice:

"Come to think of it, your objection was very pointed. The laws of zetetic philosophy do not admit of paradox. Either you are a fool . . . a possibility refuted by your obvious intelligence . . . or else, in spite of the appearance of your imprisonment, that imprisonment is not actual. And there's only one man in the world who could nullify the hard steel of the handcuffs in that cubicle."

Amazingly, the strong face had gone slack, the hard lines were faded, but it was the eyes that showed strength now. A glad, eager, wide-eyed joy. He half-whispered:

"Man, man, *you've done it!* In spite of our being unable to give you the slightest help . . . atomic energy . . . at last."

His voice rang out then, clear and triumphant: "John Thomas Cross, I welcome you and your father's great discovery. Come in here and sit down. Wait a minute while I get you out of that damn place! We can talk here in this very private den of mine. No one else is ever allowed here, except the cleaning woman."

THE WONDER of it grew with each passing minute. The tremendousness of what it meant, this world-wide balancing of immense forces: true slans with the human beings, who knew not their masters, against the tendriless slans who, in spite of their brilliant, far-flung organization, had never guessed the truth behind the mystery.

"Naturally," said Kier Gray, "your discovery that slans are naturals and not machine made is nothing new to us. We are the mutation-after-man. The forces of that mutation were at work many years before that great day when Samuel Lann's wife gave birth to the three



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originals. It is only too obvious now, in retrospect, that Nature was building for a tremendous attempt. Cretins increased alarmingly, insanity advanced by enormous percentages. The amazing thing about it was the speed with which that web of biological forces struck everywhere across the Earth.

"We have always assumed far too readily that no cohesion exists between individuals, that the race of man is not a unit, with an immensely tenuous equivalent of a blood-and-nerve stream flowing from man to man. There are, of course, other ways of explaining why billions of people can be made to act alike, think alike, feel alike, given a single dominating stimulus, but slant philosophers have, through the ages, been toying with the possibility that such mental affinity is the product of an extraordinary unity, physical as well as mental.

"For hundreds, perhaps thousands of years, the tensions had been building up. And then in a single stupendous quarter of a millennium more than a billion abnormal births occurred. It was like a cataclysm that paralyzed human beings. The truth was lost in a wave of terror that swept the world into bloody war. All attempts to revive the truth have been swamped by an incredible mass hysteria . . . even now after a thousand years.

"Yes, I said a *thousand* years. Only we true slants know that the nameless period actually lasted five hundred hellish years, and that Samuel Lann's children were born nearly fifteen hundred years ago, before the real wave of births started.

"So far as we know, not one of those ultra-normal births was exactly like another. Most were horrible failures, and there was only the one perfection, from whom all slants are believed to be descended. Nature relied on the law of averages.

No preconceived plan existed, simply a reaction to the countless intolerable pressures that were driving men mad, because neither their minds nor their bodies were built to withstand modern civilization. These pressures being more or less similar, it is understandable that many of Nature's botches should bear resemblance to each other, without being similar in detail.

"AN EXAMPLE of the enormous strength of that biological tide, and also evidence of the fundamental unity of man," Kier Gray continued, "is shown in that nearly all slans born in the first few hundred years were triplets or, at lowest, twins. There are few such births now. The single child is the rule.

"The wave spent itself. Nature's part of the work ended, it remained for intelligence to carry on. And that was where the difficulty came.

"During the nameless period, slans were hunted like wild beasts—there is no modern parallel for the ferocity of human beings against the creatures they considered responsible for the disaster. It was utterly impossible to organize; our forefathers tried everything: underground hide-outs, surgical removal of tendrils, replacement of human hearts for their own double hearts, the skinlike stuff over tendrils, which I see you have been using. But it was no good.

"Suspicion was swift beyond all resistance. Men denounced their neighbors, and had them medically examined; the greatest difficulty of all was the birth of babies. Even where the successful disguise had been achieved, a baby was always a dead giveaway, and frequently brought horrible death to mother, father and upon itself. It was gradually realized that the race could not survive.

"The scattered remnants of the slans finally concentrated all their efforts on a study of the mutation force, convinced that the solution lay there; and at last they found the answer: genes within genes. Saugelike infra-links, chains of ultimate life stuff that controlled the true genes as the genes in their turn controlled the shape of the organs.

"It remained then to experiment. That took two hundred precarious years, because with the race at stake, no risks could be taken. We found at last that each of the infra-genes controlled a generation. Strike one off the chain, and for one generation the organ affected vanished, only to turn up the following generation. And so we eliminated the double heart for twelve links—three hundred years. It came back on schedule.

"We removed thirty links from the chain controlling the tendrils, and they are due back in another forty to fifty years—"

Cross interrupted with a gasp: "Wait a minute! When I first started to search for the true slans, logic said they were infiltrated into the tendriless slan organization. Are you trying to tell me that the tendriless slans *are* the true slans?"

Kier Gray nodded matter-of-factly: "Where else could they have come from?"

At last Cross said: "But why did you ever stop them from knowing the truth?"

"I can see that you still do not recognize the inescapable realities of the lives of our ancestors. The truth was withheld in the first place because it was necessary to observe and study psychological reactions . . . because as people acted not knowing they were true slans, so

they would have acted *knowing* it. What happened?

"We had removed generations of genes from so many of their distinguishing organs to protect them from predatory human beings . . . I am similarly protected, though in my case it ends with me . . . that they had not the strength or energy to be anything but quiet-living folk in the remote corners of the world. Then the double heart came back, the superlative nervous system and the muscular strength that went with it—and, in spite of their new powers, they still preferred to lead their peaceful existence.

"The truth might have aroused them, but not in time. We have discovered that slans are by nature anti-war, anti-murder, anti-violence. We used every argument, but no logic would produce anything more than the general feeling that in a hundred years or so they could start thinking in terms of action.

"It was utterly impossible to permit them to stay that way. Human existence has been like a bomb fuse. Life burned slowly for millions of years, then the fire reached the bomb, which exploded. The explosion managed to set another fuse alight, but, though we did not know it then, the old bomb and fuse were finished. Now, it is certain that human beings will sputter out, vanish from the Earth as a result of the sterility that has already started on a vast scale.

"Undoubtedly, that sterility will be blamed on the slans; and when human beings discover it there will begin the second great wave of ferocity and terrorism. Nothing but the most powerful organization, expanded at top acceleration, under constant and dangerous pressure, could have been properly prepared."

"And so," Cross said softly, "you drove out the tendriless . . . the protected . . . slan with violence that bewildered them, then brought an equally ruthless reaction. Ever since you've been a spur on their expansion and a check on that artificially engendered ruthless spirit of theirs. But why haven't you told them the truth?"

The leader smiled grimly: "We tried that; but those we selected as confidants thought it was a trick, and their logic led them instantly to our hiding place. We had to murder them all. We've got to wait till the tendrils come back.

"And now, from what you've told me, I can see that we must act swiftly. Your hypnotism crystals, of course, are the final solution to the human being problem. Not one of us but can have pity for their position. Thank Heaven, in less than a hundred years, long before the situation becomes acute, there'll be enough tendrilled slans to hypnotize every human being; and so their passing will be painless and happy.

"As for the imminent attack, we have spaceships. We shall fit them with your atomic drivers and projectors, and make a big noise with a small force. My colleagues have a few tricks of their own that they've been saving for this moment; and the combination, plus a speech by you on the tendriless slan radio, should provide us with that fifty-year delay.

"You can tell them that ever since their attack on your valley, human factories have been turning out weapons, but that you have given away no secrets . . . that should make them feel basically safe. And now, after you've had a look in my mind to verify everything I've told you, what is your father's secret?"

AFTER a few minutes, Cross smiled and said: "Simplicity. My father was always fascinated by the first simple application of atomic energy in the old days. You know the principle: Uranium 235 placed in a boiler heats the water and produces steam to run engines.

"He rejected the massive cyclotron principle in toto, and evolved finally a central core of positive electrons spun out like a fine wire. At this core, but not directly at—a proper comparison would be the way a comet comes at the Sun, in an elongated orbit—this 'Sun' he discharged his negative electron 'comets' at the speed of light.

"The 'Sun' whipped the 'comets' around and flung them out into 'space' where—and here the comparison to the way the Solar System gets completely rid of comets is very real—a second positive core, which might be called 'Jupiter,' and which pulled at the 'comets,' already traveling at the speed of light, and catapulted them *faster than light* completely out of their orbits.

"At that speed, each electron became matter in a minus state, with a destructive power utterly out of proportion to its 'size.' Normal matter simply goes mad in the presence of this minus stuff, and reverts instantly to a primeval state. It—"

Cross stopped. Pallor spread over his face. He jumped to his feet, his muscles stiffening, nerves taut, body cold. The door opened lightly, and a tall, young woman came in.

She had flashing eyes, this young woman, and a strong, mature, finely molded, delicately textured face, and because his mind was always held on a tight band of thought, she came in without knowing he was there.

Cross thought piercingly: He should have guessed after the way Mrs. Corliss' smashed head had been repaired by the tendrillless slan doctors. He should have known the moment he discovered Kier Gray

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was a true slant, should have guessed, knowing the terrible hates and enmities that saturated the palace here, that only death—and a return from death in secret could ultimately and effectively keep Kathleen forever safe from John Petty!

It was at that moment that Kier Gray's voice cut across the silence with the rich tone of one who had secretly relished this instant for years;

"Jommy Cross, I want you to meet Kathleen Layton . . . my daughter!"

THE END.

CHEAP FUEL

The introduction of atomic fuels will necessitate the adoption of totally new standards of value, new understandings of "cheap" and "expensive" fuels. The comparison of energy values in ordinary chemical fuels and atomic fuels is almost exactly akin to the ratio between terrestrial and astronomical distances. From New York to Philadelphia is about one hundred miles; from New York to the Sun is about one hundred million miles. If the energy of a pound of coal is taken as one hundred units, the energy of a pound of uranium is five hundred million units.

That means that if coal sells at three dollars a ton, uranium can compete on energy-per-dollar alone at fifteen million dollars a ton, or seven thousand five hundred dollars a pound—which is some fifteen times the price of gold! Yet that price of bulk coal is about the cheapest fuel now available, suitable for use only in special, large-scale equipment.

The comparison becomes more startling when atomic fuel is put up against special-use fuels such as aviation gasoline. That sells at the local airports for about five cents a pound—thirty cents a gallon. *Uranium at two hundred fifty thousand dollars a pound is equal in price of energy available!* Actually, uranium selling at half a million dollars a pound could push highest aviation gasoline off the market in many fields. At twice the price per energy unit it is cheaper, because a plane capable of carrying five tons of mail and express across the Atlantic, may use another five tons of lift to stagger off with its load of gasoline. The uranium fuel to replace that gasoline would weigh less than the pilot's brief case; its weight could be ignored—and another five tons of mail carried.



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