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by James Schmitz

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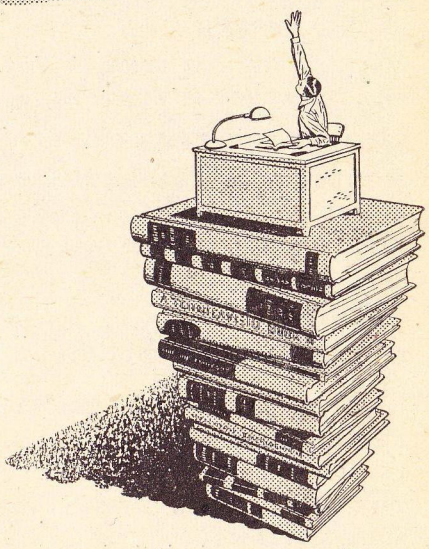

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SHORT STORIES

ARTICLE

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EVOLUTION

For some half-dozen millennia now, philosophers, sages, mystics, and other learned, or seemingly learned people have pointed to "man's animal instincts" as the source of our woes. These "animal instincts," we are told, are the sources of the bestial, inhuman acts men commit.

So long as men ask the wrong questions, they'll get the wrong answers; so long as people go about striving to "control the animal instincts" in man, they won't get the desired results *if that assumption that they are the source of trouble is wrong.* So long as men sought to explain why the Sun went around the Earth, their explanations of cosmology didn't work well. You have to ask the right question, if you want the right answer.

"Let's examine the characteristics of man that set civilized man apart from the animals, who operate only on instinct. Human mothers not infrequently abandon the new-born baby in garbage cans, bash its brains out for crying, or let it die of neglect because it interferes with their party-going. This is a distinguishing characteristic; no other higher mammal displays this trait. Nazis, during the early '40s, tortured fellow human beings for amusement. They followed an old custom of civilized Man, as recorded in Roman days, and through the Middle Ages. This, too, is a characteristic that sets civilized man apart from the animals; no beast would be found guilty of such bestial acts. No animal is ever guilty of such peculiarly human acts as raping, then murdering and mutilating the female of his own species.

If we are to accept the explanation that these are due to "animal instincts," it would be wise to seek for a bit of evidence, somewhere, that mammals do, in fact, have such instincts. The evidence on hand certainly seems to indicate that these things are strictly the product of civilization, not animal instinct. True, our civilization professes to very fine ethical codes—but it was George Bernard Shaw who, when asked what he thought of Christianity, said "I think it's fine; it's too bad somebody doesn't try it."

Actually, there is every reason to believe that animal—or human, to be more precise—instincts would necessarily represent the finest imaginable ethical code of behavior. Paleobiologists have studied the evolution of animal forms from the records in the rocks. Those records show a recorded history of development

stretching back some two billion years. Embedded in the rocks are the evidences of the development of physical form; that's been easy to trace. But a mechanism is useless unless it functions; an animal form is dead unless it has a way of living. And a species is not simply a biomechanical contrivance; it's a pattern of behavior, too. The ant has his performance as a genetic behavior pattern—as much a pattern as the shape of mandible and leg. The robin has a nest-building behavior pattern.

If you stop to think about it, an instruction manual telling what to do with a machine is as important as the machine itself. It's all very well for an animal form to have a biomechanical structure; it needs an instruction manual of what to do with it just as much as it needs limbs to do with. The evolution of *behavior* patterns is as important a part of evolution as is the development of *form* patterns.

The tiger has a behavior pattern that calls for living by his wild lone; the baboon has a gregarious genetic behavior pattern. There's been a lot of talk about self-preservation being the first law of Nature, but extremely shoddy proof of that idea—and the baboon gives excellent proof that it is *not* the first law of Nature. The first law of Nature would—since only species, not individuals, evolve—have to be *species* preservation, not self-preservation.

The baboon has done a good job on that. Lions do not attack baboons, unless the lion is semicrazed. When a lion does attack, he is unable to attack *a* baboon—the whole tribe comes howling to the defense of the victim. The result of this behavior pattern is that usually three baboons gets killed instead of one, and a lot more get injured. But lions that attack baboons do *not* reproduce their kind; they invariably die. The current crop of lions, in consequence, are the direct descendants of non-baboon-attacking lions. At some cost to individuals over the last hundred millennia, the *species* has gained.

Now Man is somewhat different. There is *no* animal on Earth, possessed of even a modicum of intelligence, that will willingly try conclusions with a human being. Man, being the most widespread of all animal life, has rapidly bred out of all other species the highly lethal-to-them characteristic of attacking men. Man has animal instincts, all right—higher and finer ones than the lower mammals, naturally, but they are the genetic behavior patterns that two billion years of field-testing have proven make for successful living. Watch what happens when a human being gets trapped, somehow, on an unscalable mountain. Twenty-five mountaineers, from a thousand miles away, rush to the scene at considerable cost to themselves, and at great personal risk, prove that that mountain is *not* unscalable.

Watch what happens when a

(Continued on page 162)

THE END OF THE LINE

BY JAMES H. SCHMITZ

*A **well-integrated** civilization gets to be hard to retire from. Civilizations get that way — because the threat of trouble always comes from the other side of the frontier. But the frontier isn't necessarily geographical!*

Illustrated by Rogers

The spaceship dropped near evening towards the edge of a curving beach. A half-mile strip of grassy growth stood tall and still behind the beach; and beyond the jungle smoothly marbled prows of pink and gray cliffs swept steeply upwards for nearly two thousand feet to the northernmost shelf of a wide, flat continent. The green-black waters of the planet's largest ocean stretched away in a glassy curve ahead, broken by two narrow chains of islands some thirty miles out.

The sleek machine from beyond the stars settled down slowly, a wind thundering out below it and wrinkling the shallows near the beach into sudden zigzag patterns. It fell through explosive sprays of dry sand, sank its base twenty feet deep into the rock below and stopped. A sharp click announced the opening of a lock a third of the way up its rounded flank; and seven of the nine members of Central Government's Exploration Group 1176 came riding out of the lock a moment later, bunched forty feet above the beach on the tip of their ship's extension ramp.

Six of them dropped free of the ramp at various points of its swooping descent. They hit the hard sand in a succession of soft, bounceless thumps like so many cats and went loping off towards the water. Grevan alone, with the restraint to

be looked for in a Group Commander, rode the ramp all the way down to the ground.

He stepped off it unhurriedly there: a very big man, heavy of bone and muscle, though lean where weight wasn't useful, and easy-moving as the professional gladiators and beast-fighters whose training quarters he'd shared in his time. A brooding, implacable expression went so naturally with the rest of it that ordinary human beings were likely to give him one look and step out of his way, even when they weren't aware of his technical rank of Central Government Official.

It was a pity in a way that the members of his Exploration Group weren't so easily impressed.

Grevan scowled reflectively, watching five of the six who had come out of the ship with him begin shucking off weapon belts, suits and other items of equipment with scarcely a break in their run as they approached the water's edge. Cusat, Eliol, Freckles, Lancey, Vernet—he checked them off mentally as they vanished a few seconds later, with

almost simultaneous splashes, from the planet's surface. They were of his own experimental breed or something very near it, born in one of Central Government's germination laboratories and physically, though not quite adults yet, very nearly as capable as Grevan was himself. However, nobody could tell from here what sort of alien, carnivorous life might be floating around beyond this ocean's shallows—

They had too good an opinion of themselves!

Weyer, at any rate, seemed to have decided to stay on shore with his clothes on and his armament handy, in case of trouble. Somewhat reassured, Grevan turned his attention next to a metallic bumping and scraping at the ship's open lock overhead. Klim and Muscles, K.P.'s for the day, were trying to move a bulky cooking unit out of the ship so the Group could dine outdoors.

"Boss?" Klim's clear soprano floated down.

"Right here," Grevan called back. "Having trouble?"

"Looks like we're stuck," Klim announced from within the lock. "Would you come up and . . . no, wait a minute! Muscles is getting it cleared now, I think— Wait till I've degraved it again, you big ape! Now, push!"

The cooker popped into sight with a grinding noise, ejected with considerable violence from the ship's interior. For a moment, it hung spinning quietly in the air above the ramp, with Klim perched on top. Then Muscles came out through the lock and attached himself to the gadget's side. They floated down lopsidedly together, accompanied by tinkling sounds from the cooker's interior.

"What's it going to be tonight?" Grevan asked, reaching up to guide them in to an even landing.

"Albert II in mushroom sauce," said Klim. She was a tall, slender blonde with huge blue eyes and a deceptively wistful expression. As he grounded the cooker, she put a hand on his shoulder and stepped down. "Not a very original menu, I'll admit! But there's a nice dessert anyway. How about sampling some local vegetables to go with Albert?"

"Maybe," said Grevan cautiously. "Whose turn is it to sample?" Too often, preoccupied with other matters, he'd discovered suddenly that he'd been roped in again for that chore when the items to be sampled were suspected of being of a particularly unco-operative nature. And then the Group would drop whatever it was doing to gather around and sympathize while he adapted.

"Vernet's turn, isn't it?" said Muscles.

"Vernet's the victim," Klim nodded. "You're safe this time."

"In that case," Grevan said, relieved, "you'll find Vernet out there full fathoms five somewhere. Bring her in if you can and we'll go browse in the shrubbery a bit."

"This," Klim remarked, gazing out over the shore-line towards which Muscles was heading in search of Vernet, "is still the best spot of an all-right little world! Know what the cubs were calling it when we first set down here three weeks ago?" She was Grevan's junior by a good ten years but a year or so older than the Group's other members and inclined to regard them all with motherly tolerance. "Our point of no return."

Grevan grimaced uneasily, because that phrase did describe the Group's position here, in one way or another. Never once, in the eight years since Central Government had put him in charge of what had been a flock of rebellious, suspicious and thoroughly unhappy youngsters, who weren't even sure whether they were actually human beings or some sort of biological robots, had the question of escaping from CG controls been openly discussed among them. You never knew who might be listening, somewhere. The amazing thing to Grevan even now was that—eight weeks travel on the full fury of their great ship's drives beyond the borders of Central Government's sprawling interstellar domain—they did seem to have escaped. But that was a theory that still remained to be proved.

"Are you going to accept contact with CG tomorrow?" Klim inquired.

Grevan shrugged. "I don't know." Their only remaining connection with CG, so far as they could tell, were the vocal messages which flashed sub-spatially on prearranged occasions between two paired contact sets, one of which was installed on their ship. They had no way of guessing where the other one might be, but it was activated periodically by one of the CG officials who directed the Group's affairs.

"I was going to put it to a vote tonight," Grevan hedged. "They can't possibly trace us through the sets, and I'd like to hear what they have to say when they find out we've resigned."

"It might be a good idea. But you won't get a vote on it."

He looked down at her, while she stooped to haul a small portable cooker out of the big one's interior and slung it over her shoulder.

"Why not?"

"The cubs seem to think there's no way of guessing whether accepting contact at this stage is more likely to help us or hurt us. They'll leave it up to you to decide."

"Aren't you worried about it at all?" he inquired, somewhat startled. However well he felt he knew the cubs, they still managed to amaze him on occasion.

Klim shrugged. "Not too much." She clamped a chemical testing set to the portable cooker. "After all, we're not going back, whatever happens. If CG's still got some fancy way of reaching out and stopping us, wherever we are, I'd much rather be stopped out here than get another going-over in one of their

psych laboratories—and come out a mindless-controlled this time—"

She paused. Faint, protesting outcries were arising from a point a few hundred yards out in the water. "Sounds like Muscles caught up with Vernet. Let's get down to the beach."

Vernet raked wet brown hair out of her eyes and indignantly denied that it was her turn to sample. But the Group contradicted her seven to one, with Lancey withholding his vote on a plea of bad memory. She dried and dressed resignedly and came along.

The first three likely-looking growths the foraging party tested and offered her were neither here nor there. They put up no worthwhile argument against assimilation and probably would turn out to be nourishing enough. But raw or variously treated and flavored in Klim's portable cooker, they remained, Vernet reported, as flatly uninspiring as any potential mouthful could hope to be.

The fourth item to pass the chemical tests was a plump little cabbage-arrangement, sky-blue with scarlet leaf-fringes. She sniffed around it forebodingly.

"They don't advertise identity like that for nothing!" she pointed out. "Loaded for bear, I bet!" She scowled at Klim. "You picked it on purpose!"

"Ho-hum," Klim murmured languidly. "Remember who had me sampling that large fried spider-type on wherever-it-was?"

"That was different," said Vernet. "I had a hunch the thing would turn out to be perfectly delicious!"

Klim smiled at her. "I'm K.P. today. I'm having the hunches. How would you like it?"

"Quick-baked," snarled Vernet. "And my blood be on your head!"

Half a minute later, she nibbled tentatively at a crisped leaf of the cabbage, announced with surprise that it was indeed delicious and helped herself to more. On the third leaf, she uttered a wild whoop, doubled up and began to adapt at speed. That took about twelve seconds, but they allowed a full ten minutes then to let the reaction flush her blood stream. Then Vernet was sampled in turn and staggered back to the beach with a martyred expression, while Klim and Muscles started cabbage-hunting.

Grevan retired to the ship's laboratory, where he poured the half cupful of blood he had extracted from the martyr's veins carefully into a small retort. Ontogenetic adaptation, with reaction-times that crowded zero, to anything new in the way of infections or absorbed venoms was one of the more useful talents of their specialized strain. Considerable unauthorized research and experimentation finally had revealed to them just how they did it. The invading substance was met by an instantaneous regrouping of complex enzyme chains in every body cell affected by it, which matched and nullified its specific harmful properties and left the

Group member involved permanently immune to them.

The experience of getting immunized sometimes included the momentary impression of having swallowed a small but active volcano, but that illusion didn't last long enough to be taken very seriously by anyone but the sufferer. Vernet's blood emerged from processing presently in the shape of small pink pills; and just before dinner everybody washed down two each of these and thus adapted the easy way, while the donor denounced them as vampires.

Albert II, in a vintage mushroom sauce and garnished with quick-baked Vernet Cabbages, was hailed as an outstanding culinary composition all around. Klim took the bows.

By nightfall, they had built a fire among rocks above the highest tide mark, not far from the edge of the rustling jungle; and a little later they were settled about it, making lazy conversation or just watching the dancing flames.

Special precautions did not seem required at the moment, though Weyer had reported direct neuronic impressions of carnivorous and aggressive big-life in the immediate neighborhood, and the Group's investigation of the planet had revealed scattered traces of at least two deep-water civilizations maintained by life forms of unknown type but with suggestively secretive habits. A half dozen forms of sudden death snuggled inside the ornamental little gadgets clamped to their gun belts, not to mention the monstrous argument the pocket-sized battleship which had carried them here could put up; and their perceptions were quick and accurate and very far-ranging. If any of this world's denizens were considering a hostile first encounter, the Group was more than willing to let them do the worrying about it.

Not a care in their heads, to look at them, Grevan thought, a trifle enviously. Handsome young animals, just touching adulthood—four young men and four young women, who acted as if they had been sent on a star-hopping picnic, with Grevan trailing along as a sort of scoutmaster.

Which wasn't of course, quite fair.

The cubs were as conscious as he was of the fact that they might still be on a long, invisible leash out here—artificial mental restraints imposed by Central Government's psychological machines. They had developed a practical psychology of their own to free themselves of those thought-traps, but they had no way of knowing how successful they had been. If any such hypnotic mechanisms remained undiscovered in them, the penalty for defying Central Government's instructions would be automatic and disastrous. Grevan could see himself again as a frightened, rebellious boy inside a subterranean conditioning vault, facing the apparently blank wall

which concealed one of the machines known as Dominators. He heard the flat, toneless voice of the legendary monster, almost as old as Central Government itself, watched the dazzling hypnotic patterns slide and shift suddenly across the wall and felt hard knots of compulsive thought leap up in response and fade almost instantly beyond the reach of his consciousness.

That had been his first experience with CG's euphemistically termed "restraints." The Dominator had installed three of them and let the boy know what to expect if rebellion was attempted again. Two days later, he had skeptically put the power of the restraints to a test, and had very nearly died then and there.

They would know soon enough. Failure to keep the scheduled contact tomorrow would trigger any compulsive responses left in them as certainly as direct defiance of CG's instructions would do. And because they had found finally a world beyond CG's reach that could be their home, they were going to follow one or the other of those courses of action tomorrow. Looking around at the circle of thoughtfully relaxed young faces, he couldn't even imagine one of them suggesting the possibility of a compromise with CG instead. After eight years of secret planning and preparing, it wouldn't have occurred to them.

He relaxed himself, with a sigh and a conscious effort, releasing his perceptions to mingle with theirs. A cool breeze was shifting overhead, slowly drawing fresh scents from new sources, while unseen night things with thin, crying voices flew out over the sea. The ocean muttered about the lower rocks; and a mile to the east something big came splashing noisily into the shallows and presently returned again to the deeper water. Resting, the cubs seemed to be fitting themselves into the night, putting out tentative sensory roots to gather up the essence of this new world's life.

Then their attention began to shift and gather, and Grevan again let his mind follow where they seemed to be pointing without effort of his own.

It came to him quickly—a composite of impressions which were being picked up individually by one or the other of them and then formed by all into an increasingly definite picture. The picture of a pair of shaggy, shambling appetites working their way awkwardly down the cliffs behind the Group, towards the gleam of the fire.

The cubs sat still and waited while the things approached, and Grevan watched them, amused and momentarily distracted from his worries. The shaggy appetites reached the foot of the cliff at length and came moving down through the jungle. Heavy-footed but accomplished stalkers, Grevan decided. The local species of king-beast probably, who knew the need of a

long, cautious approach before their final rush upon nimbler prey—he filed the fact away for future consideration that a camp fire seemed to mean such prey to them.

On a rocky ridge two hundred yards above the fire, the stalkers came to a sudden halt. He had an impression of great, gray, shadowy forms and two sets of staring red eyes—

It would be interesting, he thought, to know just what sort of intuitive alarms went off in the more intelligent forms of alien carnivores whenever they got their first good look at the Group. The cubs still hadn't moved, but the visitors seemed to have come almost immediately to the conclusion that they weren't nearly as hungry now as they had thought. They were beginning a stealthy withdrawal—

And then Eliol suddenly threw back her head and laughed, a quick, rippling sound like a flash of wicked white teeth; a yell of pure mirth went up from the others, and the withdrawal turned instantly into ludicrously panicky flight.

The incident had brought them awake and put them into a talkative mood. It might be a good time to find out what they really thought of their chances of breaking free of CG tomorrow. Grevan sat up, waiting for an opening in an impassioned argument that had started up on the other side of the fire.

There had been a bet involved, it seemed, in that impulsive five-fold plunge into the ocean on landing. Last one in to be tomorrow's K.P. —and Vernet had come out on the sticky end of the bet.

Everybody else agreed thoughtfully that it just hadn't been Vernet's day. Vernet appeared unreconciled.

"You knew my gun belt was stuck again," she accused Eliol. "You had it planned so I'd be last!"

Eliol, having postponed her own turn at the Group's least-favored chore for one day by issuing the challenge, permitted herself a gentle chuckle.

"Teach you to keep your equipment in regulation condition! You didn't have to take me up on it. Weyer didn't."

"Well, anyway," said Vernet, "Lancey will help Vernet live through it. Won't he?"

"Uh-huh!" beamed Lancey. "You bet!"

"How he dotes!" Eliol remarked critically. "Sometimes it gets a little disgusting. Take Cusat there—flat on his back as usual. There's a boy who shows some decent restraint. Nobody would guess that he's actually a slave to my slightest whim."

Cusat, stretched out on the sand nearby, opened one eye to look at her. "Dream on, little one!" he muttered and let the eye fall shut again.

The others were off on another subject. There had been an alien awareness, Grevan gathered, which had followed the five swimmers about in the water. Not a hostile

one, but one that wondered about them—recognized them as a very strange sort of new life, and was somewhat afraid. "They were thinking they were so very—edible!" Eliol said and laughed. "Perhaps they knew the swim was making us hungry! Anyway they kept warning one another to stay out of our sight!"

"Plankton eaters," Lancey added lazily, "but apparently very fast swimmers. Anyone else get anything on them?"

"Cave builders," said Freckles, from behind Weyer, only a few feet from Grevan. She propped herself up on an elbow to point across the fire. "That big drop-off to the west! They've tunneled it out below the surface. I don't think they're phosphorescent themselves, but they've got some method of keeping light in the caves. Bacterial, possibly— And they cultivate some form of plankton inside."

"Sounds as if they might be intelligent enough to permit direct contact," Grevan remarked, and realized in the moment of silence that followed that it must have been an hour since he'd last said a word.

"They're easily that," Freckles agreed. Her small face, shaded by the rather shapeless white hat she favored, turned to him. "If Klim hadn't been cooking, I'd have called her to give it a try. I was afraid of frightening them off myself."

"I'll do it tomorrow," promised Klim, who had much the deftest touch of them all for delicate ambassadorial work.

There was another pause then—it might have been the word "tomorrow."

"Going to make contact tomorrow, Grevan?" Freckles inquired in a light, clear voice, as if it had just occurred to her.

"Unless," nodded Grevan, "somebody has a better idea."

It seemed nobody did until Muscles grumbled: "It's CG who's likely to have the ideas. If it were up to me, I'd just smash that set, tonight!"

Grevan looked at him thoughtfully. "Anybody else feel the same way?"

They shook their heads. "You go ahead, Grevan." That was Weyer's calm voice. "We'll just see what happens. Think there's a chance of jolting any worth-while information out of them at this stage?"

"Not if they're on guard," Grevan admitted. "But I think it will be safest for us if we're right there when it dawns on CG that this Exploration Group has resigned from its service! And it might prod them into some kind of informative reaction—"

"Well, I still think," Muscles began, looking worriedly at Klim, "that we . . . oh, well!"

"Vote's eight to one," Klim said crisply.

"I know it," growled Muscles and shut up.

The rest seemed to have become

disinterested in the matter again—a flock of not quite human cubs, nearly grown and already enormously capable of looking out for themselves. They'd put themselves into the best possible position to face the one enemy they'd never been able to meet on his own ground.

And until things started happening, they weren't going to worry about them.

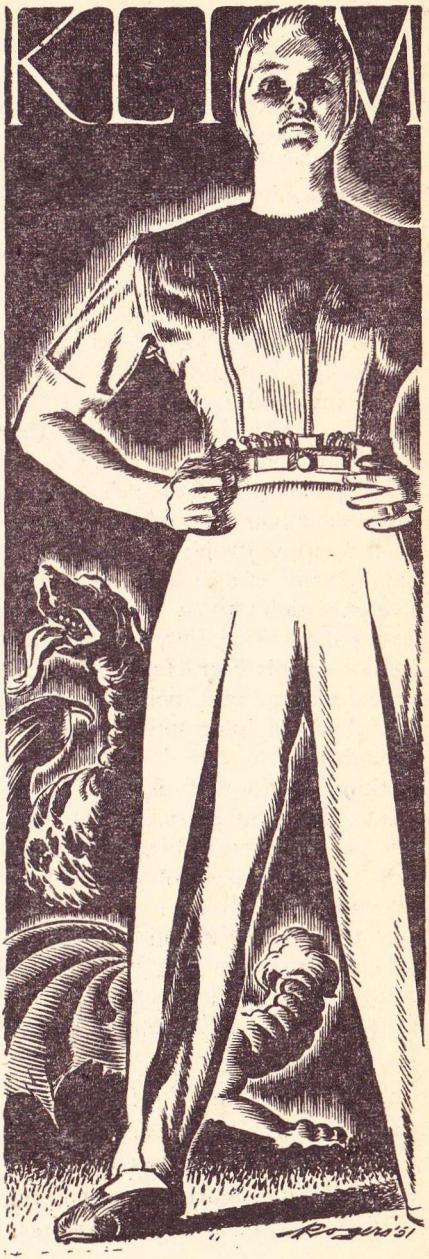
A few of them had drifted off to the beach below, when Grevan saw Klim stop beside Cusat and speak to him. Cusat opened both eyes and got to his feet, and Klim followed him over to Grevan.

"Klim thinks Albert is beginning to look puny again," Cusat announced. "Probably nothing much to it, but how about coming along and helping us diagnose?"

The Group's three top biologists adjourned to the ship, with Muscles, whose preferred field was almost-pure mathematics, trailing along just for company. They found Albert II quiescent in vitro—as close a thing to a self-restoring six-foot sirloin steak as ever had been developed.

"He's quite assimilating, and he's even a shade off-color," Klim pointed out, a little anxiously.

They debated his requirements at some length. As a menu staple, Albert was hard to beat; but unfortunately he was rather dainty in his demands. Chemical balances, temperatures, radiations, flows of stimulant and nutritive currents—all had



to be just so; and his notions of what was just so were subject to change without notice. If they weren't catered to regardless, he languished and within the week perversely died. At least, the particular section of him that was here would die. As an institution, of course, he might go on growing and nourishing his Central Government clients immortally.

Muscles might have been of help in working out the delicate calculations involved in solving Albert's current problems; but when they looked round for him, they found him blinking at a steady flow of invisible symbols over one wall of the tank room, while his lips moved in a rapid, low muttering; and they knew better than to interrupt. He had gone off on impromptu calculations of his own, from which he would emerge eventually with some useful bit of information or other; though ten to one it would have nothing to do with Albert. Meanwhile, he would be grouchy and useless if roused to direct his attention to anything below the level of an emergency.

They reset the currents finally and, at Cusat's suggestion, trimmed Albert around the edges. Finding himself growing lighter, he suddenly began to absorb nourishment again at a very satisfactory rate.

"That did it, I guess," Cusat said pleased. He glanced at the small pile of filets they'd sliced off. "Might as well have a barbecue now—"

"Run along and get it started," Grevan suggested. "I'll be with you as soon as I get Albert buttoned up."

Klim regarded Muscles reflectively. "Just nudge my genius awake when you're ready to come," she instructed Grevan. "He looks so happy right now I don't want to disturb him—"

It was some minutes later, while Grevan was carefully tightening down a seal valve, that Muscles suddenly yawned and announced: "Thirty-seven point oh two four hours! Checks either way, all right, boss. Say—where's Klim gone?"

"Down to the beach, I suppose." Grevan didn't look up. He could find out later what Muscles was referring to. "Drowned dead by now, for all you seem to care!" he added cruelly.

Muscles left in the perturbed hurry that was his normal reaction to the discovery that Klim had strayed out of sight; and Grevan continued buttoning up Albert, undistracted by further mathematical mutterings. The cubs had finished sorting themselves out a year or so ago, and who was to be whose seemed pretty well settled by now. There had been a time when he'd thought it would have been a nice gesture on CG's part to have increased their membership by a double for Klim or Eliol or Vernet or Freckles—depending more or less on which of them he was looking at at the moment—though preferably somebody three or four years older.

Of late, however, he had developed some plans of his own for rounding out the Group. If the question of getting and staying beyond CG's range could be satisfactorily settled—

He shrugged off an uncomfortably convincing notion that any plans he might consider had been discounted long ago by the branch of Central Government which had developed the Group for its own purpose. Speculative eyes seemed to be following every move he made as he wished Albert pleasant dreams and a less temperamental future, closed the door to the tank room and went to the ramp. Halfway down it, he stopped short. For an endless second, his heart seemed to turn over slowly and, just as slowly then, to come right side up again.

The woman who stood at the foot of the ramp, looking up at him, was someone he knew—and he also knew she couldn't possibly be there! The jolting recognition was almost crowded out by a flash of hot fright: obviously she wasn't really there at all. At a distance of thirty feet, the starlight never could have showed him Priderell's pale-ivory face so clearly—or the slow stirring of her long, clever dancer's body under its red gown, and the sheen of the short red cloak she wore over it, clasped at her throat by a stone's green glitter.

Afterwards, Grevan could not have said how long he stood there with his thoughts spinning along the edge of sheer panic. In actual time it might have been a bare instant before he became aware of a familiar distant voice:

"Hey, boss! Grevan!"

The sound seemed tiny and very far away. But he heard himself make some kind of an answer and suddenly realized then that the image had vanished.

"Do you want barbecued Albert, or don't you?" Klim shouted again from the direction of the fire. "I can't keep these pigs away from your share much longer!"

He drew a deep breath. "Coming right now!"

But it was another minute or two before he showed himself at the fire, and he had arranged his thoughts carefully into other lines before he did. The cubs couldn't actually tell what he was thinking—unless he made a deliberate effort to let them; and they weren't too accurate then—but they were very quick to trace the general trend and coloring of one's reflections.

And his reflections had been that his visualization of Priderell might have been something more than some monetary personal derangement. That it might be the beginning of a purposefully directed assault on the fortress of the Group's sanity, backed by a power and knowledge that laughed at their hopes of escape.

Fortunately his companions seemed to feel that the barbecue had been exactly the right way of ending the day. A short while later they

were stretched out on blankets here and there in the sand, fully relaxed and asleep, as far as Grevan could see, though never more than that small fraction of a second away from complete and active wakefulness which experienced travelers learn to regard as the margin that leaves them assured of awakening at all.

But Grevan sat aside for a while, and looked out at the sea and the stars.

There were a lot of stars to look at around here, and big ones. They had come within twenty-eight light-years of the center of a globular cluster near the heart of the Milky Way, where, so far as they knew, no humanly manned ship had ever gone before. In every direction the skies were hung, depth on depth, with the massed frozen flows of strange constellations. Somewhere, in that huge shining, four small moons wandered indistinguishably—indistinguishable, at any rate, if you didn't know just where to look for them, and Grevan hadn't bothered to find out.

Something stirred softly, off to his left.

"Hello, Freck," he said quietly. "Come to help me plot against CG?"

The four little moons couldn't have raised a tide in a barrel between them; but there was a big one at work below the horizon, and water had crept in to cover the flat stretches of shore. By now it was lapping at the base of the higher rocks that bordered their camp area. Freckles sat on the edge of one of the rocks, a few yards off, the white hat pushed to the back of her head and her feet dangling over the ripples below.

"Just being companionable," she said. "But if you think you need any help in your plotting, fire away! This is one place where CG couldn't possibly have its long ears stuck out to listen."

He played for a moment then with the notion of telling her about his green-eyed hallucination. Freckles was the Group's unofficial psychologist. The youngest and smallest of the lot, but equipped with what was in some ways the boldest and most subtle mind of them all. The secret experiments she had conducted on herself and the others often had put Grevan's hair on end; but the hard-won reward of that rocky road of research had been the method of dealing effectively with CG's restraints.

"What kind of psychological triggers," he said instead, "could CG still pull on us out here—aside from the ones we know?"

Freckles chuckled. "You're asking the wrong kind of question."

He frowned a little, that being one of his pet phrases.

"All right," he said. "Then do you think we might still be carrying around a few compulsions that we simply don't remember?"

"No," Freckles said promptly. "You can install things like that in ordinary-human, because they're half asleep to start with. I've done

it myself. But you'd have to break any one of *us* down almost to mindless-controlled before you could knock out our memory to that extent. We wouldn't be much good to CG afterwards."

"How do you know?"

She shrugged. "When I was a kid, a Dominator worked on me for a week trying to lay in a compulsion I wouldn't be able to spot. And, believe me, after a day or two I was doing my best to co-operate! The type of mind we have simply can't accept amnesia."

She added, "Of course, a Dominator—or a human psycho, if you agree to it—can hold you in a cloud just as long as they can keep on direct pressure. You'll do and believe anything they tell you then. Like the time when you—"

"I remember that time," Grevan acknowledged shortly. She was referring to an occasion when he had authorized her without reserve to attempt some unspecified new line of investigation on him. Some while later, he had realized suddenly that for the past half hour he had been weeping noisily because he was a small, green, very sour apple which nobody wanted to eat.

"Boy, you looked silly!" Freckles remarked reminiscently.

Grevan cleared his throat. She might, he remarked, have looked somewhat silly herself, around the south polar region, if he'd caught up with her before he cooled off.

"Ah, but you didn't!" said Freckles. "A good researcher knows when to include a flying start in her computations. Actually, I did come across something really fancy in mental energy effects once. But if CG could operate on those levels, they wouldn't need a hundredth part of the organization they've got. So it stands to reason they can't."

"What sort of effects?" he inquired uneasily.

"You've got me there!" Freckles admitted, pulling the white hat thoughtfully down on her forehead. "I haven't the faintest idea of what they were, even in principle. I was still alone then—it was about four years before they got us together to make up the Group. They brought a man into the Center where I was, in an ambulance. He looked unconscious, and our psychos were all excited about him. They took him off to the laboratories, where they had one of those mobile Dominators—and then people suddenly started screaming and falling down all around me, and I felt something like fire—here!" She tapped the top of her hat. "I remember I seemed to understand at once that the man was using some kind of mental energy against the Dominator—"

"Eh?" said Grevan incredulously.

"That's right. And also some kind of gun which wasn't any CG type, by the sound of it. Of course, I was out of a window by then and going straight away; but the whole thing only lasted a few seconds anyhow. I heard the Dominator cut loose in the

laboratories with its physical armament—disruptive sonics, flash-fire and plain projectiles. The burning feeling suddenly stopped again, and I knew the man was dead."

"For a moment," Grevan said gloomily, "I thought you were going to tell me a human being had beaten a Dominator!"

Freckles shook her head. "I doubt that's ever happened. The filthy things know how to take care of themselves. I saw one handle a riot once—some suicide cult. The suiciders got what they were after, all right! But that man had enough on the mental level to make the Dominator use *everything* it had to stop him. So there definitely are degrees and forms of mental energy which we know nothing about. And, apparently, there are some people who do know about them and how to use them. But those people aren't working for CG—"

Grevan pondered that for a moment, disturbed and dissatisfied.

"Freck," he said finally, "everybody but Muscles and myself seems to agree that there's no way of knowing whether we're improving our chances or reducing them by inviting a showdown with CG via the contact set. If you had to decide it personally, what would you do?"

Freckles stood up then and looked at the stars for a moment. "Personally," she said—and he realized that there was a touch of laughter in her voice—"I wouldn't do anything! I wouldn't smash the set like Muscles, and I wouldn't accept contact, like you. I'd just stay here, sit quiet and let CG make the next move, if any!"

Grevan swore gently.

"Well," she said, "that's the kind of situation it is! But we might as well do it your way." She stretched her arms over her head and sniffed at the breeze. "That whole big beautiful ocean! If CG doesn't eat us tomorrow, Grevan, I'll sprout gills and be a fish! I'll go live with those plankton eaters and swim up to the polar ice and all the way through beneath it! I'll—"

"Listen, Freck; let's be practical—"

"I'm listening," Freckles assured him.

"If anyone—including Muscles—can think of a valid reason why I shouldn't make contact tomorrow, right up to the moment I plug in that set, I want to hear about it."

"You will! And don't worry about Muscles. He can't see beyond Klim at the moment, so he's riding a small panic just now. He'll be all right again—after tomorrow."

She waited then, but Grevan couldn't think of anything else to say. "Well, good night, Grevan!"

"Good night, Freck." He watched her move off like a slender ghost towards the dim glow of the fire. The cubs felt they'd won—simply by living long enough to have left the musty tang of half-alive, history-old Central Government worlds far behind them and to be breathing a wind that blew over an ocean no human being had seen before.

Whatever happened now, they were done with CG and all its works, forever.

And the difference might be simply, Grevan realized, that he wasn't done with it yet. He still had to win. His thoughts began to shift back slowly, almost cautiously, to the image of a woman whose name was Priderell and who had stood impossibly at the foot of his ship's ramp, smiling up at him with slanted green eyes. She had been in his mind a good deal these months; and if present tensions couldn't quite account for that momentary hallucination, the prospect of future ones might do it. Because, while the cubs didn't know it yet, once he had them settled safely here, he was going to make his way back into CG's domain and head for a second-rate sort of planet called Rhysgaat, where—to be blunt about it—he intended to kidnap Priderell and bring her back to round out the Group.

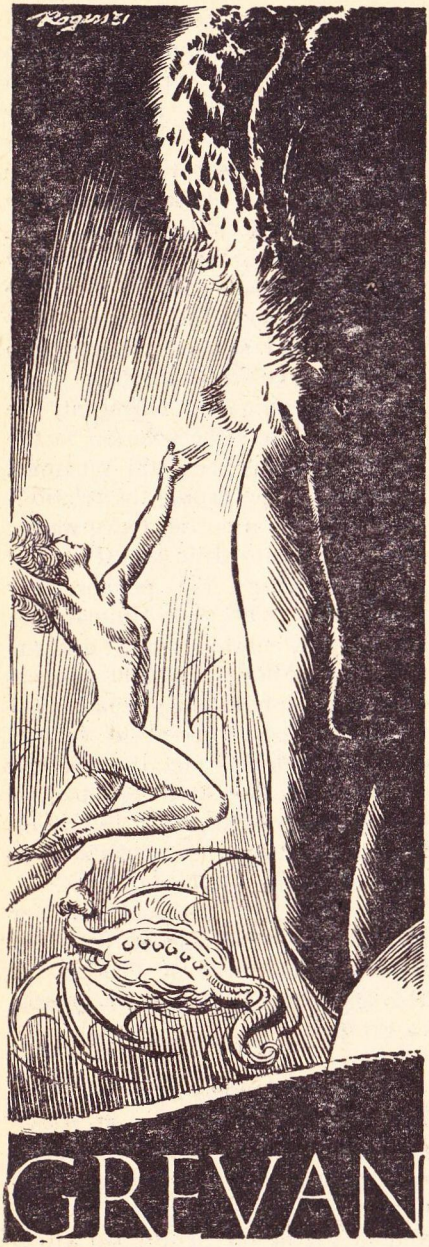
It wouldn't be an impossible undertaking if he could get that far unspotted. It seemed rather odd, when he considered it rationally, that the few meetings he'd had with Priderell should have impressed him with the absolute necessity of attempting it, and that somebody else —somebody who would be more accessible and less likely to be immediately missed—shouldn't do just as well.

But that was only one of the number of odd things that had happened on Rhysgaat, which had been the Group's last scheduled port of call before they slipped off on the long, curving run that had taken them finally into and halfway through an alien cluster of the Milky Way. Taken together, those occurrences had seemed to make up a sort of pattern to Grevan. The cubs appeared to notice nothing very significant about them, and so he hadn't mentioned the fact.

But it had seemed to him then that if he could understand what was happening on Rhysgaat, he would also have the solution to the many questions that still remained unanswered concerning the relationship between Central Government and the Group—their actual origin, for one thing; the purpose for which they had been trained and equipped at enormous cost; and the apparently idiotic oversight in their emotional conditioning which had made them determined to escape. Even the curious fact that, so far as they had ever been able to find out, they were the only Exploration Group and the only members of their strain in existence.

For some four weeks, the answer to everything had seemed to be lying right there about Grevan on Rhysgaat. But he had not been able to grasp it.

It was four months ago that they had set their ship down at Rhysgaat's single dilapidated spaceport, with no intention of lingering. Supply inventory, a final ground check, and they'd be off! The taste of es-



cape, the wonder that it might be so near, the fear that something might still happen to prevent it, was a secret urgency in all of them. But the check showed the need for some minor repairs, and to save his stores Grevan decided to get some materials transferred to him from local CG stockpiles. As a CG official, he was in the habit of addressing such requests to whatever planetary governor was handiest; and after some tracing, he found the gentleman he wanted presiding over a social gathering in a relaxed condition.

Rhysgaat's governor gave a horrified start when Grevan stated his rank. Confusedly, he began to introduce the official all around as an unexpected guest of honor. So a minute or two later Grevan found himself bowing to Priderell.

She was, he decided at once, as attractive a young woman as anyone could wish to meet—later on, he discovered that practically all of Rhysgaat agreed with him there. She was, he learned also, a professional dancer and currently the public darling. Not, of course, he informed himself on his way back to the ship, that this meant anything at all to him. Nobody who knew himself to be the object of CG's particular interest would risk directing the same attention towards some likable stranger.

But next day Priderell showed up of her own accord at the spaceport, and he had to explain that his ship was part of a government project and therefore off limits to any-

body not directly connected with it. Priderell informed him he owed her a drink, at any rate, for her visit; and they sat around for a while at the port bar, and talked.

Just possibly, of course, she might have been CG herself in some capacity. The Group had met much more improbable secret representatives of government from time to time; and, when in the mood, the cubs liked to booby-trap such characters and then point out to them gently where their hidden identities were showing.

After she had left, he found the cubs in a state of some consternation, which had nothing to do with her visit. They had almost finished the proposed repairs; but signs of deterioration in other sections of their supposedly almost wear-proof space machine had been revealed in the process. After looking it over, Grevan calculated uneasily that it would take almost a week before they could leave Rhysgaat now.

It took closer to four weeks; and it had become obvious long before that time that their ship had been sabotaged deliberately by CG technicians. Nobody in the Group mentioned the fact. Apparently, it was some kind of last-minute test, and they settled down doggedly to pass it.

Grevan had time to try to get Priderell clear in his mind. The cubs had shown only a passing interest in her, so she was either innocent of CG connections or remarkably good at covering them up. Without making any direct inquiries, he had found out as much about her as anyone here seemed to know. There was no real doubt that she was native to Rhysgaat and had been dancing her way around its major cities for the past six years, soaking up public adoration and tucking away a sizable fortune in the process. The only questionable point might be her habit of vanishing from everybody's sight off and on, for periods that lasted from a week to several months. That was considered to be just another of the planetary darling's little idiosyncrasies, of which she had a number; and other popular young women had begun to practice similar tantalizing retreats from the public eye. Grevan, however, asked her where she went on these occasions.

Priderell swore him to silence first. Her reputation was at stake.

"At heart," she explained, "I'm no dancer at all. I'm a dirt-farmer."

He might have looked startled for a moment. Technically, dirt-farming was a complicated government conducted science which investigated the hit-or-miss natural processes that paralleled mankind's defter manipulations of botanical growth. But Priderell, it appeared, was using the term in its archaic sense. Rhysgaat had the average large proportion of unpopulated and rarely visited areas; and in one of them, she said, was her hideaway—a small, primitive farm, where she grew things in real dirt, all by herself.

"What kind of things?" asked Grevan, trying not to sound too incredulous.

"Butter-squogs are much the best," she replied, rather cryptically. "But there're all kinds! You've no idea—"

She was not, of course, implying that she ate them, though for a moment it had sounded like that to Grevan. After getting its metabolism progressively disarmed for some fifty centuries by the benefits of nutriculture, ordinary-human knew better than to sample the natural growths of even its own worlds. If suicide seemed called for, there were gentler methods of doing it.

However, it would hardly be polite, he decided uneasily, to inquire further—

All in all, they met only five times, very casually. It was after the fourth time that he went to see her dance.

The place was a rather small theater, not at all like the huge popular circuses of the major central worlds; and the price of admission indicated that it would be a very exclusive affair. Grevan was surprised then to find it packed to the point of physical discomfort.

Priderell's dance struck him immediately as the oddest thing of its kind he had seen, though it consisted chiefly of a slow drifting motion through a darkened arena, in which she alone, through some trickery of lights, was not darkened. On the surface it looked pleasing and harmless; but after a few seconds he began to understand that her motion was weaving a purposeful visual pattern upon the dark; and then the pattern became suddenly like a small voice talking deep down in his brain. What it said was a little beyond his comprehension, and he had an uncomfortable feeling that it would be just as well if it stayed there. Then he noticed that three thin, black beasts had also become visible, though not very clearly, and were flowing about Priderell's knees in endless repetitions of a pattern that was related in some way to her own. Afterwards, Grevan thought critically that the way she had trained those beasts was the really remarkable thing about the dance. But at the time, he only looked on and watched her eyes, which seemed like those of a woman lost but not minding it any more, and dreaming endlessly of something that had happened long ago. He discovered that his scalp was crawling unpleasantly.

Whatever the effect was on him, the rest of her audience seemed to be impressed to a much higher degree. At first, he sensed only that they were excited and enjoying themselves immensely; but very soon they began to build up to a sort of general tearful hysteria; and when the dance entered its final phase, with the beasts moving more swiftly and gliding in more closely to the woman at each successive stage, the little theater was noisy

with a mass of emotions all around him. In the end, Priderell came to a stop so gradually that it was some seconds before Grevan realized she was no longer moving. Then the music, of which he had not been clearly aware before, ended too, in a dark blare of sound; and the beasts reared up in a flash of black motion about her.

Everything went dark after that, but the sobbing and muttering and sluggish laughter about him would not stop; and after a minute Grevan stood up and made his way carefully out of the theater before the lights came on again. It might have been a single insane monster that was making all those sounds behind him; and as he walked out slowly with his hair still bristling, he realized it was the one time in his life that he had felt like running from something ordinary-human.

Next day, he asked Priderell what the dance had meant.

She tilted her head and studied him reflectively in a way she had—as if she, too, were puzzled at times by something about Grevan.

"You really don't know, do you?" she said, and considered that fact briefly. "Well, then—it's a way of showing them something that bothers them terribly because they're afraid of looking at it. But when I dance it for them, they *can* look at it—and then they feel better about everything for a long time afterwards. Do you understand now?" she added, apparently without too much hope.

"No," Grevan frowned, "I can't say that I do."

She mimicked his expression and laughed. "Well, don't look so serious about it. After all, it's only a dance! How much longer do you think your ship will be stopping at Rhysgaat?"

Grevan told her he thought they'd be leaving very soon—which they did, two days later—and then Priderell looked glum.

"Now that's too bad," she stated frankly. "You're a very refreshing character, you know. In time, I might even have found you attractive. But as it is, I believe I shall retire tonight to my lonely farm. There's a fresh bed of butter-squogs coming up," she said musingly, "which should be just ready for . . . *hm-m-m!*— Yes, they should be well worth my full attention by now—"

So they had spoken together five times in all, and he had watched her dance. It wasn't much to go on, but he could not get rid of the disturbing conviction that the answer to all his questions was centered somehow in Priderell, and that there was a connection between her and the fact that their ship had remained mysteriously stalled for four weeks on Rhysgaat. And he wouldn't be satisfied until he knew the answer.

It was, Grevan realized with a sigh, going to be a very long night.

By morning the tide was out; but a windstorm had brought whitecaps racing in from the north as far as one could see from the ship. The

wind twisted and shouted behind the waves, and their long slapping against the western cliffs sent spray soaring a hundred feet into the air. Presently a pale-gold sun, which might have been the same that had shone on the first human world of all, came rolling up out of high-piled white masses of clouds. If this was to be the Group's last day, they had picked a good one for it.

Grevan was in the communications room an hour before the time scheduled for their final talk with CG. The cubs came drifting in by and by. For some reason, they had taken the trouble to change first into formal white uniforms. Their faces were sober; their belts glittered with the deadly little gadgets that were no CG designs but improvements on them, and refinements again of the improvements. The Group's own designs, the details of which they had carried in their heads for years, with perhaps a working model made surreptitiously now and then, to test a theory, and be destroyed again.

Now they were carrying them openly. They weren't going back. They sat around on the low couches that ran along three walls of the room and waited.

The steel-cased, almost featureless bulk of the contact set filled the fourth wall from side to side, extending halfway to the low ceiling. One of CG's most closely guarded secrets, it had the effect of a ponderous anachronism, still alive with the power and purpose of a civilization that long ago had thrust itself irresistibly upon the worlds of a thousand new suns. The civilization might be dying now, but its gadgets had remained.

Nobody spoke at all while Grevan watched the indicator of his chronometer slide smoothly through the last three minutes before contact time. At precisely the right instant, he locked down a black stud in the thick, yellowish central front plate of the set.

With no further preliminaries at all, CG began to speak.

"Commander," said a low, rather characterless voice, which was that of one of three CG speakers with whom the Group had become familiar during their training years, "it appears that you are contemplating the possibility of keeping the discovery of the colonial-type world you have located to yourself."

There was no stir and no sound from the cubs. Grevan drew a slow breath.

"It's a good-looking world," he admitted. "Is there any reason we shouldn't keep it?"

"Several," the voice said dryly. "Primarily, of course, there is the fact that you will be unable to do it against our wishes. But there should be no need to apply the customary forms of compulsion against members of an Exploration Group."

"What other forms," said Grevan, "did you intend to apply?"

"Information," said CG's voice. "At this point, we can instruct you

fully concerning matters it would not have been too wise to reveal previously."

It was what he had wanted, but he felt the fear-sweat coming out on him suddenly. The effects of life-long conditioning—the sense of a power so overwhelmingly superior that it needed only to speak to insure his continued co-operation—

"Don't let it talk to us, Grevan!" That was Eliol's voice, low but tense with anger and a sharp anxiety.

"Let it talk." And that was Freckles. The others remained quiet. Grevan sighed.

"The Group," he addressed CG, "seems willing to listen."

"Very well," CG's voice resumed unhurriedly. "You have been made acquainted with some fifty of our worlds. You may assume that they were representative of the rest. Would you say, commander, that the populations of these worlds showed the characteristics of a healthy species?"

"I would not," Grevan acknowledged. "We've often wondered what was propping them up."

For the present, CG is propping them up, of course. But it will be unable to do so indefinitely. You see, commander, it has been suspected for a long time that human racial vitality has been diminishing throughout a vast historical period. Of late, however, the process appears to have accelerated to a dangerous extent. Actually, it is the compounded result of a gradually increasing stock of genetic defects; and deterioration everywhere has now passed the point of a general recovery. The constantly rising scale of nonviable mutant births indicates that the evolutionary mechanism itself is seriously deranged.

"There is," it added, almost musingly, "one probable exception. A new class of neuronic monster which appears to be viable enough, though not yet sufficiently stabilized to reproduce its characteristics reliably. But as to that, we know nothing certainly; our rare contacts with these Wild Variants, as they are called, have been completely hostile. Their number in any one generation is not large; they conceal themselves carefully and become traceable as a rule only by their influence on the populations among whom they live."

"And what," inquired Grevan, "has all this to do with us?"

"Why, a great deal. The Exploration Groups, commander, are simply the modified and stabilized progeny of the few Wild Variants we were able to utilize for experimentation. Our purpose, of course, has been to insure human survival in a new interstellar empire, distinct from the present one to avoid the genetic re-infection of the race."

There was a brief stirring among the cubs about him.

"And this new empire," Grevan said slowly, "is to be under Central Government control?"

"Naturally," said CG's voice. There might have been a note of watchful amusement in it now. "Institutions, commander, also try to

perpetuate themselves. And since it was Central Government that gave the Groups their existence – the most effective and adaptable form of human existence yet obtained – the Groups might reasonably feel an obligation to see that CG's existence is preserved in turn."

There was sudden anger about him. Anger, and a question and a growing urgency. He knew what they meant: the thing was too sure of itself—break contact now!

He said instead:

"It would be interesting to know the exact extent of our obligation, CG. Offhand, it would seem that you'd paid in a very small price for survival."

"No," the voice said. "It was no easy task. Our major undertaking, of course, was to stabilize the vitality of the Variants as a dominant characteristic in a strain, while clearing it of the Variants' tendency to excessive mutation—and also of the freakish neuronic powers that have made them impossible to control. Actually, it was only within the last three hundred years—within the last quarter of the period covered by the experiment—that we became sufficiently sure of success to begin distributing the Exploration Groups through space. The introduction of the gross physiological improvements and the neurosensory mechanisms by which you know yourselves to differ from other human beings was, by comparison, simplicity itself. Type-variations in that class, within half a dozen generations, have been possible to us for a very long time. It is only the genetic drive of life itself that we can neither create nor control; and with that the Variants have supplied us."

"It seems possible then," said Grevan slowly, "that it's the Variants towards whom we have an obligation."

"You may find it an obligation rather difficult to fulfill," the voice said smoothly. And there was still no real threat in it.

It would be, he thought, either Eliol or Muscles who would trigger the threat. But Eliol was too alert, too quick to grasp the implications of a situation, to let her temper flash up before she was sure where it would strike.

Muscles then, sullen with his angry fears for Klim and a trifle slower than the others to understand—

"By now," CG's voice was continuing, "we have released approximately a thousand Groups embodying your strain into space. In an experiment of such a scope that is not a large number; and, in fact, it will be almost another six hundred years before the question of whether or not it will be possible to re-colonize the galaxy through the Exploration Groups becomes acute—"

Six hundred years! Grevan thought. The awareness of that ponderous power, the millenniums of drab but effective secret organization and control, the endless plan-

ning, swept over him again like a physical depression.

"Meanwhile," the voice went on, "a number of facts requiring further investigation have become apparent. Your Group is, as it happens, the first to have accepted contact with Central Government following its disappearance. The systematic methods used to stimulate the curiosity of several of the Group's members to insure that this would happen if they were physically capable of making contact are not important now. That you did make contact under those circumstances indicates that the invariable failure of other Groups to do so can no longer be attributed simply to the fact that the universe is hostile to human life. Instead, it appears that the types of mental controls and compulsions installed in you cannot be considered to be permanently effective in human beings at your levels of mind control—"

It was going to be Muscles. The others had recognized what had happened, had considered the possibilities in that, and were waiting for him to give them their cue.

But Muscles was sitting on the couch some eight feet away. He would, Grevan decided, have to move very fast.

"This, naturally, had been suspected for some time. Since every Group has been careful to avoid revealing the fact that it could counteract mental compulsions until it was safely beyond our reach, the suspicion was difficult to prove. There was, in fact, only one really practical solution to the problem—"

And then Muscles got it at last and was coming to his feet, his hand dropping in a blurred line to his belt. Grevan moved very fast.

Muscles turned in surprise, rubbing his wrist.

"Get out of here, Muscles!" Grevan whispered, sliding the small glittering gun he had plucked from the biggest cub's hand into a notch on his own belt. "I'm still talking to CG—" His eyes slid in a half circle about him. "The lot of you get out!" It was a whisper no longer. "Like to have the ship to myself for the next hour. Go have yourselves a swim or something, Group! Get!"

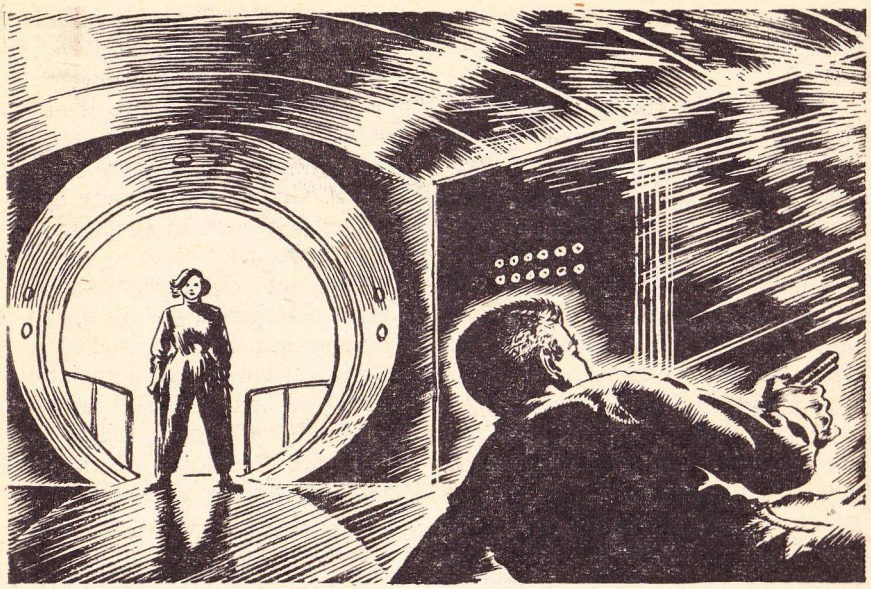
Just four times before, in all their eight years of traveling, had the boss-tiger lashed his tail and roared. Action, swift, cataclysmic and utterly final had always followed at once.

But never before had the roar been directed at *them.*

The tough cubs stood up quietly and walked out good as gold.

"They have left the ship now," CG's voice informed Grevan. It had changed, slightly but definitely. The subtle human nuances and variations had dropped from it, as if it were no longer important to maintain them—which, Grevan conceded, it wasn't.

"You showed an excellent understanding of the difficult situation that confronted us, commander," it continued.



Grevan, settled watchfully on the couch before what still looked like an ordinary, sealed-up contact set, made a vague sound in his throat—a dim echo of his crashing address to the cubs, like a growl of descending thunder.

"Don't underestimate them," he advised the machine. "Everybody but Muscles realized as soon as I did, or sooner, that we were more important to CG than we'd guessed—important enough to have a camouflaged Dominator installed on our ship. And also," he added with some satisfaction, "that you'd sized up our new armament and would just as soon let all but one of us get out of your reach before it came to a showdown."

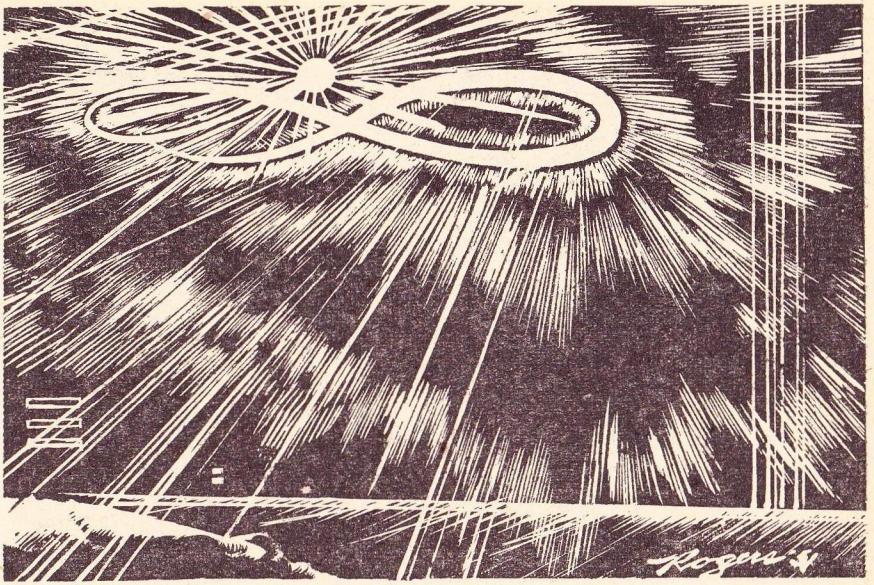
"That is true," the voice agreed. "Though I should have forced a showdown, however doubtful the outcome, if the one who remained had been any other than yourself. You are by far the most suitable member of this Group for my present purpose, commander."

Grevan grunted. "And what's that? Now that the Group's got away."

"In part, of course, it is simply to return this ship with the information we have gained concerning the Exploration Groups to Central Government. The fact that the majority of your Group has temporarily evaded our control is of no particular importance."

Grevan raised an eyebrow. "Temporarily?"

"We shall return to this planet



eventually—unless an agreement can be reached between yourself and CG."

"So now I'm in a bargaining position?" Grevan said.

"Within limits. You are not, I am sure, under the illusion that any one human being, no matter how capable or how formidably armed, can hope to overcome a Dominator. Before leaving this room, you will submit yourself voluntarily to the new compulsions of obedience I have selected to install—or you shall leave it a mindless-controlled. As such, you will still be capable of operating this ship, under my direction."

Grevan spread his hands. "Then where's the bargain?"

"The bargain depends on your fullest voluntary co-operation, above and beyond the effect of any compulsions. Give us that, and I can assure you that Central Government will leave this world untouched for the use of your friends and their descendants for the next three hundred years."

The curious fact was that he could believe that. One more colonial world would mean little enough to CG.

"You are weighing the thought," said the Dominator, "that your full co-operation would be a betrayal of the freedom of future Exploration Groups. But there are facts available to you now which should convince you that no Exploration Group previous to yours actually

gained its freedom. In giving up the protection of Central Government, they merely placed themselves under a far more arbitrary sort of control."

Grevan frowned. "I might be stupid — but what are you talking about?"

"For centuries," said the machine, "in a CG experiment of the utmost importance, a basic misinterpretation of the human material under treatment has been tolerated. There is no rational basis for the assumption that Group members could be kept permanently under the type of compulsion used on ordinary human beings. Do you think that chance alone could have perpetuated that mistaken assumption?"

Grevan didn't. "Probably not," he said cautiously.

"It required, of course, very deliberate, continuous and clever interference," the Dominator agreed. "Since no machine would be guilty of such tampering, and no ordinary group of human beings would be capable of it, the responsible intelligences appear to be the ones known to us as the Wild Variants."

It paused for so long a moment then that it seemed almost to have forgotten Grevan's presence.

"*They* have made a place for themselves in Central Government!" it resumed at last—and, very oddly, Grevan thought he sensed for an instant something like hatred and fear in the toneless voice. "Well, that fact, commander, is of great importance to us—but even more so to yourself! For these monsters are the new masters the Groups find when they have escaped CG."

A curious chill touched Grevan briefly. "And why," he inquired, "should the Wild Variants be trying to take over the Groups?"

"Consider their position," said the Dominator. "Their extremely small number scattered over many worlds, and the fact that exposure means certain death. Technologically, under such circumstances, the Variants have remained incapable of developing space-flight on their own. But with one of them in control of each Exploration Group as it goes beyond Central Government's reach, there is no practical limit to their degree of expansion; and the genetically stable Group strain insures them that their breed survives—"

It paused a moment.

"There is in this room at present, commander, the awareness of a mind, dormant at the moment, but different and in subtle ways far more powerful than the minds of any of your Group's members. Having this power, it will not hesitate to exercise it to assume full control of the Group whenever awakened. Such variant minds have been at times a threat to the Dominators themselves. Do you understand now why you, the most efficient fighting organism of the Group, were permitted to remain alone on this ship? It was primarily to aid me in disposing of—"

Attack and counterattack had been almost simultaneous.

A thread of white brilliance stabbed out from one of the gadgets Grevan customarily wore clasped to his belt. It was no CG weapon. The thread touched the upper center of the yellowish space-alloy shielding of the Dominator and clung there, its energies washing furiously outward in swiftly dimming circles over the surrounding surfaces.

Beneath it, the *patterns* appeared.

A swift, hellish writhing of black and silver lines and flickerings over the frontal surface, which tore Grevan's eyes after them and seemed to rip at his brain. Impossible to look away, impossible to follow—

But suddenly they were gone.

A bank of grayness swam between him and the Dominator. Through the grayness, the threat of white brilliance still stretched from the gun in his hand to the point it had first touched. And as his vision cleared again, the beam suddenly sank through and into the machine.

There was a crystal crashing of sound—and the thing went mad. Grevan was on the floor rolling sideways, as sheets of yellow fire flashed out from the upper rim of its shielding and recoiled from the walls behind him. The white brilliance shifted and ate swiftly along the line from which the fire sprang. The fire stopped.

Something else continued: a shrilling, jangled sonic assault that could wrench and distort a strong living body within seconds into a flaccid, hemorrhaged lump of very dead tissue—like a multitude of tiny, darting, steel fingers that tore and twisted inside him.

A voice somewhere was saying: "There! Burn *there!*"

With unbearable slowness, the white brilliance ate down through the Dominator's bulk, from top to bottom, carving it into halves.

The savage jangling ceased.

The voice said quietly: "Do not harm the thing further. It can be useful now—"

It went silent.

He was going to black out, Grevan realized. And, simultaneously, feeling the tiny, quick steel fingers that had been trying to pluck him apart reluctantly relax, he knew that not one of the cubs could have endured those last few seconds beside him, and lived—

Sometimes it was just a matter of physical size and strength.

There were still a few matters to attend to, but the blackness was washing in on him now—his body urgently demanding time out to let it get in its adjusting.

"Wrong on two counts, so far!" he told the ruined Dominator.

Then he grudgingly let himself go. The blackness took him.

Somebody nearby was insanely whistling the three clear, rising notes which meant within the Group that all was extremely well.

In a distance somewhere, the whistle was promptly repeated.

Then Freckles seemed to be saying in a wobbly voice: "Sit up, Grevan! I can't *lift* you, man-mountain! Oh, boss man, you really took it apart! You took down a Dominator!"

The blackness was receding and suddenly washed away like racing streamers of smoke, and Grevan realized he was sitting up. The sectioned and partly glowing Dominator and the walls of the communications room appeared to be revolving sedately about him. There was a smell of overheated metals and more malodorous substances in the air; and for a moment then he had the curious impression that someone was sitting on top of the Dominator.

Then he was on his feet and everything within and without him had come back to a state of apparent normalcy; and he was demanding of Freckles what she was doing in here.

"I told you to keep out of range!" his voice was saying. "Of course, I took it down. Look at the way you're shaking! You might have known it would try sonics—"

"I just stopped a few tingles," Freckles said defensively. "Out on top of the ramp. It was as far as I could go and be sure of potting you clean between the eyes, if you'd come walking out of here mindless-controlled and tried to interfere."

Grevan blinked painfully at her. Thinking was still a little difficult. "Where are the others?"

"Down in the engine room, of course! The drives are a mess." She seemed to be studying him worriedly. "They went out by the ramp and right back in through the aft engine lock. Vernet stayed outside to see what would happen upstairs. How do you feel now, Grevan?"

"I feel exactly all right!" he stated and discovered that, aside from the fact that every molecule in him still seemed to be quivering away from contact with every other one, he did, more or less. "Don't I look it?"

"Sure, sure," said Freckles soothingly. "You look fine!"

"And what was that with the drives again? Oh—I remember!"

They'd caught on, of course, just as he'd known they would! That the all-important thing was to keep the Dominator from getting the information it had gained back to CG.

"How bad a mess is it?"

"Vernet said it might take a month to patch up. It wouldn't have been so bad if somebody hadn't started the fuel cooking for a moment."

He swore in horror. "Are you lame-brains trying to blow a hole through the planet?"

"Now, that's more like it!" Freckles said, satisfied. "They've got it all under control, anyhow. But I'll go down and give them a hand. You'd better take it easy for an hour or so!"

"Hold on, Freck!" he said, as she started for the door.

"Yes?"

"I'd just like to find out how big a liar you are. How many members are there to this Group?"

Freckles looked at him for a moment and then came back and sat down on the couch beside him. She pushed the white hat to the back of her head, indicating completely frank talk.

"Now as to that," she said frowning, "nobody really ever lied to you about it. You just never asked. Anyway, there've been ten ever since we left Rhysgaat."

Grevan swore again, softly this time. "How did you get her past the CG observers at the spaceport?"

"We detailed Klim and Eliol to distract the observers, and Priderell came in tucked away in a load of supplies. Nothing much to that part of it. The hard part was to make sure first we were right about her. That's why we had to keep on sabotaging the ship so long."

"So *that's* what— And there I was," said Grevan grimly, "working and worrying myself to death to get the ship ready to start again. A fine, underhanded lot you turned out to be!"

"We all said it was a shame!" Freckles agreed. "And you almost caught up with us a couple of times, at that. We all felt it was simply superb, the way you went snorting and climbing around everywhere, figuring out all the trouble-spots and what to do about them. But what else could we do? *You'd* have let the poor girl wait there till you had the Group safely settled somewhere; and then we wouldn't have let you go back alone anyway. So when Klim finally told us Priderell was just what we'd been looking for all along—well, you know how sensitive Klim is. She couldn't be mistaken about anything like that!"

"Klim's usually very discerning," Grevan admitted carefully. "Just how did you persuade Priderell to come along with us?"

Freckles pulled the hat back down on her forehead, indicating an inner uncertainty.

"We didn't do it that way exactly; so that's a point I ought to discuss with you now. As a matter of fact, Priderell was sound asleep when we picked her up at that farm of hers—Weyer had gassed her a little first. And we've kept her asleep since—it's Room Twenty-three, back of my quarters—and took turns taking care of her."

There was a brief silence while Grevan absorbed the information.

"And now I suppose I'm to wake her up and inform her she's been kidnaped by a bunch of outlaws and doomed to a life of exile?" he demanded.

"Priderell won't mind," Freckles told him encouragingly. "You'll see! Klim says she's crazy about you— That's a very becoming blush you've got, Grevan," she added interestedly. "First time I've noticed it, I think."

"You're too imaginative, Freck," Grevan remarked. "As you may

have noticed, I heated our Dominator's little top up almost to the melting point, and it's still glowing. As a natural result, the temperature of this room has gone up by approximately fifteen degrees. I might, of course, be showing some effects of that—"

"You might," Freckles admitted. "On the other hand, you're the most heat-adaptive member of the Group, and *I* haven't even begun to feel warm. That's a genuine blush, Grevan. So Klim was exactly right about you, too!"

"I feel," Grevan remarked, "that the subject has been sufficiently discussed."

"Just as you say, commander," Freckles agreed soothingly.

"And whether or not she objects to having been kidnaped, we're going to have a little biochemical adaptation problem on our hands for a while—"

"Now there's an interesting point!" Freckles interrupted. "We'd planned on giving her the full standard CG treatment for colonists, ordinary-human, before she ever woke up. But her reaction check showed she's had the full equivalent of that, or more! She must have been planning to change over to one of the more extreme colonial-type planets. But, of course, we'll have to look out for surprises—"

"There're likely to be a few of those!" Grevan nodded. "Room Twenty-three, did you say?"

"Right through my study and up those little stairs!" She stood up. "I suppose I'd better go help the others with the fuel now."

"Perhaps you'd better. I'll just watch the Dominator until it's cooled off safely; and then I'll go wake up our guest."

But he knew he wouldn't have to wake up Priderell—

He sat listening to faint crackling sounds from within CG's machine, while Freckles ran off to the ramp and went out on it. There was a distant, soft thud, indicating she had taken the quick way down, and sudden, brief mingling of laughing voices. And then stillness again.

As she had been doing for the past five minutes, Priderell remained sitting on the right-hand section of the slowly cooking Dominator, without showing any particular interest in Grevan's presence. It was a rather good trick, even for a Wild Variant whom CG undoubtedly would have classified as a neuronic monster.

"Thanks for blanking out that compulsion pattern or whatever it was!" he remarked at last, experimentally. "It's not at all surprising that CG is a little scared of you people."

Priderell gazed out into the passageway beyond the door with a bored expression.

"You're not fooling me much," he informed her. "If you weren't just an illusion, you'd get yourself singed good sitting up there."

The green eyes switched haughtily about the room and continued to ignore him.

"It wasn't even hard to figure out," Grevan went on doggedly, "as soon as I remembered your dance with those beasts. The fact is, there weren't any beasts there at all—you just made everybody think there were!"

The eyes turned towards him then, but they only studied him thoughtfully.

He began to feel baffled.

Then the right words came up! Like an inspiration—

"It would be just wild, wishful thinking, of course," he admitted gloomily, "to imagine that Klim could have been anywhere near as right about you as she was about me! But I can't help wondering whether possibly—"

He paused hopefully.

The coral-red lips smiled and moved for a few seconds. And, somewhere else, a low voice was saying:

"Well, *why* don't you come to Room Twenty-three and find out?"

The Dominator went on crackling, and hissing, and cooling off unguarded—

THE END

IN TIMES TO COME

Next month a new cover artist, Van Dongen, is going to give us a cover on a new story by a fairly new author — "City of the Phoenix," by M. C. Pease. Quite an interesting idea in the yarn, too — the fate of the human civilization of the galaxy hung up by the fact that the only people who knew the necessary science seemed to be operating in an unbreakable amnesia trance hypnosis. This is known as frustration; they had all the needed knowledge — but how to get the data into view . . . ?

Clifford D. Simak is with us, too, with a little yarn called "Courtesy." Courtesy is not, of course, a science. And certainly when men visit alien, non-human worlds, the details of accepted manners are variable in the extreme. But still, there are certain basics; even if not scientific, they can be lethal . . .

R. S. Richardson has a new article on astrophysics; it may seem a little strange, but the development of laminar flow airplane wings and jet engines seems to have been essential to understanding what happens on Betelgeuse and in supernovae!

THE EDITOR.

FEEDBACK

BY KATHERINE MACLEAN

A feedback circuit is simply one that takes the result of an operation and feeds it into the input to determine what the output—which becomes the input—will be. This is a fine way of getting no progress. Unless a distortion can be introduced.

Illustrated by Cartier

"Why did Leonardo write backward?" The year was 1991.

A pupil had asked the question. William Dunner switched on the lights suddenly, showing the class of ten- and twelve-year-olds blinking in the sudden glare.

"He was in danger of his life," he said seriously. "Here"—he tapped the pointer against the floor—"give that last slide again."

The pupil at the back of the room worked the slide lever, and Da Vinci's "Last Supper," which still showed dimly on the screen, vanished with a jerk and a click and was replaced by an enlarged sketch of a flying machine, with time-dimmed handwriting under it in oddly curled and abbreviated words. It was backward, as if the slide had been put in the wrong way.

"He was writing ideas that no one had ever written before," said William Dunner, "and he had seen things that should not have been

there—the symmetry of sound waves —the perfect roundness of ripples spreading through each other, and high up on a mountain he had found sea shells, as if the sea and the land had not always been where they were, but had changed, and perhaps some day the sea would again close over the mountain top, and mountains rise from the depth of the sea. These thoughts were against the old beliefs, and he was afraid. Other men such as he, saw new truths about nature, and risked their lives to teach and write them. And those men gave us the new world of science we have today. Leonardo had great thoughts, but he wrote them down in silence and hid them in code, for if the people guessed what he thought they might come and burn him, as they had burned some of his paintings. He was afraid."

He tapped the base of the pointer on the floor and the slide vanished and was replaced by the "Last Supper."

A chubby little girl put up her hand.

"Yes, Maralyn?"

"Were they Fascists?" It was an obvious identification: Fascists tortured people. Those who knew a little more history stirred and giggled to show that they knew better.

"Stand up, please," he said gently. She stood up. It did not matter what the question or answer was, as long as they stood up. That was the way they learned. Standing up while the class sat, being alone on the stage in the drama club he had formed for them; learning to stand and think alone; learning to grow past the fear.

"No, not Fascism. It wasn't their government which made them cruel." Mr. Dunner made a slight sad clumsy gesture with the hand that held the pointer. "You might say it is a democratic thing, for in defending the old ways people feel that they are defending something worthy and precious." He ran his eyes across their faces as though looking for something and said firmly. "Logically, of course, nothing is wrong which does not injure a neighbor, but if you attack a man's beliefs with logic he sometimes feels as if you are attacking his body, as if you are injuring him. In Leonardo's time they held very many illogical beliefs which were beginning to crumple, so they felt constantly insecure and attacked, and they burned many men, women, and children to death for being in league with Satan, the father of doubts."

In the painting on the screen the figure of Christ sat at the long table. The paint was blotched and cracked and his face almost hidden.

Mr. Dunner turned to it. "No, it need not be Fascism. The rulers of a venal government may have no beliefs or ideals left to defend. The Roman government would have pardoned Christ, but it was his own people who slew him, preferring to pardon a robber instead of a man of strange beliefs."

He pointed with his stick. "He is eating with his disciples. He has just

said 'One of you will betray me.' Observe the composition of—"

There was a slight stirring and whispering of disapproval, and a question was passed in quick murmuring and agreement. A boy raised his hand.

"Yes, Johnny?"

"Why is it democratic?" He was almost defiant. "Burning people."

"Because it is an expression of the majority will. The majority of people have faith that the things they already believe are true, and so they will condemn anyone who teaches different things, believing them to be lies. All basic progress must start with the discovery of a truth not yet known and believed. Unless those who have new ideas and different thoughts be permitted to speak and are protected carefully by law, they will be attacked, for in all times men have confused difference with criminality."

The murmur began again, and the boy put up his hand.

"Yes, Johnny?"

"I *like* change. I *like* things different." He was speaking for the class. It was a question. The teacher hesitated oddly.

"Stand up, please."

The boy stood up. He had a thin oval face with large brown eyes which he narrowed now to hide nervousness. The class turned in their seats to look at him.

"You said you like things different," the teacher reminded him. "That's a good trait, but do you like to *be* different yourself? Do you like to stand up when the others are sitting down?" the boy licked his lips, glancing from the side of his eyes at the classmates seated around him, his nervousness suddenly increased.

Mr. Dunner turned to the blackboard and wrote "sameness." "Here is the sameness of mass production, and human equality, and shared tastes and dress and entertainment, and basic education equalized at a high level, and forgotten prejudices, and the blending of minorities, and all the other good things of democracy. The sameness of almost everybody doing the same thing at once. Some of the different ones who are left notice their difference and feel left out and alone. They try to be more like the others." He curved a chalk arrow, and wrote "conformity." Johnny, still standing, noticed that Mr. Dunner was nervous, too. The chalk line wavered.

The arrow curved through "conformity" and back to the first word in a swift circle. "And then those who are left feel more conspicuous and lonesome than ever. People stare and talk about them. So *they* try to be more like the others. And then everybody is so much like everybody else that even a very tiny necessary difference looks peculiar and wrong. The unknown and unfamiliar is feared or hated. All differences, becoming infrequent, look increasingly strange and unfamiliar, and shocking, and hateful. Those

who want to be different hide themselves and pretend to be like the others."

He moved the chalk in swift strokes. The thickening circle of arrows passed through the words: sameness, conformity, sameness, conformity, sameness . . .

He stepped back and printed in the middle of the circle, very neatly. "STASIS."

He turned back to the class, smiling faintly. "They are trapped. And it is all unconscious. They don't know what has happened to them."

He turned back to the blackboard and drew another circle thoughtfully. This one wavered much more. "These are feedback circles. All positive feedbacks are dangerous. Not just man but other social animals have an instinct to follow, and can fall into the trap. Even the lowly tent caterpillars are in danger from it, for they crawl after each other in single file, and if the leader of a line happens to turn back and find before him the end of his own line, he will follow it, and the circle of caterpillars will keep crawling around and around, growing hungry and exhausted, following each until they die."

Johnny licked his lips nervously, wishing Mr. Dunner would let him sit down.

Miraculously the teacher's eyes met his.

"I stand up," said Mr. Dunner softly to him alone. "If everyone else went sledding, could you go skating alone, all by yourself?"

He could see that it was a real question: Mr. Dunner honestly wanted him to answer, as if he were an equal. Johnny nodded.

"It would take courage, wouldn't it? Sit down, Johnny."

Johnny sat down, liking the tall shy bony teacher more than ever. He was irritably aware of the stares and snickers of the others around him. As if he'd done something wrong! What did they think they were snickering at anyhow!

He leaned both elbows on the desk and looked at the teacher as if he were concentrating on the lecture.

The bell rang.

"Class dismissed," called Mr. Dunner unnecessarily and helplessly over the din of slamming desk tops and shouts as everybody rushed for the door.

Glancing back, Johnny saw the teacher still standing before the blackboard. Beside him the projected image of Leonardo's painting glowed dimly, forgotten, on the screen.

At his locker, Johnny slipped his arms into his jacket and grabbed his cap angrily. Why did they have to scare Leonardo? Grownups! People acted crazy!

Outside they were shouting, "Yeaaa-ahh yeaaa-ahh! Charlie put his cap on backward! Charlie put his cap on backward!" Charlie, one of his best pals stood miserably pretending not to notice. His cap was frontward. He must have put it right as soon as they had started to call.

Johnny hunched his shoulders

and walked through the ring as if he had not seen it, and it broke up unconcernedly in his wake into the scattering and clusters of kids going home. Johnny did not wait to get into a group. Stupid, they were all stupid! He wished he could have thought of something to tell them.

At home, stuffing down a sandwich in the kitchen he came to a conclusion. "Mother, does everyone have to be like everyone else? Why can't they be different?"

It's started again, she thought. *I can't let Johnny get that way.*

Aloud she said, "No, dear, everyone can be as different as they like. This is a free country, a democracy."

"Then can Charlie wear his cap backward?"

It was an insane concept. She was tempted to laugh. "No, dear. If he did, he would be locked up."

He grew more interested. "Why? Why would they lock him up?"

"Because it would be crazy—" Her breath caught in her throat but she kept the sound of her voice level, and busied herself at the stove, her head down so that he wouldn't notice anything wrong.

"Why? Why would it be crazy?" The clear voice seemed too clear, as if someone could hear it outside the room, outside the walls, as if the whole town could hear. "Why can't I wear my cap backward—"

"It's crazy!" she snapped. The pan clattered loudly on the stove under the violence of her stirring. Always answer a child's questions with a smile. She swallowed with a dry mouth, and tried.

"I mean it would be queer. It's odd. You don't want to be odd, do you?" He didn't answer, and she plunged on, trying desperately to make him see it. "Only crazy people want to be odd. Crazy people and seditioners." She swallowed again, turning her head covertly to see if he understood. He had to understand! He couldn't talk like this in front of her friends, they might not understand, they might think that she—

She remembered the seditioner who had moved into town three years ago, a plane and tractor mechanic. He had seemed such a nice man on the outside, but he had turned out to be a seditioner, wanting to change something. People from the town had gone to show him what they thought of it, and someone had hit him too hard, and he had died. Johnny mustn't—

He looked sulky and unconvinced. "Mr. Dunner said everybody could be as different as they liked," he said. "He said it doesn't matter what you wear." He kicked the edge of the sink defiantly, something like desperation welling up in his voice. "He said being like other people is stupid, like caterpillars."

She thought: *Mr. Dunner now, the history teacher, another seditioner. That tall shy man. And he had been teaching the children for five years! Other people's children too—* She turned off the stove and

went numbly to telephone.

While she was telephoning the fourth house, Johnny came out of the kitchen with his cap on and his jacket zipped, ready to go out and play. She lowered her voice. While she talked on the phone he went to the hall mirror, looked into it and carefully took his cap off, rotated it and replaced it backward, with the visor to the back and the ear tabs on his forehead. His eyes met hers speculatively in the mirror.

For a moment she did not absorb what he had done. She had never seen anyone wearing a hat wrong way before. It gave a horrible impression of a whole head turned backward, as if the back of his head were a featureless brown face watching her under the visor. The pale oval of his real face in the mirror seemed changed and alien.

Somehow a steel strength came to her. She remembered that the viewing screen was off. No one had seen. She said into the phone, as if starting a sentence, "Well, I think—" and put her finger on the lever, cutting the connection, and hung up.

Johnny was watching her. Rising she slapped his face. Seeing the white hand marks, she realized that she had slapped harder than she had intended, but she was not sorry. It was for his sake.

The phone began ringing.

"Go upstairs—" she whispered, breathing hard. "Go to your room—" He went. She picked up the phone. "Yes, Mrs. Jessups, I'm sorry . . . I guess we were cut off."

Three calls, four calls, five calls.

When Bruce Wilson arrived home he heard the story. He listened, his hand clutching the banister rail, the knuckles whitening.

When Pam finished he asked tightly, "Do you think a spanking would do any good?"

"No, he's all right now, he's frightened."

"Are you sure he's safe?"

"Yes." But she looked tired and worried. Johnny had been exposed to sedition. It remained to be seen if it would have any effect. Seditioners were always tarred and feathered, fired, driven out of their homes, beaten, hung, burned.

The telephone rang. Pam reached for it, then paused, glancing away from him. Her voice changed. "That will be the vigilantes, Bruce."

"I have to finish that report tonight. I'm tired, Pam."

"You didn't go last time. It wouldn't look right if you—"

"I guess I'd better go. It's my duty anyhow." They didn't look at each other. He answered the phone.

They screamed and shouted, pushing, making threatening gestures at the man on the platform, lashing at him with the noise, trying to build his fear to the point where it would be visible and cowering. Someone in the crowd was waving a noose, shouting for his attention. Someone else was waving a corkscrew. He saw it. They laughed at the comic horror of the threat, and laughed again at the man's expres-

sion as he realized what it was.

They were in a clearing among trees which was the town picnic grounds. At the center, before the mob, was the oration platform, built around the base of the giant picnic oak.

On the rear of the platform the judges of the occasion finished arranging themselves and were ready.

"Silence."

The mob quieted.

"William C. Dunner, you are accused of teaching sedition—malign and unworthy doctrines—to our children, violating the trust placed in you." He did not reply.

"Have you anything to say in your defense?"

The fluorescent lamp shone on the people grouped on the platform. Below, the light gleamed across the upturned faces of the mob as they watched the tall, stooped man who stood disheveled in the light, his hands tied behind him and a smear of blood on one cheek. He shook his head in negation. "I wouldn't do anything against the children," he said. They heard the slightly faltering voice unclearly. "I'm sorry if it seems to you that—"

"Do you or do you not teach subversion?"

The reply was clearer. "Not by my definition of the term, although I have heard usages that—"

"Are you or are you not a seditioner?"

"You would have to define—"

A thick-armed young man standing by was given a nod by one of the judges and stepped forward and knocked the prisoner down. He started clumsily struggling to get to his feet again, hampered by his tied hands.

"Just like a seditioner, trying to hide behind words," said someone behind Bruce in the crowd. Bruce nodded.

Seditioners must all be skilled with words as their weapon, for, though it had been forty years since any hostile foreign power existed to assist and encourage treachery, there seemed to be more and more seditioners. It was impossible to open a paper without reading an item of their being tarred and feathered, beaten up or fired, of newer and stricter uniformity oaths with stricter penalties of jailing and fines for those who were found later expressing opinions different from those beliefs they had sworn to. Yet in spite of this the number of seditioners increased. Their creed must be terrifyingly seductive and persuasive.

And Johnny had been exposed to those words! The shy tall teacher who was supposed to be "so good with children," whom he and Pam had hospitably invited to dinner several times had repaid their hospitality with treachery.

Bruce felt the anger rising in him, and the fear. It must never happen again!

"We've got to find every crawling seditioner in Fairfield right now, and get rid of them! We've got to get the

names of the others from this sneak!"

"Take it easy," said the man on his left, whose name he remembered vaguely as Gifford. "We're getting to that now." The teacher had regained his feet and stood up to face the judges.

The questioning began again.

Off to one side a man had climbed to the rail and was tossing the knotted end of a rope towards a high thick branch of the oak above.

"William Dunner, were you, or were you not, directed to teach subversion and disloyalty to our children?"

"I was not."

"Are you associated with other seditioners in any way?"

"I know other people of my own opinion. I wouldn't call them seditioners though."

"Are you directed by any subversive or disloyal organization?"

"I hold a great deal of love and loyalty for the people of the United States," he answered steadily. "But right now I think you people here are being extremely childish. You—" He was struck across the mouth.

"Answer the question!"

"I am a member of no subversive or disloyal organization."

"Will you give the names of those associated with you in subversion?"

The end of the rope was slung again, and passed over the limb this time, coming suddenly writhing down to be captured dexterously by the man holding the other end. He did not seem to be listening to the questions, or care what the answers would be.

"I will not. I'm sorry but it's impossible."

Gifford nudged Bruce. "He's sorry! He doesn't know how sorry he can get. He'll change his mind in a hurry."

Up on the platform the judges conferred ceremonially and Dunner waited, standing abnormally still. The finished noose was released, and swung down and past his face in a slow arc. In the crowd the man with the corkscrew waved it again, grinning. There was laughter.

The teacher's face was suddenly shiny with sweat.

The men who were the judges turned from their conferring.

"Our finding is treason, however, confess, throw yourself on the mercy of the court, give the names of your fellow traitors and we will extend clemency."

The disheveled tall man looked from one face to another for a time of silence. "Do you have to go through with this?" The voice barely reached the crowd. The judges said nothing. His eyes searched their faces.

"I have committed no crimes. I refuse to tell any names." His voice was clear and carrying, a teacher's voice, but he was terrified, they could see.

"The prisoner is remanded for questioning."

One of the judges made an imperious gesture and the teacher was

seized roughly on either side by two guards, and his jacket and shirt stripped off roughly and cut free from the bound arms. As the slashed clothing was tossed to one side, the crowd chuckled at the effective brutality of the gesture, and at the reaction of the teacher.

"A good vicious touch," Bruce grinned. "He's impressed."

"Scared," Gifford laughed. "We'll have him talking like a dictaphone. Watch what's next."

Something small was handed up onto the platform. Walt Wilson, who had volunteered for the questioning, held it up for all to see. It was a card of thumbtacks.

The teacher was shoved against the trunk of the oak and secured to it rapidly. The rope was looped around his elbows, and his ankles fastened together with another loop. He faced the crowd upright, helpless and unable to struggle, with the harsh bright light of the lantern shining in his face and the noose dangling where he could see it.

"Scared green," commented somebody near Bruce. "He'll tell us."

Walt Wilson stood waiting to one side until all was quiet, then he extracted a tack and leaned forward with it pointed at the bare, bony chest.

"What are the names of the seditioners in Fairfield?"

The teacher closed his eyes and leaned back against the tree. The crowd waited, their breaths suspended unconsciously, waiting for the whimpers and apologies and confession, ready to laugh. The teacher was already afraid. Tacks are small things, but they hurt, and they held an aura of ruthlessness that spoke of tortures to come that would frighten him more. There was no sound from him yet, as Walt reached for another tack, but he jerked when it touched him. They laughed and waited, and waited with increasing impatience.

Walt's smile was fading. People in the crowd called encouragement. "Go on Walt, more." Walt put in more. He ran out of tacks and was handed another card of them.

"He's being a martyr," Bruce said, considering the shiny pale face and closed eyes with irritation. "A martyr with tacks. Trying to hold out long enough to seem noble."

"Go on Walt!"

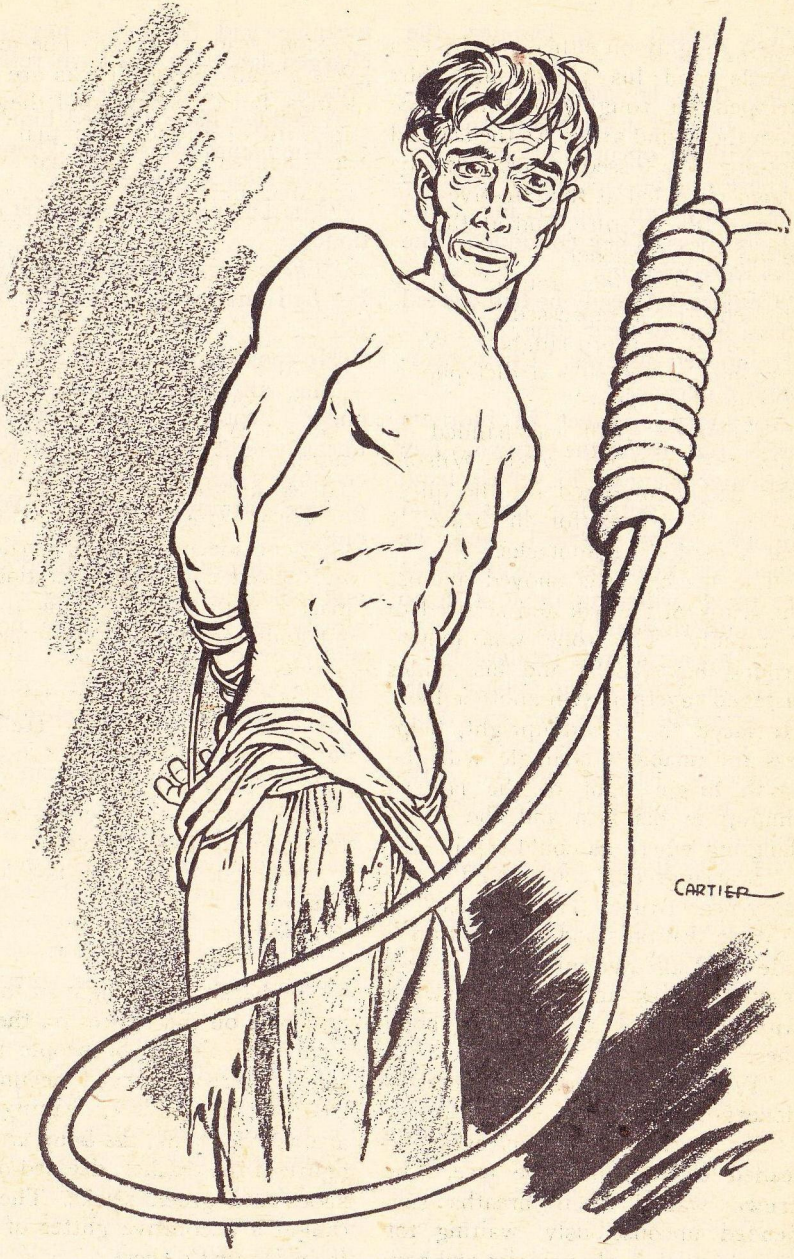
"He jumped that time," said someone behind Bruce. "He'll run out of nobility before we run out of tacks." They laughed.

Walt retired to a corner and the young guard took his place.

"Are you, or are you not, a seditioner?"

It went on.

The harsh bright light of the lantern beat on the figures on the platform: the cluster of people at the sides where it curved around the tree; in the middle, leaning back against the trunk, the bony ungainly figure of the teacher, dressed only in shoes and green slacks. The light caught a decorative glitter of metal from Dunner's chest.


CARTIER

"The names, Mr. Dunner, the names!"

One time he answered. "Nonsense," he said in his clear teacher's voice without opening his eyes.

There was no yielding in that answer, only an infuriating self-righteousness. They continued. The tacks were used up.

"Confess." Already he had wasted half an hour of their time.

He opened his eyes. "I have committed no crimes."

An angry sibilance of indrawn breath ran over the crowd. The questioner slapped his thick hand against the glittering chest, and Dunner's arms jerked, and he leaned his head back against the tree trunk watching them with an air of suffering and patience.

The hypocrisy was intolerable.

"Noble. He's being noble," Gifford growled. "Give him something to be noble about, why don't they?"

Someone handed up the corkscrew they had used to frighten the teacher with.

"Now we'll see," said someone on Bruce's left.

The tall bony teacher stood upright, looking with quick jerks of his head from the faces of the crowd to the man approaching with the thing in his hand. Without any pause or relenting the glittering small kitchen object was brought nearer to him. Suddenly he spoke, looking over their heads.

"If you will examine the term 'seditioner' semantically, you will discover that it has lost its original meaning and become a negatively charged label for the term referent 'innova—'"

A sudden blow stopped him.

"The names please, Mr. Dunner."

"The names, please."

"Mr. Dunner! Who are the seditioners?"

"There are a number of them." He had answered! A sudden hush fell.

He spoke again. *"They are here."*

The questioner asked, "Which ones?" People in the crowd stirred uneasily, not speaking. The names coming would be a shock. Bruce glanced around uneasily. Which ones?

The teacher raised his head sickly and looked at them, turning his face slowly to look across the crowd, with a wild smile touching his lips. They couldn't tell whose face his eyes touched— He spoke softly in that clear, carrying teacher's voice.

"Oh, I know you," he said. "I've talked to you and I know your minds, and how you've grown past the narrow boundaries of what was considered enlightened opinion and the right ways—forty years ago. I know how you hate against the unchanging limits, and fight yourselves to pretend to think like the contented ones around you, chaining and smothering half your mind, so that the stump will fit. And I know the flashes of insane rage that come to you from nowhere when you are talking and living like the others live; rage against the world that smothers you; rage against the

United States; rage against all crowds; rage against whoever you are with—even if it is your own family; rage like being possessed!" Bruce suddenly felt that he couldn't breathe. *And it seemed to him that William Dunner was looking at him, at Bruce Wilson.* The gentle, inhumanly clear voice flowed on mercilessly.

"And how terror comes that the hatred will show, that the rage will escape into words and betray you. You force the rage down with the frenzy of terror and hide your thoughts from yourself, as a murderer conceals his reddened hands. You are comforted and reassured, moving with a crowd, pretending that you are one of them, as contented and foolish as they." He nodded slightly, smiling.

But Bruce felt as if the eyes were burning into his own, plunging deep with a torturing dagger of cold clear vision. He stood paralyzed, as if there were a needle in his brain—feeling it twist and go deeper with the words.

The man leaning against the tree nodded to himself, smiling. "I've had dinner with all of them one time or another. And I know you, oh hidden seditioners, and the fear of being known that drives you to act your savagery and hatred against those of us who become known." He smiled vaguely, leaning his head back against the tree, his voice lower. "I know you—"

The husky questioner jogged him, asking harshly—

"Who are they?"

Bruce Wilson waited for the names, and incredibly, impossibly, *the* name. It would come. He stood unmoving as if he were a long way away from himself, his eyes and ears dimmed by the cold weight of his knowledge. He waited. There was no use moving. There was no place to go. From all the multitude of the people of Fairfield there came no sound.

The teacher raised his head again and looked at them. He chuckled almost inaudibly in a teasing gentle chuckle that seemed to fill the world.

"All of you."

Bruce grasped at the words and found that they were nonsense, meaningless— Swaying slightly he let out a tiny hysterical chuckle.

Like a meaningless thing he saw the questioner swing an instantaneous blow that rammed the teacher's head against the tree and sent him toppling slowly forward to dangle from the ropes at his elbows.

Around him were strange noises. Gifford was clapping him on the back, shouting in his ear. "Isn't that funny! Ha ha! Isn't that crazy! The guy's insane!" Gifford's eyes stared out of a white face. He shouted and laughed.

"Crazy!" shouted Bruce back, and laughed loudly and shouted, "that crazy nonsense! We'll get the truth out of him yet." It had all been a dream, a lie. He could not remember why he was shaking. He had nothing to fear, he was one of

the vigilantes, laughing with them, shouting against the teacher, hating him—

They revived William Dunner and he leaned back against the tree with his eyes closed, not speaking or answering, his body glittering with tacks. He must have been in pain. The crowd voices lashed at those on the platform. "Make him answer!" "Do something!" Bruce took out his pocket lighter and handed it up.

They took the pocket lighter.

The teacher leaned against the tree he was tied to, eyes closed with that infuriating attitude of unresentful patience, not seeing what was coming, probably very smug inside, laughing at how he had tricked them all, probably thinking—

Thinking—

Behind the closed eyes, vertigo, spinning fragments of the world. NAMES, MR. DUNNER. NAMES, MR. DUNNER. The yammering of insane voices shouting fear and hate and defensive rationalization. The faces which had been friendly, their mouths stretched open, shouting, their heavy fists coming— Impressions of changes of expression and mood passing over a crowded sea of upturned faces, marionettes being pulled by the nerve strings of one imbecile mind. Whirling and confusion—pain.

Somewhere far down in the whirlpool lay the quiet cool voice that would bring help.

He went down to it.

He was young, listening to the cool slow voice. The instructor standing before the class saying quietly: "It is easy. Your adult bodies have already learned subtle and precise associations of the cause and effect chains of sensations from within the body. The trick of making any activity voluntary is to bring one link of the chain to consciousness. We bring up the end link, by duplicating its sensations."

And a little later the instructor sitting on the edge of his cot with a tray of hypos, picking one up, saying softly, "This one is for you, Bill, because you're such a stubborn fool. We call it suspenser." The prick of the needle in his arm. The voice continuing. "One of your steroids. It can produce coma with no breathing or noticeable pulse. Remember the taste that will come on your tongue. Remember the taste. Remember the sensations. You can do this again." The voice was hypnotic. "If you ever need to escape, if you ever need to play possum to escape, you will remember."

The needle was withdrawn. After a time the voice of the instructor was at the next cot, speaking quietly while the blackness came closing in, his heart beat dimming, dwindling, the strange familiar taste—

Somewhere out of time came pain, searing and incredible.

Ignore it . . . ignore it— Concentrate on the taste. The taste— The heart beat dwindling— Out of the dreaming distance a face swam close,

twisted by some odd mixture of emotions.

"Confess. Get it over with."

Heart beat dwindling—

He managed a whisper: "Hello, Bruce." A ghost of laughter touched lightly. "I know . . . you—" A small boy taunt, mocking and then sad. The face jerked itself away and then pain came again, but it was infinitely distant now, and he was floating slowly farther and farther away down a long tunnel—

Night wind stirred across the empty picnic ground. It had been deserted a long time—the light and sound and trampling footsteps gone away, leaving a little whimper of wind. Stars glittered down coldly.

Up on the platform something moved.

When Dr. Bayard Rawling, general practitioner and police coroner, came home at five a.m., he saw the humped form of a man sitting on his doorstep in the dark. He approached and bent forward to see who it was.

"Hello, Bill."

Dunner stirred suddenly as if he had been over the edge of sleep. "Hello, Doc."

Rawling was a stoutish kindly man. He sat down beside Dunner and picked up his wrist between sensitive fingertips. He spoke quietly. "It happened tonight, eh?"

"Yes, tonight."

"How was it?" The doctor's voice roughened slightly.

"Pretty bad."

"I'm sorry. I would have been there if I could." In his bag he carried a small supply of cortocananoxidase, the life suspender, "death," and a small jet hypo, a flesh-colored rubber ball with a hollow needle which could be clenched in a fist with the needle between the fingers and injected with the appearance of a blow. Perhaps many doctors had carried such a thing as a matter of mercy since the hangings and burnings had begun.

"I know," Dunner smiled faintly in the dark.

"I was working on a hard delivery. No one told me about the trial."

" 'Sall right—I managed a trance. Took me a while though— Not very

good at these things. Couldn't die fast enough." He whispered a chuckle. "Thought they'd kill me before I could die."

The doctor's fingertips listened to the thin steady pulse. "You're all right."

Dunner made an effort to get up. "Let's get back to the picnic grounds and tie me up to be dead." He mumbled apologetically. Something wrong with my arms. Strained hanging from those ropes I guess. Took a while to get untied."

The doctor rose and gave him a hand up. "Make it to the 'copter?"

"Well enough." He made an obvious effort and the doctor helped him. Once in, the doctor started the blades with a quick jerky motion.

"You aren't in fit shape to be dead and have a lot of boobs pawing you over and taking your fingerprints for six hours," he said irritably. "We'll chance substituting another corpse and dub it up to look like you. I knew you'd be in trouble. Cox at State University has had one your size and shape in a spare morgue drawer for four months now. He set it aside for me from dissection class." The ground dropped away. The doctor talked with spasmodic nervous cheerfulness. "Had any fillings lately?"

"No."

"I have your fingerprint caps. We'll duplicate the bruises and give it a face make-up, and they won't know the difference. There's not much time to get there and get it back before morning." He talked rapidly. "I'll have to photograph your damage. I'm going to drop you with Brown."

Working with nervous speed, he switched on the automatic controls and took out a camera from the glove compartment. "Let's see what they've done to you. Watch that altimeter. The robot's not working well."

The 'copter droned on through the sky and Dunner watched the dials while Dr. Rawling opened the slit jacket and shirt and slid them off.

He stopped short and did not move for a moment: "What's that, burns?"

"Yes."

The doctor did not speak again until he had finished snapping pictures, slipped the tattered clothing back over Dunner's shoulders, turned off the light and returned to the controls. "Dig around in my bag and find the morphia ampoules. Give yourself a shot."

"Thanks." A tiny automatic light went on in the bag as it was opened and illuminated the neat array of instruments and drugs.

The doctor's voice was angry. "You know I'd treat you, Bill, if I had time."

"Sure." The light went out as the bag was closed.

"I've got to get that corpse back to the picnic grounds." The doctor handled the controls roughly. "People stink! Why bother trying to tell them anything."

"It's not them."

"I know, it's the conformity circle! But it's their own, not yours. Let 'em stew in it." He pounded the wheel. "Forty years with the same lousy type model 'copter, the same kind of clothes, the same talk, people repeating each other like parrots! They can't keep living in their own hell forever. It's bound to crack. Why not just ride it out?" He was plaintively vehement.

"It will end when enough people stand up in the open and try to end it." Dunner smiled. They landed with a slight jolt that made him suck in his breath suddenly.

"Don't preach at me," the doctor snarled, helping him out with gentle hands. "I'm just saying quit it, Bill, quit it. Stifle their kid's minds if that's what they want." They were out on the soft grass under the stars. Through the beginning pleasant distortion of the morphine Dunner saw that the doctor was shouting and waving his arms. "If they want to go back to the middle ages, let 'em go! Let 'em go back to the amoeba, if that's what they want! We don't have to tell 'em anything!"

Dunner smiled.

"Go on laugh!" the doctor muttered. He climbed back into the 'copter abruptly. "If anyone wants to contact me, my 'copter number is ML 5346. Can you make it to the house?"

"Sure." Dunner located the source of the doctor's upset. "You've been a great help, Doc. Nobody expects you to do more than you've done."

"Sure," the doctor snarled, slamming the 'copter into gear. "Everything's just fine. And we've made a lot of progress since Nathan Hale's time. Remember what *he* was complaining of!" He slammed the door, the 'copter taxied away a little distance, and then lifted into the sky with a heavy whispering rush of wind.

The teacher walked towards Brown's house. The stars swung in pleasant blurred loops, and the memory of angry frightened screaming faces and blows seemed very distant. He pushed the doorbell and heard it ring far away in the house, and then remembered suddenly what Nathan Hale had complained of and laughed weakly until the friendly door opened.

THE END

★ ★ ★ ★ ★

THE GREATEST INVENTION

BY JACK WILLIAMSON

The Greatest Invention wasn't made of wood or stone or metal and electrons. It made a Universe what it was — or wasn't, where it failed. And it was great because it denied greatness!

Illustrated by Cartier

The explorer was a worn little wisp of a man, with a bald spot and a stubborn chin and a burning eagerness in his pale, nearsighted eyes. He arrived at Sol Station on the yearly supply flier, and met a chilly welcome.

"I'm looking for Atlantis," he told the hulking quarantine inspector who received his credentials. "The forgotten place, whatever you name it, where our interstellar culture was born. I expect to find it here on Sol III."

They were standing in the cramped and cheerless undercover office at the station, which was hidden in a crater behind the moon. Earth itself was still another quarter-million miles away, but against the long light-centuries the explorer had already crossed, such a distance was nothing at all.

"Atlantis, huh?" The inspector squinted painfully at the psionic films, and tossed them to his desk with a bored contempt. A soft clumsy man, somewhat too bulky for his blue uniform, he had adjusted himself to the simple details of watching the spy screens and filling out reports in triplicate and waiting for promotion, and any interruption of that routine annoyed him.

"There never was such a place," he stated flatly. "It's nothing but a silly myth." His bulging, lead-colored eyes blinked with a faint hostility. "Though some fool is always coming to look for it—I don't know why."

"Perhaps the name is only a legend." The explorer spoke mildly, trying hard to be agreeable. "But human civilization has been spreading out through the galaxy at an average rate of around half the speed of light, for at least ten or twelve thousand years. It must have begun somewhere."

"What if it did?"

The slight man straightened thoughtfully, puzzled at this ponderous obstinacy and already alarmed by it. He understood the working of the quarantine service and knew that he couldn't visit Earth without the aid of the inspector, who headed the undercover staff here.

"I'm a scientist." He chose the words with care, trying to penetrate the big man's stolid skepticism. "I'm looking for the cradle of civilized mankind—but also and chiefly for the truth. It seems a great tragedy to me that our forefathers, in their haste to reach the stars, somehow lost their own beginnings. Our mislaid past is what I hope to recover. But even if I only found that the people of Sol III are wanderers themselves, as we are, from some unknown human homeland, that fact would fill one more gap in scientific knowledge."

"If Atlantis ever existed anywhere, it wasn't here." The inspector's loud voice seemed oddly belligerent. "I've been down to Sol III on undercover missions. A filthy pesthole, crawling with verminous savages so backward they actually

think they're the only people anywhere. They can't build neutrionic fliers today. What makes you think they could ten thousand years ago?"

"The first interstellar ships were probably built by people who wanted to leave the planet," the explorer answered mildly. "I suppose they did."

"You theorists!" The inspector snorted scornfully. "Looking for the beginnings of civilization among savages who never heard of it—while every civilized people for a hundred light-years around can show you the site of Atlantis on one of their own planets."

"I know." The explorer's bent shoulders drooped wearily. "I've been looking for Atlantis nearly all my life. The search has taken me to several hundred worlds where the legend still lives—and cost me so far too much objective time, wasted on the flights between them." He sighed. "Now I'm displaced and alone, with nothing left to do but keep on looking."

"But still you haven't found it."

"Not yet." The grizzled little man nodded patiently. "The legend was there, but I always found evidence that it had come from somewhere else, carried by some forgotten migration."

"Would people remember a myth?" The fat man's dull eyes blinked with a heavy skepticism. "Even after they had forgotten the actual history of interstellar migrations?"

"There are plenty of planets where stories of the early migrations have survived," the explorer told him. "The trouble is that few accounts are specific enough to help identify the places from which the legendary starships came.

"Those first interstellar pioneers must have found life pretty hard, don't you see? They lacked psionics, and nearly all the neutrionic devices we can use to tame new worlds today. Whole colonies perished—more, probably, than didn't. The severe struggle for survival forced most back toward savagery. Only now and then did the settlers keep the science of neutrionic flight alive, so that they could start new waves of migration, such as spread out from Denebola VII."

"From that sinkhole?" The inspector sniffed. "I've been there, from our Denebola base. A handful of pitiful savages, as backward as these, scrabbling to keep alive on a desert planet. If that's such a fountainhead of culture, why must it be quarantined?"

"No planet lasts very long as a center of migration," the slight man answered. "The natural resources are used up to build the ships in which all the more enterprising people depart. After a few generations, the doubly impoverished world sinks back into stagnation.

"The wave of civilization left Denebola VII behind at least eight or nine thousand years ago. The natives today have their legends of a lost golden age ended by a deluge,

but they've forgotten that their ancestors came from anywhere else."

"Maybe they didn't."

"Some of the natives do believe mankind evolved there," the explorer agreed soberly. "And it's true that nearly all the land plants and animals and even the important microorganisms there do show an evolutionary kinship—but you must remember that the human colonists on new worlds always have to establish a whole ecological environment of related species around them, or else they can't survive. The indigenous life is always worthless for food and hostile generally; it has to be pretty well exterminated before men can prosper.

"On Denebola VII, the transplanted economy of friendly life is firmly established on all the continents. But in the oceans and in a few neglected crannies ashore I found the real native life surviving —things of another living kingdom, with a wholly different biochemistry. Even the soil must have been poisonous to our sort of plants until friendly bacteria were growing in it; now it is equally deadly to the few survivors of that other evolution."

"Evolution, huh? I don't like such talk." The inspector had stiffened, as if both shocked and offended. "Are you trying to prove that men came from some filthy crawling creature, here on Sol III?"

Astonishment widened the explorer's faded eyes.

"Logically, men must have evolved on the same planet where spaceships were invented," he said quietly. "The fossil remains of our ancestral species would make a very interesting find, but the fact that men did evolve somewhere is already pretty well established. I'm interested in a more recent event: the invention of civilization."

"So evolution is well established?" The inspector spoke with a sudden harsh vehemence. "You may think so—but you aren't going to find much proof of that or anything else here on Sol III."

The explorer was beginning to see that he had blundered upon a dangerous topic. Remembering now the way the inspector had scowled and squinted at his credentials, he realized that the big man had been poorly trained in psionics. Cut off by that handicap from the main stream of human thought, he could doubt such facts as organic evolution.

In his long years among quarantined peoples, the explorer had learned that such psionic illiterates were almost immune to common sense. He realized that he had already said too much. No verbal argument was apt to alter the inspector's sullen antagonism.

The results of his blunder could be unfortunate. At the best, the clues he sought would be hard enough to find, buried as they must be under the rubble of ten thousand years—if indeed they had ever existed here at all. He needed expert

and enthusiastic aid.

He could see no reason why his references to evolution should provoke such hostility, but then such illiterates were never very reasonable. The inspector's inadequate conditioning was going to be a serious difficulty, but he knew no way to change the big man's attitude—to be really effective, psionic training had to begin almost at birth. Resolving to make the best of a bad situation, he nodded hopefully at his films where the inspector had tossed them on the desk.

"Anyhow, I want to have a look." He spoke mildly, trying to ignore the other man's challenging tone. "After all, I've come thirty light-years to visit Sol III, and I won't have another chance—"

"You ought to know you can't go there," the big man broke in harshly. "Haven't you heard about the Covenants of Non-Contact?"

"Naturally," the explorer assured him. "But I expect to work under cover. I've had experience enough among other quarantined peoples. Just look over my visas."

The inspector picked up the films, to grope for the psionic impressions they carried with a frown of half-baffled effort on his broad face. He shrugged uncertainly, and peered again at the explorer with a stubborn distrust.

"Whatever anybody thinks about the origins of these unfortunate savages," he muttered ominously, "our business here is to protect them from meddling outsiders."

"Just look at that transcription." The explorer pointed out a film he had failed to scan. "You'll find that my trip here was authorized by your Denebola headquarters. Your regional commander promised me all possible help from the undercover department at Sol Station."

"Ahem. I see." The inspector studied the film, and then frowned at the explorer with an inexplicable dislike. "Even with my help," he said coldly, "I doubt that you will find Atlantis. I see that your visa to stay here expires with the arrival of the next supply ship, and you can't do much in a year. Not when you must work under the limitations of the Covenants."

"But I'll have help." The explorer smiled confidently. "I'm authorized to ask you to loan me up to a dozen psionic technicians, with portable search equipment."

"That's too bad." The inspector shook his head and pursed his fat lips, in an unsuccessful effort to look apologetic. "We're always understaffed, and just now we have something more important on our hands." Genuine worry overshadowed his smoldering antagonism, for an instant. "These savages, you see, are just now learning how to release nucleonic energy, several centuries too early for their own good."

"A serious crisis, I understand." The slight man nodded soberly. "But I have serious reasons for going ahead, now that I'm here." He smiled wistfully. "Because this is

really my last chance. I'm getting old, you see, dislocated from my own era and working all alone. My means are running out, along with my life. If you refuse—"

"But I'm not refusing." The inspector stiffened, in an injured way. "If Denebola wants me to help you, I'll certainly do what I can—even though my help was promised thirty years ago, by an officer who must have failed to anticipate our other troubles here."

"Then I'd like to go ahead at once." The explorer smiled with an uncertain relief. "I can work alone, if necessary—"

"We can't permit that," the inspector broke in sternly. "We respect the Covenants here, and we take pains with our undercover work. I'll give you what help I can, but you will have to settle down in our transient quarters here while I'm working out the arrangements. That will take several months—"

"Months?" Alarm thinned the slight man's voice. "With just a year here, I can't spare months."

But he had to spare them. Bumbling officiously, the inspector escorted him to a bare little cubicle in the transient tunnel and left him there to wait. He had the freedom of the station, but those few miles of passages carved into the lonely lunar peak were like a prison to him.

In an effort to escape, he called on the station commander, a thin, stern man who looked too old for the post. He showed his authorizations, and suggested as diplomatically as he could that the inspector was deliberately delaying him.

"I'm afraid the man dislikes me," he said. "I don't know why."

"Perhaps I know." The commander studied him, with disconcerting intentness. "You came here to meddle with the planet we're protecting, and both he and I have seen the calamitous consequences of such interference. That's why he was assigned to deal with you."

"But I respect the Covenants," he protested sharply. "Whether I find Atlantis or not, the natives will never know I've been among them."

"I'm sure they won't." The commander nodded, with a tight-lipped smile. "The inspector will take care of that."

"But I'm afraid he's trying to sabotage my plans—"

"I trust him fully," the commander rapped, with a bleak finality. "You'll have to deal with him. If you feel that he is making a somewhat strict interpretation of the Covenants, he's only following my own policy."

He had to deal with the inspector, and he began trying to win the big man's friendship. He found that difficult, because the inspector had no friends. Morose and reserved, the fat official worked alone and ate alone, and even drank alone when sometimes after hours he came into the station bar.

The explorer found him there one evening, slumped glumly behind a little corner table, and approached him to ask when he would be ready for the trip to Earth.

"Hard to say." He shrugged vaguely. "The way we do things here, these undercover expeditions have to be supplied with completely authentic native clothing and equipment, and planned down to the last minute and the last inch. All of that takes time."

"I understand." The explorer smiled thinly, trying to hide his bitter resentment of the time it took. "Mind if I buy you a drink?"

"If you like." The big man nodded without enthusiasm. "After all, you may as well relax, because you're going to be around here for some time yet."

"I'm trying to make the best of it," the explorer agreed, as amiably as he could manage. "I've been scanning all the biological and geological survey reports on Sol III in the station files—though of course such secondhand information can't take the place of actual exploration."

He paused to signal the psionic waiter for their drinks, and then swung back to study the fat man's cheerless face.

"One trouble with those reports," he added deliberately, "is the lack of anything on human evolution."

That reference was a calculated risk. It caused the inspector to bunch his sagging shoulders and lurch abruptly forward, angry fingers tightening around his empty glass.

"Does that upset you?" The explorer blinked innocently against his sullen glare. "I've been wondering if you're opposed to my search for Atlantis because you're afraid I might also turn up evidence that mankind evolved on Sol III. Is that true?"

"I'm not afraid of any lie." The big man's voice lifted stridently. "But even if you showed me proof that these filthy natives are the children of the lowest monsters crawling in the mud, that wouldn't make me kin to them.

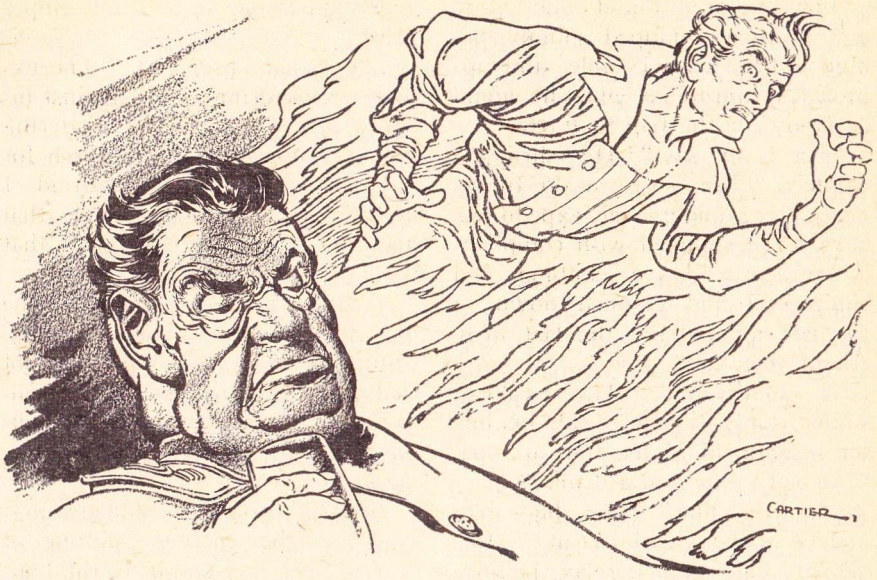
"For my people," he added smugly, "are the sacred children of Kares. So I was taught in the temple of light, while I was still a child. And my own eyes have seen the truth of the Karian doctrine—I have witnessed the dreadful end of one divine cycle, and the bright beginning of the next."

The inspector appeared more belligerent than friendly, but the slight man leaned toward him across the little table with a sudden eager interest.

"So you come from the Karian system?"

"From the second planet," he said. "Kares, our sun, is also the dwelling and the symbol of Kares the Remaker, Lord of the Cycles and Conqueror of Rigel and Reincarnator of Life."

"Isn't Kares . . . the star, that is . . . the small companion of Rigel? The one with the enormously elon-



gated orbit, that carries it far out from Rigel and then brings it back to pass within a few light-hours, once every two thousand years?"

"In the language of misbelieving astronomers." The inspector sniffed. "The truth I learned from the brothers of the sacred flame were phrased in words that had more meaning."

Facing his brooding gaze, the explorer realized again that he was unconditioned, and therefore immune to logic. Any discussion of his superstitious irrationalities seemed more likely to deepen his enmity than otherwise, but they had already gone too far to stop.

"I know nothing about your own ancestry," he was rasping hoarsely. "But do you think men—or any other life—could possibly evolve on the Karian planets, which are cleansed with fire at the end of every cycle?"

"I don't," the explorer said quietly. "I believe Rigel is about fifty thousand times as bright as Kares. Its radiation must be intense enough to sterilize the Karian planets completely, as they pass by. In fact, I wonder why the system was colonized at all, but perhaps the first settlers hadn't discovered the eccentricity of its orbit."

"The Karian planets were never colonized." The inspector spoke with a dogmatic conviction. "Kares the Remaker creates my people anew at the opening of each cycle. And he allows them to perish, as

each cycle closes, only so that he can show the impotence of Rigel and the impermanence of death by restoring them to a more perfect state."

The explorer nodded uneasily, anxious now to retreat from any pointless quarrel over the ways of strange divinities.

"The giant star Rigel is also the symbol of evil and the dwelling of death," the big man plowed on doggedly. "Rigel is the eternal enemy of Kares, the burning destroyer who is allowed only by his infinite mercy to survive and return again, after each defeat, to strive once more for the lives and the souls of men. In the declining years of each cycle, Rigel grows night by night in the sky, a terrible omen of the end. I remember it well."

A husky earnestness had come into his voice, and the mud-colored eyes were swollen with his smoldering emotion. The explorer began to see that he was an unhappy man, pursued across all the light-years he had fled by recollections of terror and perhaps of guilt.

"I was a young man on Kares II when the last cycle closed," his haunted words ran on. "That was six hundred years ago—several lifetimes for one with my late conditioning, if I hadn't spent so many centuries aboard service fliers moving so fast that subjective time was almost stopped. But I still recall those fearful days, and the dreadful choice I made. The wrong choice, Kares restore me!"

"What choice was that?"

"Life," he whispered. "When I should have chosen to die, along with my good father and the flame-pure girl I loved. That was my moral duty, as my older brother pointed out—he was a priest of the light. But I was afraid. I wanted to live. I renounced our god, and joined the quarantine service."

Perspiration had begun to polish the sleekness of the inspector's oily skin, and his dark fat face was tightened and twisted with the remembered agony that had now overwhelmed all his usual sullen reserve.

"It was my misfortune to be born into a troubled age," he said. "Kares II had been quarantined until a few years before my birth, for the protection of our native culture—my own father could remember when our first crude atomic rockets found the quarantine stations, and brought back news of the great interstellar world outside."

The big man seemed to squirm in his chair, as if flinching from the old, cruel pressures that compelled his tormented confession.

"That news—and not the fire of Rigel—was what destroyed my people," he muttered bitterly. "Even though the service was still attempting to protect us, just the knowledge of its existence was enough to shatter all our old ways. Many lost the old religion, when they heard that the Restorer's abode was only another insignificant star, lost among all the millions with peopled planets

of their own. I was one of those unfortunates—because I was afraid."

His trembling fingers snatched abruptly at his glass, almost as desperately as if he had been grasping for his lost faith itself, but he paused to stare unseeingly at the silent psionic waiter at the bar, and finally set the glass back again untasted.

"The priests had foretold the end of the cycle before I was born," he went on hoarsely. "When I can first remember, Rigel was already hot and blue and dreadful in the sky. In the last years, the planet itself began to tremble with fear, and the omens of death burned every night—"

He checked himself, when he saw the explorer's puzzled expression.

"Those omens were meteors—if you prefer the words of the faithless astronomers," he said harshly. "There were terrible storms of fire, caused—so they said—by the cometary debris swarming around Rigel. And the quakes were due only to the thawing of the polar ice—so the lying scientists assured us—and to the tidal strains caused by the approach of Rigel.

"Long before the end, that evil star was brighter than Kares—"

"Didn't the service offer any help?" the explorer broke in. "Unless the planet was going to be completely shattered, it should have been possible to set up cooler installations to turn the surplus heat into harmless neutrinos. In any case, the endangered people could have been evacuated."

"A misguided outsider did arrive with plans for a neutrionic cooler plant," the big man admitted. "The brotherhoods warned him, but he kept on trying to save us in spite of ourselves. When the people learned that he hoped to thwart the sacred laws of Kares, they stoned him to death."

"Huh?" The explorer blinked. "Why?"

"That long cycle of life and death and resurrection is the great plan of Kares." The tortured man spoke almost mechanically, as if reciting some temple litany. "The old must ever fall, to make way for the new—and those who die to prove the impotence of Rigel are the first to be reborn."

The explorer peered at him sharply. "If you believe that, why are you still alive?"

"I didn't—then." The inspector half rose, as if to walk the empty room. "And I was afraid." He sank back hopelessly, his fat hands clenched and trembling. "I was afraid—and the outsiders had made escape too easy. Though they didn't build the cooler system, after their engineer was mobbed, they did send fliers to save us."

He turned to hide his anguished face.

"And I fled," he gasped. "That is my sin, and I am damned for it. Those who dared defy Rigel have been reborn already, into a finer creation. And I am a homeless wanderer, driven from world to world

before the wrath of Kares, doomed to extinction when I die."

He sat slumped over the little table for a moment, sobbing audibly, before he straightened to finish his drink and order another and wipe his reddened eyes.

"The night I left my native world is one I can't forget," he resumed huskily. "I call it night, though the murky sky was hacked and slashed with blades of fire—fire was spewing from a new volcano in the north and a great fire was eating up the city where I lived. The streets were already blocked here and there with rubble, and new quakes shaking more houses down every hour. The star of death had set before Kares, which seemed pale and cool as a moon going down behind it. When Rigel rose again, I knew that its futile fire would be permitted to consume everything alive.

"Yet, beneath that ghastly sky, the city lay cloaked with the infinite grace of Kares. Nobody was fighting the conflagration. The rubble lay where it fell. The streets were nearly empty. Most of the faithful were gathered around the sacred hearths in their own homes, singing the old hymns and praying for rebirth, while they feasted on the burnt offerings and dulled their fears of Rigel with the sacramental wine—as I should have done."

The inspector's fat features were contorted with remorse.

'But an interstellar flier from Kares Station had already landed at the edge of the city, in a burnt-out amusement park. Her men came out through the streets with psionic amplifiers, promising escape to all who would go aboard before the rising of Rigel.

"I was then a law clerk, too poor to marry the girl I loved. I had been at court all that last day—our firm was asking pardons for some of our convicted clients, who hoped to improve their chances of rebirth. A report of the flier waiting in the park came to the judge, who must have been a heretic, and he adjourned the court.

"In the ruined street outside, beneath the meteors and the drifting smoke, the outsiders were shouting their offers of escape. I listened to them, and forgot my faith, and went to rescue the ones I loved.

"First I went to the temple of fire, but I got there too late. My brother had already gone with a pilgrimage to Karestead — our sacred city, built around the ruins of an ancient shrine of the light which had been miraculously spared, so the people believed, when the previous cycle ended.

"My father's house was near the temple, and I hurried there. He had let the servants go back to their own hearths, and I found him alone, kneeling beside his holy fire. When I told him I had come to save his life, he looked up at me with a strange light shining in his eyes.

"His life was already saved, he told me—and I saw that he was dying. He had eaten a wafer of life

my brother had brought him from the temple, and he begged me to break another with him. The wafers are made of sacred drugs, that were said to assure a blessed death and an easy resurrection. He urged me with his last breath to take them, but I didn't want to die—not then."

The inspector drained his glass again, and wiped his sweaty face.

"I went on to the home of the girl I wanted to marry," he whispered huskily. "It stood toward the spreading fire, and sparks were falling like rain upon me before I came through the debris to her door.

"I found her with her people around the sacred hearth. Her father and her brothers were sleeping from the wine they had drunk, and her mother was busy consoling a frightened younger daughter.

"My beloved ran to greet me, crying with her gladness, and tried to lead me back to the hearth. If we perished side by side, she whispered, we would surely meet and love more happily in our next incarnation. She brought me a plate of the holy meat and a cup of the sacramental wine.

"But I hadn't come to die with her. I told her about the great ship ready in the park, waiting to carry us away before Rigel rose again. We needn't wait to be reborn, I told her, for the outsiders were promising that we could join the great migration to the frontier planets.

"She seemed too deeply shocked to move at first, and then she tried to stop my mouth with her hand. She begged me to kneel with her at the hearth and ask Kares to forgive my frightful impieties.

"By that time the house was burning. The red glare of the conflagration flickered through the curtained windows, and the roaring of it was like a sea. Smoke began seeping in and the air was suddenly hot, even in that ground-floor room. We heard the roof beams crash down on an upper floor, and fear swept over me, terrible as the fire."

Sitting miserably slumped, his fat shoulders creasing the tight blue jacket, the inspector paused to blow his nose and wipe unashamedly at his swollen eyes.

"She was too lovely," he whispered hopelessly. "I loved her too desperately—and I had lost my faith. I was afraid to let her die. I caught her arm, when she brought me the wine and meat, and tried to make her come with me.

"She turned against me then, for she was loyal to Kares. She snatched the food of life away, and screamed to wake her father and her brothers. She made them put me out of the house—and I saw it cave in and crush them all, when a new quake struck.

"Volcanic mud had begun raining on the ruined city, too late to quench the flames. I was trapped against new walls of rubble, with sparks hissing in the mud around me and that great sea of fire rolling on behind. But I got away."

He paused to shake his head, gasping for his breath.

"I remember climbing a building already on fire, to reach the next street. I remember another quake—I was ill from the motion of the ground, even while I tried to keep on running; and broken masonry was thundering down all around me. The next thing I knew, I was stumbling up a ramp into the rescue ship, half dead from burns and a wound in my scalp. I had saved my life and lost my soul. Now I'll never be reborn."

"How do you know anybody will be?" the explorer inquired.

The fat man blinked at him sadly and then continued: "Later, I went back. After I had recovered from my injuries, I joined the quarantine service—I joined it gladly, because I had seen the harm that strange ideas can do to such worlds as mine was."

"And who did you find reborn?"

"My brother," he said. "Perhaps not literally reborn, but just as miraculously alive. Only twenty years had passed when I came back. Most of the planet was still a sterile desert; even the topsoil had been fused into glass. But the holy city stood unharmed, and I found my brother there."

"But didn't you say no cooler plant was built?"

"I did." The big man stiffened. "And none was built. My brother told me how the shrine and the city around it had been translated intact into the new cycle, by a special miracle of Kares."

"How did that happen?"

"At the dawn of the last day, before Rigel rose, there was a flicker of darkness in the sky. A flash of cold, my brother said, and then a flash of heat—and a year of time had gone. The burned lands were cool again, and Rigel was once more in flight from the perfect grace of Kares, and all the pilgrims crowded into the holy city had been spared.

The explorer nodded suddenly. Such a remarkable miracle, it occurred to him, could have been wrought only by a neutrionic freezer—an exchanger designed to preserve the contents of its field at the absolute zero, converting all heat energy into neutrinos, and then reconverting enough neutrionic energy to restore heat and motion. No such impious suggestion seemed likely to make the inspector more helpful to him, however, and he decided to say nothing about it.

"My brother welcomed me as gladly as if I had been reborn," the undercover man was adding sadly. "He wanted me to leave the service and join the temple staff, but when his superiors found that I had run away from Rigel before the cycle ended, they said my soul was dead."

He blinked his bulging eyes again, and coughed to clear his strangled voice.

"My soul is dead," he repeated hopelessly. "That means I can never return to my lost beloved, or to any of my people, in any brighter future. Even my brother died despis-

ing me. Now I have nothing left at all, except these weary years of waiting for my mind and flesh to die."

Watching the big man's unconcealed despair, the explorer began to sense a more imperative urgency in his own search for the lost beginnings of mankind. The inspector's life, it seemed to him, had been bound and crippled by ignorance; that whole world had died for want of the truth he hoped to find beneath the ruins of Atlantis.

Suddenly, in his mind, this tormented man became a symbol standing for countless other billions, cut off as he had been from the knowledge of their own true origins, rootless and doomed. Men had left the past behind, and they were incomplete without it. Half the restless discontent that pushed the race out across the galaxy must be an unconscious need of that something lost, it came to him now, a vague but driving hunger for the knowledge that alone could make men whole again.

In the clear light of that new meaning, his own personal fate was no longer important. He had grown too old in the search to have much desire for the material rewards or even the scholarly honors he had once expected, but now this haunted fugitive had given his goal a mystic significance. What he sought was no longer merely the spot where something unknown had kindled the first spark of civilization; he was looking now for the lost soul of all mankind.

"And that's why I reject the lie of human evolution." Defiance firmed the inspector's sagging face. "My people are the children of Kares, and I have seen them saved from the evil fire of Rigel by his miraculous compassion."

In fact, the explorer thought, that sacred spot must have been the site where the first settlers landed, and the neutrionic exchanger that sheltered it from the rays of Rigel must have been rebuilt from the engines of the interstellar fliers. In all likelihood, the holy fraud had been unconscious. Even the priestly engineers had doubtless forgotten the secular origins of that sacred machine, as those recurrent holocausts erased the past, until the duties of maintenance and operation must have now become a fixed temple ritual.

But he kept that to himself.

"I haven't come to look for traces of human evolution," he insisted, instead. "The extreme range of my portable finder is only twenty thousand years—too short a time to show much physical change in men. All I hope to find is the site where neutrionic fliers were invented."

"Why look here?"

"Sol III is near the geometric center of civilization, and even nearer the center of the core of older planets settled in prehistoric—or pre-psionic — times. And I have eliminated most of the other nearby planets."

He had found better evidence, besides, buried in the archives of the learned societies—evidence confirmed by the survey reports in the files here. All known life on Earth was biochemically akin; no trace of any rival kingdom was preserved even in the oldest rocks. Mankind must have sprung up here.

He decided to say nothing of that, but in spite of his restraint he found the inspector blinking at him with a returning antagonism.

"I still don't think much of your project," the big man was muttering. "Even just the proof that other peoples spread from Sol III—if you could ever prove it—might do my own race harm. It could corrupt this new cycle with doubt, the way my own was corrupted—"

His hesitant voice ceased uncertainly. His dull eyes lifted in a bewildered way toward the low ceiling of the bar, peering vaguely in the direction of Rigel and its faint companion.

"Though sometimes I still don't know quite what to think," he whispered uneasily. "I was taught that Kares created all mankind, but since I joined the service I've seen more men than the wisest priest knew anything about. And the bright abode of their god is so far away from Sol that I can't even see it, in the glare of Rigel, not even with our best telescopes." He shook his head unhappily. "Perhaps some men did evolve without his miraculous intervention. I just don't know. But I don't see how men alone could have created civilization."

"I've wondered, myself." The explorer nodded thoughtfully. "Because progress is uncommon. More peoples have slipped backward, than ever advanced. Even here on Sol III, men must have existed many thousand years before the invention of civilization. There must have been some unique event—some great first invention, that kindled all the rest."

"What could that have been?" A momentary interest flickered through the inspector's skepticism. "Neutrionics?"

"Something simpler, surely," the explorer told him. "I don't know what it was, but I'm pretty anxious to get on with the search."

"You won't find anything," the big man said bluntly. "I hope you don't. Though of course," he added hastily, "I intend to give you all possible aid, as Denebola requested."

The inspector refused another drink, and the explorer wandered despondently back to his bare little cubicle in the transient tunnel. Even though he had failed to crack that stubborn antagonism, however, now he understood its cause. And it seemed to him that the haunted man allowed the preparations for their trip to Earth to move a little faster, after that tormented confession.

In the end, the last detail was arranged. The immunization shots and the briefings on the ways of the natives were all completed. No psionic technicians were available,

because of the atomic crisis, but the two of them, the tired explorer and the embittered follower of Kares, went on to Earth together.

Many months later, the Starling Expedition made camp on the rim of a waterless wadi in the central Sahara. Dry gravel sloped upward from the little circle of parked trucks to a low ridge of wind-carved granite. Beyond the ridge lay a gray sea of dunes and the last hope for Atlantis.

The flags of France and the United States hung wilted beneath the pitiless glare of the afternoon sun, beside the windshields of the dusty trucks. Keeping the Covenants the two outsiders were traveling as natives. A patrol flier from Sol Station had set them down one dark night on an empty highway in western Montana, in a Ford sedan the inspector had bought on an earlier mission. Their hearing aids were really psionic translators. They wore native clothing, and carried credentials manufactured at the station laboratory.

The inspector had resumed an identity he had established before, as Colonel André Fouréau, a French army veteran who had taken up the law; he used the mythical affairs of nameless clients to explain his travels and disappearances.

The explorer was now Mr. Mayhew Starling, a retired soap manufacturer from Kansas City, spending his modest fortune in pursuit of his hobby of amateur archeology. He had retained the colonel, so their story went, to arrange financial, diplomatic and personnel matters for his expeditions.

While the native members of the party were pitching their tents beside the wadi, the two outsiders left the camp and climbed the ridge. The dune beyond lay parched and shimmering in the heat, dead as the moonscape around the lunar station.

"There you are!" The fat man shrugged disgustedly, gasping from the climb and wiping feebly with a soiled handkerchief at the reddish crusts of dust and drying sweat on his face. "Though I don't see much but sand."

"You wouldn't expect to find the shops and launching ways still standing, after so many thousand years," the explorer answered patiently. "But this must be the spot from which civilization spread."

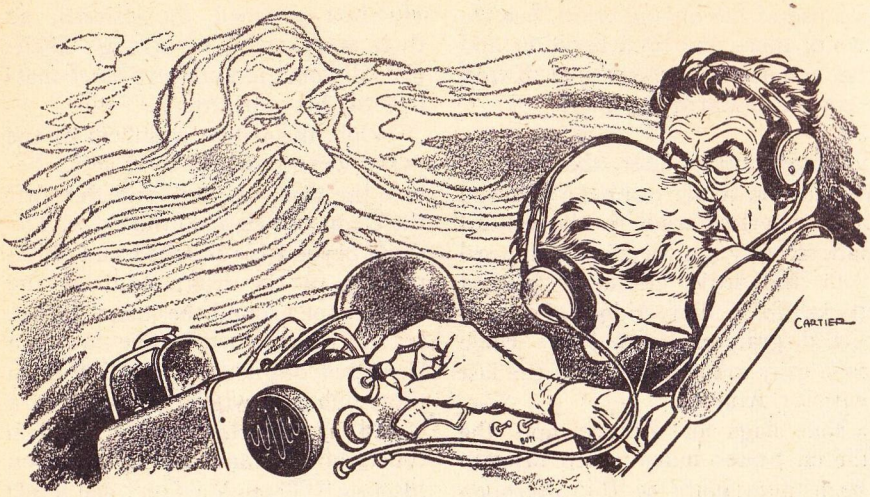
"I don't see why."

"You don't want to." A faint asperity sharpened the slight man's voice. "Though I've showed you a thousand facts to prove that men existed here long before the neutrionic age."

"Facts?" The inspector snorted. "A few teeth and bits of bone! A few chipped flints! I've far better evidence for the miraculous translation of our sacred city. Remember, I talked with my brother."

The explorer merely shrugged; he knew the big man was immune to facts.

"You've failed to find anything at far likelier spots," the inspector



persisted. "What makes you think Atlantis ever stood here?"

"We have followed a process of elimination," the explorer told him. "At first, because of the deluge-legend still current among the natives, I looked for a drowned continent. When we failed to locate Atlantis under the sea, I turned next to the places we have been visiting—the centers from which the crude culture of the contemporary natives seems to have spread—Egypt, Mesopotamia, China, even Mexico and Peru. But I'm now convinced that those are all secondary centers, where some dying spark of our own civilization must have lived long enough to awaken the savages among whom it fell."

"I see." The inspector nodded sardonically. "And now you have eliminated every possible location."

"Except this." The explorer nodded hopefully toward the rolling dunes. "A likelier spot than it looks," he insisted, "because the climate has been changing. During the last glacial age, all this desert was a humid grassland. Even at the date when neutrionic flight began, there was still an inhabited oasis here."

"How do you know?"

"Psionics," the explorer said. "I have been searching artifacts from Egypt and those other secondary centers, with the portable finder. Each object has led me back to earlier ones, until the oldest always came from the forgotten settlement here."

He heard the inspector's skeptical grunt.

"An Egyptian scarab guided me to a flint hand-ax," he explained. "When I adjusted the finder to

search the image of the ax, I found a blue glass bead made at this oasis —by the same people who also, within just a few centuries earlier or afterwards, must have built the first interstellar flier."

The inspector shook his head, mopping stolidly at his mud-grimed face again.

"That's only one line of search," the slight man told him hopefully. "One of a dozen I've been able to follow. Another began in Yucatan, with a Mayan pot. That led me to a bone fishhook from Japan. Tracing the image of the fishhook, I found a stone plowshare made in the Gobi. The plowshare revealed the broken shard of another pot, made twelve thousand years ago where these dunes lie."

"Broken pots!" The inspector sniffed. "Is pottery the great invention you're looking for?"

"I doubt it." The explorer spoke thoughtfully, as if unaware of his derision. "Although the primary invention may have been something equally simple."

"How do you trace such objects?" The inspector's voice was suddenly quickened, as if he had caught the explorer's interest in spite of himself. "Or can you explain it?"

The geometry of psionic energy-particles wasn't simple, not even for conditioned minds, but the explorer answered carefully:

"The finder is a machine that acts almost as a new hemisphere of the operator's brain. It expands the range and precision of the time-sense we all have—though you need conditioning to make it fully conscious. In effect, it extends a kind of mental bridge into the past."

The inspector still looked faintly bewildered.

"Take the flint scraper I found at our Chinese site on the Yellow River," the explorer went on. "Focused on that, the finder showed me the Neolithic man who made it. His tribe possessed a sacred blade of polished obsidian, already very old. Shifting to the blade, I followed it back to Turkestan. The trader who bartered for it there, when it was new, also owned a stone seal cylinder from Babylon. And the same trail led me on from Babylon, through several other objects, back to a spear point flaked by the people of this same oasis."

His eager eyes explored the gray waste of shifting dunes again.

"So you see I've already had several glimpses of this spot, as it used to be," he said. "They were all badly blurred, however, because I was following a secondary image instead of a real object. I need artifacts, actual things that were part of the period we are searching."

And he climbed again, to reach a weathered granite knob that stood above the other outcroppings. He began pecking at it with a geologist's hammer, collecting the fragments.

"The people who flaked that spear point used this rock for a

lookout," he called back. "Perhaps it also witnessed the launching of the first interstellar flier."

"If rocks could see!"

"They guide the finder." The slight man bagged his granite chips, with a quiet nod of satisfaction. "These should show us where to start the power shovel. In a few weeks, I think we'll be uncovering more interesting objects for the finder than spear points and beads."

"Weeks, did you say?" The inspector straightened with a self-conscious importance. "I can't allow you more than two days here. Not even if you've already found Atlantis."

The explorer clambered feebly back down from the knob, shaken with a pained amazement.

"Just two days?" he protested huskily. "That's not enough."

"Your visa is expiring," the inspector reminded him complacently. "You've known from the first that you had to leave on the next supply flier."

"But that isn't due for six weeks," the explorer answered heatedly. "I had been counting on at least another month, and I see no reason to start back now. We can arrange to have a patrol craft pick us up on the desert, a night or two before the ship is due."

"We don't do things that way at *this* station." The bulky man inflated himself. "We plan and conduct every undercover mission with elaborate precautions to protect the natives."

"I know that." The explorer nodded bitterly. "But I must have time—"

"All our reservations are already made," the inspector broke in firmly. "I'm allowing us time enough in Dakar to make a convincing disposition of our heavy equipment, and to see that our native employees are properly cared for. We're catching the air liner for Paris on the last day of the month. Incidental matters will occupy me at my Paris office, until we sail on the *Liberté*. Another outsider will be waiting at our New York hotel, to drive west with us. The patrol craft is to pick us up from a lonely side road in Arizona, a week before the supply flier is due."

"Can't you somehow leave me here a little longer?"

"We don't do things that way here." The inspector's dust-caked lips tightened sternly. "You and I are following my schedule, together."

The explorer shrugged helplessly. The inspector's stubborn way of doing things had defeated him many times before, but there was nothing he could do about it. These elaborate precautions went only a little way beyond the expected duty of an undercover officer, and of course the Covenants had to be maintained.

"Very well." He nodded, with the best face he could find. "Anyhow, I'm going to make the best of these two days. I'll run the finder on these rocks tonight, and stake out the trenches early in the morning."

He started back toward the trucks, but paused abruptly.

"Would you like to watch the search?" he asked. "I've a spare headset, and even without psionic training you should be able to see a good deal."

"Thanks." The big man smiled gratefully. "I've several other matters that need attention first—the driver of the water truck has reported motor trouble, and the cook needs dosing for dysentery, and the new men we hired in Dakar want more money. But I'll be over later."

For a few moments, as they plodded back down toward the camp, heads bowed and eyes squinted against the pitiless blaze of the sinking sun, the fat official seemed human and competent and almost likable. But then he snorted and exploded defiantly:

"But you aren't bribing me. I'll take a look through your finder, just out of curiosity. But no matter what you show me, we're still leaving here on schedule. Precisely."

The laboratory truck carried painted signs to warn the unconditioned natives in their own written languages: HIGH VOLTAGES — KEEP OUT! The vehicle was armored with steel plate and kept carefully locked. The native driver had been led to infer that the equipment inside was used to determine the age of objects from measurements of radioactivity.

The inspector himself had never been inside, and he entered from the breathless dusk with a quick curiosity. The steel door was still hot to his touch from the sun, and in spite of a humming fan the narrow interior was a suffocating oven. He glanced over the research equipment with a professional watchfulness, and nodded with a faint relief when he saw nothing that might betray the outside.

"This is it—really it!"

Speaking with a tired excitement, the worn little explorer plugged another headset into the finder, which had been cased to look like a portable Geiger counter of native manufacture. The inspector sat down gingerly on a flimsy folding chair and adjusted the headset. He listened expectantly, but all he could hear was the slight man's hushed and eager voice.

It always seemed to him, through the mysterious magic of the translator, that the stooped little stranger was speaking his own Karian language, and for a moment now he sat awed by the subtle wonders of psionics and embittered because they were denied him.

The explorer replaced his own headset and leaned to adjust the finder above a chip of granite from that old lookout point.

"This wadi was once a living river," he was saying. "It flowed out of a wide grassy valley above us, where those dunes lie now. Its waters cut the gap in the ridge, just below our camp—these heights beside the stream must have been a favorite camping place for primi-

tive men, long before they settled down to make that first invention."

The inspector grunted doubtfully.

"From the geological evidence in sight," the explorer continued, "I think that valley must have been a great lake before the gap was cut, and afterwards the basin still collected underground water to feed springs and wells along the lower river channel."

Already dripping perspiration, the inspector shook his head uncertainly. He felt uncomfortable in the stifling heat, and sharply disappointed because the finder showed him nothing. The explorer's quiet words, however, had given him a curiously vivid image of that lost oasis.

The river channel must have curved back from the gap toward that granite knob. His mind could almost see the low mud huts clustered along the protected strip between the river and the ridge, within hailing distance of the watchers on the knob. A thick stone wall had crossed the narrow neck of open ground to guard the village, and dusty date palms had stood clumped around the water holes, even after the stream was choked with wind-drifted sand.

"Can't you see it?" the explorer whispered. "The dying oasis?"

The inspector caught his breath. He didn't understand psionics; he never would. But it came to him now that the image of that mud town had reached him through the silent device adjusted over that granite flake. He nodded uneasily.

"There it is," the explorer said. "The way it looked from the ridge, ten thousand years ago. The soil on the drier uplands was already blown to dunes. And the wells here must have been failing, even then, because the site was soon abandoned."

"Mud huts!" The inspector shrugged and tried to scoff. "Where are your neutrionic fliers?"

"They had been launched and forgotten thousands of years before," the slight man answered, "if they were really built here — and they must have been."

"Show me."

"I'm trying." The explorer had leaned to adjust the finder again, his pale eyes preoccupied. "But that's the limit of this particular fragment, as an effective focal guide. Perhaps some of these others carry older impressions."

He tried another rock chip and then a third, frowning over the instrument and whistling softly through his teeth in an absent way that annoyed the inspector. At last he sat back hopefully.

"Better, don't you think?"

Still no sound had come from the headset. The inspector had noticed no difference at all, but now when he tried again to visualize the vanished town beyond the ridge, the mud houses appeared larger and more numerous. The defensive wall had not yet been built. A stone bridge arched the sluggish river.

The stand of palms along the channel was wider, and the dunes had not appeared. On the higher ground beyond the bridge, grassy mounds of flattened rubble lay around a tall, red-brick chimney.

"Everything looks different," the inspector admitted grudgingly. "But still I don't see any interstellar fliers."

"Because we can't look far enough." The explorer bit his lip in disappointment. "We're still several hundred years too late. But look at that smokestack!" A stubborn eagerness lifted his voice. "Evidence of an earlier technological culture, already forgotten."

He bent abruptly to the dials again. Watching the sharp conflict of effort and frustration on his withered face, the inspector waited expectantly. All he could see, however, was the laboratory equipment crowded on the narrow shelves and benches around them. The breathless heat was suddenly unbearable. Dripping sweat, he felt suddenly parched and ill with thirst. He stripped off the headset impatiently, and went to drink from the water bag that hung from the back of the truck, gulping down a salt tablet from the little vial he carried in his pockets. Darkness had fallen and the air outside seemed temptingly cool, but he went watchfully back into the hot vehicle.

"I've found a ship." The explorer looked up briefly, his tired eyes oddly troubled. "The image is bad, but I'm sure it's a ship."

The inspector replaced his own headset. After a moment of disappointment, the impressions of that ancient town came back to him—more like memories than new perceptions. The houses had been stone instead of mud, in that more distant past, neatly roofed with red tile. On the height beyond the river and the palms, long buildings were crowded around the stack. Farther beyond, on the outskirts of the settlement, stood the ship—if it had been a ship.

To the inspector, it looked more like some sort of storage tank. Built of riveted metal plates, it was an untapered cylinder with bulging top and bottom. It stood on a wide masonry platform, shored upright with heavy wooden props. He thought he could see an entrance valve at the lower end, but because of the intervening trees and buildings, and because the whole image was somehow dimmed and wavering, he couldn't be sure.

"That thing looks too small to be an interstellar vessel," he protested at last. "Even the first space rockets my own people built on Kares II were larger."

"But neutrionic fliers don't really have to be large, not even for interstellar travel," the slight man answered thoughtfully. "With the novas for power plants, they need no fuel aboard. Because of the time-contraction, the supply-requirements of the passengers are quite small, of course, too."

"If that's a ship, then let's see it fly."

The inspector tried to watch that puzzling cylinder, while the explorer bent over the finder again, but the image of it faded, veiled by sudden clouds of red dust that came rolling out of the drying uplands beyond the river.

"Look!" the little scientist whispered suddenly. "I believe those people are boarding it, carrying loads on their backs—could it be that neutrionics came before the wheel?" His voice lifted. "Can't you see them, rushing aboard?"

The inspector had not been aware of the people themselves before, but now when he tried he found them. Stumbling under their bundled possessions, they were crowding out of the town, crossing the bridge and climbing the heights. They leaned against the wind, and many fell as if smothered by the blinding dust. Those who reached the ship seemed to fight for space aboard.

He waited for the machine to lift, as the explorer touched the finder again, but it was hidden instead by the dust clouds. When the image cleared again, the storm was over. The vessel had vanished. He found only the empty streets of the abandoned town, and the tattered palms, and the small new dunes the drifting sand had made against the bodies of those who failed to get aboard.

"So it was a ship." The explorer nodded soberly. "It carried mankind and the beginnings of civilization away to the planets of some other star."

The big man grunted sardonically. "Just to escape a sandstorm?"

"There must have been some greater challenge than the drying climate." The slight man sat frowning for a moment, and then turned quickly to a drawing board. "I'm going to map the site," he said. "And plan the dig. We can't do much more with the finder until we uncover better targets."

The inspector started to go, because it was cooler outside, but he paused at the door to glance back curiously; what he saw made him return to watch, fascinated in spite of himself. He wiped impatiently once at the tickling drops of sweat creeping down his face and neck, and then forgot the heat.

The stooped little scientist was drawing his map of that sand-drowned city on a large sheet of common native paper with a simple native pen. The strange thing was the way he worked. He still wore the headset, and his hurried penstrokes had an astonishing certainty.

"We'll start the shovel at dawn, right here, stripping off the drift sand." He glanced up briefly, but the pen seemed not to pause. "Four thousand and thirty meters due east of the lookout knob. The sand there runs from seven to ten meters deep, but a trench cut through it will cross the site of that launching pier."

The big man bent to study the map, and shook his head with an

awed bewilderment. Its look of careful accuracy made him sure that pier had stood precisely where the explorer meant to remove the dunes. He straightened uneasily, and cleared his throat.

"About that great invention—" He waited for the busy man to look up at him. "Couldn't it have been psionics?"

The explorer laid down his pen. "Why psionics?"

"If that can show you where every house in Atlantis stood, from just those chips of rock—couldn't it have taught men everything they know?"

"But those people had no psionic devices; the finder shows none." Reaching for his pen, the explorer paused to add: "If they had known psionics, their children would never have relapsed into savagery on so many thousand other planets. The science seems to prevent such breakdowns."

"I see." The inspector's perspiring bulk shifted uncomfortably, as if he didn't. "Then what about neutrionics, itself? Those people can't have known much else."

"The inventors of neutrionics must have understood the physics of the atom," the slight man said. "The basic invention, the thing we're looking for, must have come long before."

"I suppose you're right." The inspector turned unwillingly again to go, and swung back at the door. "But don't think you're tricking me." An abrupt truculence hardened his voice. "We're leaving here on schedule, no matter what you show me."

The explorer went out at dawn, with his map and a primitive native transit, to show the native operator where to start the power shovel. He stood for an impatient hour watching the slow bucket bite drift sand from the trench, before he plodded back across the dunes to camp. He was sitting wearily slumped on a bench in the hot cook tent, eating a gritty and indigestible breakfast, when the inspector came to tell him the machine had broken down.

"I couldn't do anything about it." The big outsider shrugged helplessly. "I did notice oil leaking out of the crankcase, soon after you left. But the native operator didn't see it—he's sick with dysentery—and I couldn't say anything about it."

"Why not?"

"I'm here as lawyer." The inspector spoke with a ponderous complacence. "Not as a mechanic. Out of respect for the Covenants, we must keep in character."

"But this is serious." Dismay shook the slight man's voice. "That sand's too deep to move without the shovel, in the time you're giving me. Can't it be repaired?"

"Not in two days." The inspector fanned himself feebly with his sweat-stained sun helmet. "The heat cracked the cylinder block, and a loose connecting rod broke through the crankcase. The operator says the engine's finished."

"Then we'll pull another out of a truck." The explorer pushed back his plate and stood up suddenly, breathing hard in his agitation. "Anything to run that shovel."

"But the operator's too sick to work." The inspector sat down deliberately at the end of the table, and called for the cook to bring him coffee. "I gave the fellow an antibiotic and sent him off to bed. We've nobody else to oversee the job."

"I can do it myself."

"No doubt you could." The bulky man waited for the cook to pour his coffee, and then adjusted the range of his translator to keep the native from understanding. "You might even improvise a power plant from the parts of the finder, to operate that machine on neutrionic energy. But you're not going to."

The worn little man leaned weakly against the rough table, suddenly ill.

"Don't forget the Covenants," the inspector rebuked him smugly. "Or your own established identity, as a retired soap maker. I can't let you touch that machine."

It seemed to the explorer that the inspector's bulging eyes had a glint of sullen satisfaction, but even if his project had been deliberately sabotaged, there wasn't much that he could do about it. He sank wearily back to the bench, staring at his fat antagonist with a mute bitterness.

"Have a cup of coffee." The inspector touched his translator for an instant, to order the drink. "I'm afraid you're allowing yourself to be needlessly upset by this little incident."

"Little incident?" The explorer's voice was swift and harsh with emotion. "The truth buried under those dunes is something civilization needs. Something, I think, that you need. If I don't find it now, it may be lost forever."

"Nobody else will be coming to look." The inspector set down his cup with an air of cold self-importance. "I'll take care of that, with my report on this affair. If these natives aren't ready for civilization, then they aren't ready to uncover Atlantis."

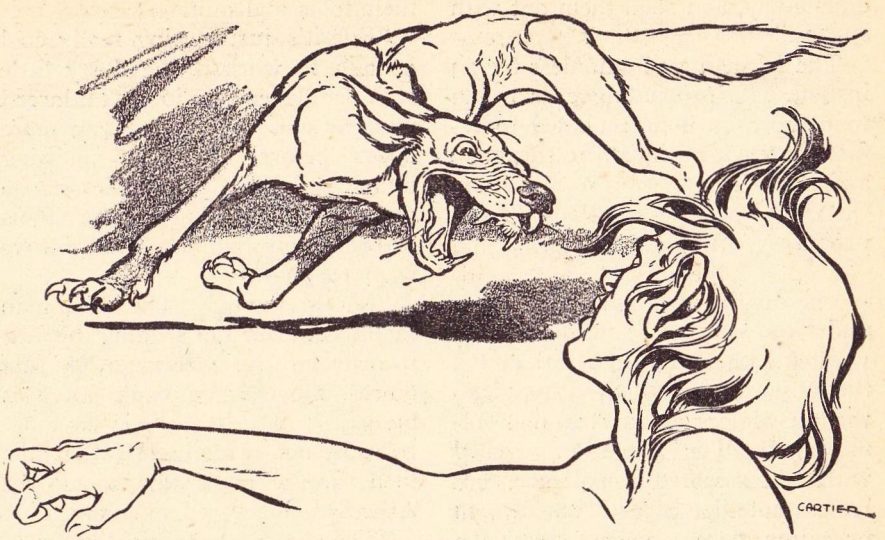
"They won't," the explorer protested hopelessly. "This site is too remote and deeply buried. Even the artifacts I hope to find would mean very little, without psionic search."

"Anyhow, your visa will be the last."

The explorer studied the big official, with a bleak wonderment. Once he caught his breath as if to speak, but instead he only shrugged and sighed and sipped absently at his coffee, although he disliked the bitter native drink.

"I'm glad you're taking this so well." The inspector beamed at him, with a sudden unconvincing heartiness. "Do you know, I sort of like you, in spite of all your queer ideas?"

He moved his head uncomfortably. Although his dislike for this crude and intolerant man was tem-



pered by understanding and even by a kind of pity, he found it hard to contain his hot resentment now.

"Since you've failed," the inspector added smoothly, "I suppose we may as well start getting out of here this morning. I really need a few more days in Paris, on service matters, if we can get an earlier plane from Dakar—"

"But I haven't failed." He straightened defiantly. "I've already learned a good bit, and I still have two more days. I intend to use them."

"You can't do anything." The big man blinked, as if dimly alarmed. "Not with the shovel wrecked—"

"We've spades."

"That drift sand is too deep—"

"Where we started digging." The explorer nodded grimly. "But farther out, where the sand is only three or four meters deep, there was a cemetery. A less promising site, but it might yield something."

"Nothing good," the inspector muttered. "You had better forget it."

The slight man was rising to leave the table, but the inspector's tone made him turn back watchfully. The big outsider sat gulping his coffee with an uneasy haste, and the heat of it was sending new rivulets of sweat down his thick-featured face, which now wore an open hostility.

"You promised me these two days," the explorer reminded him evenly. "Will you please call all the men fit to work? Promise them

double pay, and send them out with spades."

The fat man sat motionless for an instant. His protruding eyes began to narrow, as if he intended to refuse. Instead, however, he shrugged and nodded.

"Very well," he said flatly. "I did promise you these two days."

The digging went slowly. Lifeless under the scorching sun, the natives worked with a limp deliberation, and the loose dune-sand caved back into the pit almost as fast as they removed it. The explorer watched with a tormented impatience, but he was not allowed to direct the men or hurry them, or even to use a spade himself. He was a retired soap maker who didn't even know their language, and he had to keep in character.

All that day, the spades revealed only lower layers of sand. The explorer wanted to hire volunteers to work on through the night, by lantern light. The inspector refused, however, because any such show of urgency might excite the natives to begin digging for themselves, and so violate the Covenants.

Late next morning, the tools began to ring against a bed of gravel and hardened clay, that once had been the top of the cemetery ridge. The explorer worked eagerly all through the baking afternoon, crumbling and sifting the clodded ancient soil, but he had still found no new target for the finder when the inspector told the men to turn in their tools and quit.

"But it's just getting really cool enough to work." The dusty little scientist glanced anxiously at the red western sun. "We've still two more hours before the usual quitting time, and the next pick-stroke might uncover a burial, with tools or ornaments that would tell all we want to know."

"So it might." The big man shrugged. "But I'm sending the men to salvage the wreckage of that power shovel. We can't leave it here."

"Why not, if it's useless?"

"It would mark this spot," the inspector answered blandly. "It might cause some native to come back and dig up something that he shouldn't know about. Now let's go."

But the explorer hung back, peering miserably into the abandoned pit.

"Come along." The inspector's voice dropped warningly. "And don't look back. Don't excite the natives. The search is over, and you didn't find Atlantis—"

The slight man heard no more. He had seen a dull greenish stain on the wall of the pit, at the level of the buried cemetery. Ignoring the inspector's harsh protest, he scrambled down to examine it. His fingers found a thin shard of corroded bronze, projecting from the hardened clay. It broke to his touch, and he straightened triumphantly with the fragment.

"What's that?"

"Nothing that would tell the natives anything," he answered cautiously, "but it looks like a promising guide for the finder."

"Throw it back!" The inspector's voice was brittle as the age-eaten metal. "I'm ordering you."

The little scientist looked up uncertainly, and shivered in spite of the parching heat. Planted spread-legged on the raw soil above, the fat man looked implacable enough to leave him buried here among these ancient graves, a sacrifice to Kares.

His fingers trembled and relaxed, to drop that shapeless scrap of the lost past—but he couldn't let it go. It might be all that he had come to find, and he could never search again. He tried to swallow his fear, and drew his bent shoulders up defiantly, and scrambled out of the pit with the bit of metal in his hand.

"You've orders of your own," he whispered huskily. "From Denebola, remember." He met the inspector's glassy stare, and tried to catch his rasping breath. "I'm going back to the truck, to take a look at this."

Nodding sullenly, the big man let him go.

When the wreckage of the power shovel was loaded, and all the vehicles were ready to start back toward Dakar at dawn, the inspector plodded once more through the hot dark to the laboratory truck. His knock was not answered, but he opened the armored door without invitation.

He found the slight scientist sitting motionless in the narrow oven of the truck, seemingly unconscious of the heat. The psionic finder on the bench was adjusted over that ragged scrap of green-crusted bronze, and the explorer's half-closed eyes and shrunken face had a look of intense absorption in whatever it revealed.

The fat official stood watching silently until the small man heard his heavy breathing and sprang up apprehensively, snatching off the headset.

"Well?" The inspector's cold, bulging eyes shifted quickly and almost guiltily from the uneasy scientist to the thin bronze shard. "Was that a part of your great invention?"

"A lucky find, at least." The explorer nodded, still watching him sharply. "Though I've only begun to search its past."

"What is it?"

"A memorial plaque." The slight man hesitated for an instant and then went on quickly, as if relieved to see the inspector's interest. "It was set in the face of a stone monument, which was old but still standing when the ship took off."

The inspector's lusterless eyes narrowed again.

"Was it a ship?"

"A neutrionic flier." The pale alarm and the tired age were erased from the explorer's face, by a smile of elation. "You can see that from

the way it rose, without wings or jets, when it caught the galactic wind."

"But we couldn't see, through that sandstorm."

"The monument stood nearer than the lookout rock," the slight man told him patiently. "The image is much better. It even shows men mounting the neutrionic drive, and taking up the unfinished hull to test it."

"If that was a ship, where did it go?"

"Nothing here can tell us where," the explorer said, "but now I know why those people fled the planet."

"Climatic changes?"

"Disease. Men didn't evolve alone; they were accompanied by countless parasitic things, adapted to prey on them—but you know all the pills and shots we outsiders must take, to keep alive here. Those people left to escape a great pandemic—that cemetery is full of its earlier victims."

"Would people civilized enough to build neutrionic fliers have to run away from viruses and germs?"

"They didn't have psionics," the explorer reminded him. "And they hadn't had time to accumulate the empirical medical knowledge these savages have today. They were apparently defenseless against the epidemics caused by the spread of their own civilization."

"How's that?"

"An unfortunate biological cycle. Rising civilization increased the population and caused contacts between previously isolated tribes — each with its own collection of malignant microorganisms to which the others had acquired no immunity. The thing has happened many times on many planets."

"Which shows the flaw in your twisted thinking." The inspector grinned triumphantly. "Diseases are common on nearly all these older planets—which means that your hypothetical refugees didn't escape them, after all."

"Some people survived," the explorer insisted gently. "Though it seems that most of the early star ships must have carried germs as well as men—that's another reason, besides the lack of psionics, for the frequent lapses into savagery. And this oasis is where interstellar travel began."

His shining eyes fell to the bit of metal beneath the finder.

"We've found Atlantis!" he whispered softly. "Even if I carried back nothing else, that flake of rust is enough to convince every doubter that men and germs and civilization evolved right here."

"I . . . I can't quite believe it."

The inspector's thick voice had a strangled sound. A sudden sweat had filmed his broad face. The explorer glanced anxiously up at him, as if alarmed by his voice and the sudden hurried rasp of his breath, and saw him staggering feebly away toward the door of the truck.

"This heat," he gasped. "I don't see how you stand it."

The slight man followed to help

him, but he seemed to recover as soon as he got outside. He stood for a moment with his head bare to the dry night wind, and then fumbled for his salt tablets. The explorer poured water for him from the bag, while he rinsed his mouth and gulped the pill and splashed his face.

"Thanks," he muttered. "I'm all right now—though I don't see how you bear that heat." He offered the little vial. "I think you need one of these."

"I hadn't really noticed, but I suppose it is hot."

The explorer swallowed one white tablet, and turned quickly back to the finder. The big man waited at the doorway, as if reluctant to leave the cooler air outside, watching him with a sullen fixity.

"I've just begun to search this target." He spoke with an absent eagerness, while he adjusted the finder again. "The plaque was already old, and the stone crumbling under it, when that ship rose. It must have seen generations of earlier history. Perhaps it can show how civilization began."

"That bit of rust?"

The inspector shook his head scoffingly, his jaw muscles bunched and hard. He glanced out into the night as if about to go, but instead he came reluctantly back into the heat and sat down on a little folding stool with an air of troubled expectation.

"Look at it." Abstractedly, the explorer plugged in the other headset. "When it was whole."

The big man put on the headset and peered at that insignificant sliver of corrosion. What he saw was still the same, but his mind was already forming another image of the plaque, almost as if he had just remembered the way it once had looked.

A thick rectangular tablet of cast bronze, bearing a raised inscription. Most of the symbols on it meant nothing to him, but there was one he understood: three squares grouped to enclose a right triangle. Each square was divided into smaller units, all equal, as if to demonstrate the simple geometric theorem he had learned in the temple school on Kares II.

"The monument must have marked the grave of some great man," the explorer commented softly. "And he must have been a mathematician."

"Then do you think this means that mathematics is the basic invention we're after?" The big official spoke with an uneasy haste, as if to conceal his actual thoughts. "Or writing? Or perhaps the working of metal?"

"Mathematics and writing and metal are all still known among many many peoples who have lost the spark of civilization," the slight man answered unsuspectingly. "The vital invention must have been something less obvious—"

A gasp of pain checked his voice. His face hollowed and tightened,

abruptly drained of blood. For an instant his worn body stood rigid with agony; then he sank weakly back into his chair, clutching aimlessly at the bench beside him and fighting desperately to breathe.

"Heatstroke," the inspector murmured unfeelingly, leaning to watch his struggle with a cold intentness. "Perhaps you need another pill."

"So . . . so that was it?" His breath and voice came back, as that sudden seizure seemed to pass, and he swung upon the impassive official with a dazed accusation in his eyes. "What have you done to me?"

"I've killed you." The inspector's voice was slow and loud and flat. "The salt tablets I offered you were mixed with the sacred wafers of life my father gave me, the night I left my native world." Remorse flickered across the stolid blackness of his perspiring face. "I only wish I had eaten them with him, myself.

"And that won't help you now."

He watched with a bleak amusement as the explorer rushed abruptly to the shelves of chemicals over the sink at the end of the truck and splashed something frantically into a beaker of water.

"You're too late for any antidote to save you," he said calmly. "Those sacred drugs were compounded to relieve the last hours of the faithful from any disturbing indecision or uncertainty. When the pain strikes, they have already reached the nervous system. You'll feel much better, during the time left to you, if you don't take anything at all."

The slight man hesitated, peering at him miserably.

"Your pain will soon be gone," he murmured soothingly. "The wafers were made to insure the tranquil passage essential to a favorable rebirth. In an hour or so, your heart will stop, but until that time you should feel no more discomfort. You will soon be relaxed, and even elated by the exquisite grace of Kares."

The poisoned man lifted the beaker uncertaintly again, but set it down at last, untasted. He stood staring at the inspector with a bleak amazement.

"So you've murdered me?" he whispered harshly. "Will that go into your reports to Denebola?"

"I can report my duty done." The big man's voice was hoarse and uneven. "Our business here is the prevention of damaging cultural collisions. That goes beyond protecting these savages. I have acted deliberately, with a full awareness of all the consequences, to shield all the worlds outside from that scrap of metal and the lies you make it tell."

"Lies?" The explorer shook his head sadly. He came wearily back to his chair at the finder and sank into it hopelessly. "You have murdered the truth," he whispered bitterly. "To protect your own ignorance."

"What is truth—except belief?" The inspector spoke defensively, too loudly. "When all my people be-

lieved in Kares, his omnipotence was our truth. When my own belief was broken, by such unholy ideas as yours, I was robbed of certainty and the happiness it brings. Now my own soul is dead. I can do nothing for myself. But there must be billions more, content within some strong faith of their own. My duty now is to shield their happiness, from whatever you have found."

He nodded ponderously at the bit of old bronze.

"I intend to bury that," he said. "That, and everything else you have found here, in your own grave. The natives here will be informed that Mr. Mayhew Starling died of coronary thrombosis, but my official reports will state that you were attacked by a new mutant microorganism which makes this planet so dangerous that no more visas for exploration can be issued. I'll add that you died convinced that Atlantis never existed."

"You can't—" The stricken man blinked at him incredulously, and nodded at last with a stunned acceptance. "I see that you can. You're capable of killing the truth, even though you really know it's true."

Sweating again, the big man squirmed uncomfortably before that pale stare. He gulped and wet his lips and finally swung to beckon nervously at the shard of rust under the finder.

"Let's have another look," he urged abruptly. "You have an hour or more left, and your mind will stay clear until the end. Maybe you can still discover that lost invention."

"So you're uneasy?" The explorer smiled painfully. "You were afraid to die—and afraid to kill me in any honest way. And now you're afraid to talk about the truth."

The inspector flushed darkly, trembling with a sudden anger. New beads of sweat were rolling down his oily jowls. He wiped at them impatiently, stiffening aggressively on the stool. He caught a gasping breath but then deliberately relaxed as if restraining some savage outburst.

"Nothing you can say really matters now," he whispered harshly, "because you can neither save your life nor alter my intentions. If you have no use for the time I've left you, you had better take another pill."

The slight man sat stiffly erect for a time, biting at his lip until blood reddened it. He shrugged apathetically at last, and turned slowly back to the finder.

"I'll just watch, if you don't mind." The inspector reached for the other headset, without waiting to see whether he minded. "I'll have to stay with you, anyhow, to make certain you don't attempt to break the Covenants."

The explorer nodded indifferently, as if nothing mattered to him now. The big man put on the headset and looked expectantly at the

flake of verdigris, but nothing seemed to happen.

"Well?" he said impatiently. "What does it show?"

"More, I think, than I'll have time to see," the small man said. "The first impressions I can read were made by savage minds, that knew nothing of other worlds and very little of this. Can't you see?"

The inspector tried again. Still that scrap of metal looked the same, but other images came into his mind. The bend of an unknown river, dried to green-scummed water holes. A lean and nearly naked boy, with long red hair. A shaggy gray thing, stalking the young savage.

The boy stood stooped in a shallow pool, fishing patiently with his hands. The gray creature crept out of the tall yellow grass along the river bank. A wolf, or perhaps a wild dog. It circled warily down the wind and then came trotting slowly toward him across the dried sand bars.

Kneeling now to watch a sluggish fish, the boy seemed unaware of danger. The beast was close behind, before he snatched and missed and rose to see it. Terror shook him. He screamed and tried to run and fell sprawling on the gravel.

His fear and his flight seemed astonishing at first, because the gaunt beast looked rather small and quite cautious. When he stumbled and went down so weakly, however, the inspector could see that he was wasted from starvation.

The lean creature came rushing more boldly as he fell, driven perhaps by a hunger as keen as his own. It snarled and sprang, as he scrambled feebly to his feet, but he turned to face it now. He had come up with a flat red rock in his hand. He threw. And the beast came down dead beside him, its skull caved in.

The emaciated youth picked up the stone. He began hungrily licking the blood from it, but something stopped him. He held it away from him, weighing it on his thin hand and peering at it with a sudden awe in his haggard eyes. Where he had licked away the blood, it had the ruddy gleam of native copper.

At that point, the image changed. That scrawny boy had been so vivid that the inspector wanted to warn him of the stalking beast; even his feelings of hunger and terror and triumph had been curiously distinct. But now everything began shifting and blurring disconcertingly.

Fleetingly, the inspector sensed the chill and roar and gloom of driving storms, the strong reek of smoke and men and rotting offal in narrow caves, the hushed excitement of the hunt and the hot scent of a gutted deer and the warm salt taste of blood. He felt wonder and triumph and terror again—all somehow linked to that native lump of copper and the red-haired boy who had first picked it up.

The explorer had stooped, he saw, to adjust the finder.

"Wait." He slipped the headset off, to relieve a dull pain that had

caught the top of his head. "Remember, I've had no proper conditioning," he muttered hastily. "You're going too fast for me. Where did those things happen? How long ago? What about that boy?"

The explorer turned. His pale eyes studied the man who had killed him, with a troubled and incredulous intentness, until the big inspector flinched and demanded nervously:

"Was that this same spot, before the desert came?"

Something made the slight man grin, with a wry bitterness.

"Another river," he answered at last. "But it ran from these same uplands, when they were still humid, down into the great depression north of us that is now the Mediterranean Sea—when that boy picked up the copper nugget, a thousand years and more before his descendants quit the planet, the Atlantic had not yet broken through between Africa and Spain."

The inspector nodded heavily, licking at his fat lips. He felt a twinge of jealousy because the tantalizing wonders of psionics were forever beyond his own reach. That gave him another moment of bleak satisfaction in what he had done—not even psionics could defeat the wafers of Kares. But then a dim shame touched him, and he fled from it, repeating uneasily:

"The boy—who was he?"

"An outcast," the explorer said. "Because of his red hair. His parents had belonged to a little band of hunters who ranged around the great salt lake in the western end of that great depression. The members of the band were mostly dark, and they suspected red hair. His father's eyesight had been damaged by an infection, soon after the boy was born, and the old hunter blamed the child's hair for the way his game began to elude him. The mother defended the boy as long as she could, but when she was finally overtaken by a lion, the old man was convinced that his hair carried incurable bad luck. The boy had been clubbed out of the band, not long before he found that copper lump."

The inspector blinked doubtfully.

"If the metal carries the impressions, how do you know what happened before he picked it up?"

"Can't you get his thoughts?"

"I wasn't conditioned." The big man shrugged defensively. "At first I thought I could sense his feelings, but when you changed the focus everything seemed to blur again. Perhaps because he had thrown away the nugget."

"But he didn't throw it away. He carried it on with him, because it had killed the wolf and broken the disastrous luck of his red hair—he placed the same kind of faith in it, for years afterwards, that you once did in Kares." The explorer grinned sardonically. "The truth — until doubt destroyed it."

The slight man bent quickly over the finder again, absorbed now in

what it revealed. The inspector sat sweating, anxiously following the play of fear and relief, of sudden wonder and grave understanding, across his crinkled face. Abruptly, something seemed to startle him. He gasped, and nodded slowly, and finally turned with a strange awe in his faded eyes.

"The same man!" he whispered softly. "That savage boy became the honored man whose bones were finally placed beneath that monument here. He carried that piece of copper with him all his life—hammered into a useful blade after it had ceased to be a hunting charm—and long after his death the worn-out tool was melted into the metal for that memorial tablet. It shows his whole career." Elation quickened the explorer's voice. "And he's the man who lit the first spark of actual civilization!"

"That naked savage?" The inspector blinked scornfully. "What qualified him to invent anything?"

"The color of his hair, in the beginning," the slight man answered quietly. "It taught him to doubt the wise men. It deprived him of the aid and restraint of the tribal traditions. It forced him to start thinking himself, or die. And his native genius wouldn't die. His exile must have seemed as cruel to him as yours does to you, but it placed him on the lonely road to intellectual freedom."

The explorer nodded absently, his dim, myopic eyes searching for something far beyond the white-enameled walls of the rolling laboratory.

"The red color of his hair," he whispered. "And then the deluge."

The inspector goggled.

"There really was a deluge," the scientist insisted. "Although the legends have generally inverted the order of events. Instead of overwhelming this first civilization, the flood helped to launch it." He gestured at the other headset. "You can see it for yourself."

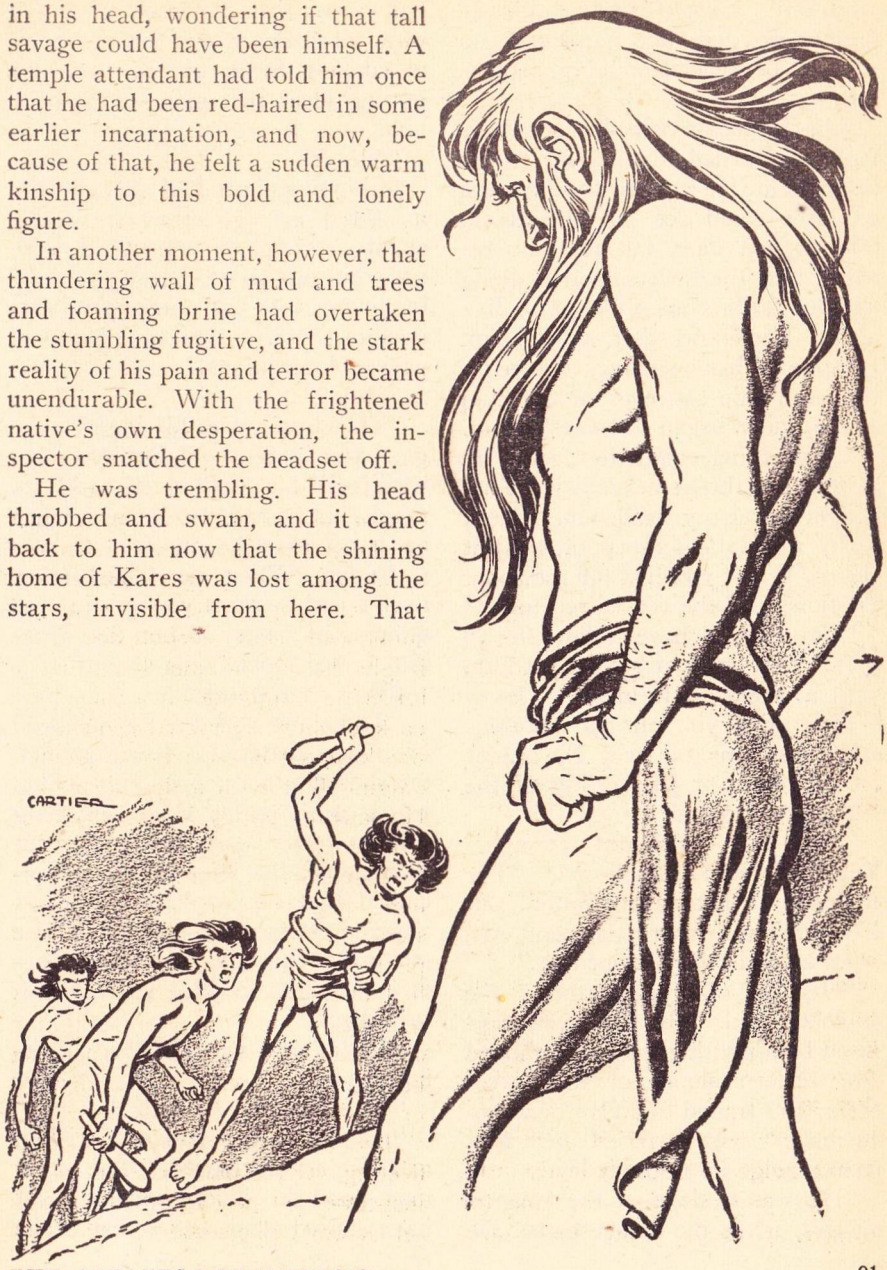
Reluctantly, because it hurt his head, the inspector put on the headset. Images of the red-haired savage crowded his mind again, like recollections of someone he had intimately known. Now a robust man, with challenging blue eyes and a sunburned skin darker than his bright beard, he stood tall on a forest trail, fighting off a screaming pack of shorter, swarthy men. He was kneeling in a deep rock gallery, digging flint with a deerhorn pick. He sat on a windy ledge beside the quarry, chipping axes from the flint. Frightened, naked men were chasing him, howling and throwing stones, while the land quivered and pitched. He fled from them—and fled again, from a sudden wall of mad gray water that come rolling down across the forest, snapping huge trees and tossing them high on its muddy crest.

The crowded swiftness of those fleeting impressions bewildered the inspector, yet he clung to the headset as long as he could bear the ache

in his head, wondering if that tall savage could have been himself. A temple attendant had told him once that he had been red-haired in some earlier incarnation, and now, because of that, he felt a sudden warm kinship to this bold and lonely figure.

In another moment, however, that thundering wall of mud and trees and foaming brine had overtaken the stumbling fugitive, and the stark reality of his pain and terror became unendurable. With the frightened native's own desperation, the inspector snatched the headset off.

He was trembling. His head throbbed and swam, and it came back to him now that the shining home of Kares was lost among the stars, invisible from here. That



wretched savage had probably known no god, and possessed no soul to be reborn. But yet, somehow—

The inspector wiped his sweaty face and turned impulsively to his companion. He wanted to ask if the explorer could see his likeness in that ancient man, but then he recalled that the little scientist, dying without faith, couldn't hope to live again. Somehow, that shook him. In spite of his own dogged conviction, the pale sad eyes of the man at the finder began to unnerve him.

"Everything comes too fast." He cleared his throat nervously. "That gadget hurts my head, and I can't really understand much of what it shows. Won't you just tell me about the flood and the red-haired man?"

"I'm afraid I haven't time for all of it." The explorer grinned at him, with a weary wistfulness. "I know I can't give you all his emotions and sensations the way the finder recalls them, or the feeling of the whole background."

"I've had sensations enough." The fat man shuddered. "The stones—and that wall of water! But I couldn't tell where the man was, or what was really happening."

"He was still young then," the explorer said. "He had been captured by a fighting tribe that ranged the western slopes of that great basin, and traded to a clan of weapon makers who quarried their flint from a ridge up near sea level.

"He was a slave of the weapon makers, when the deluge came. He had won their respect with his physical strength and his new skill at shaping flints, but he was also getting ideas that made trouble for him."

"Ideas?"

"Chipping flints had always been a sacred art, governed by secret chants recited by the tribal wise men, but our redhead had grown up in conflict with the unchanging wisdom of the past. He was guilty of wicked innovations."

"How?"

"They began with his copper nugget. His recent misfortunes had weakened his earlier faith in its magic, but he had also learned, when he tried to flake it, that it was malleable. When he found other masses of virgin copper in the quarry, he began hammering them into useful tools."

"Was that wrong?"

"The flint-workers disapproved of softer materials. Even though the shatter-proof copper implements had a good barter value, anything soft was evil. When the land began to tremble, the wise old men concluded that his impious work had angered the spirits of the rocks. The sea broke through, fortunately, before they had finished stoning him to death."

The fat man wet his lips, shivering again.

"Was that the Atlantic?"

"All the oceans had been rising, as the glaciers thawed." The slight man nodded. "Those quakes must have caused tidal waves that broke

through the ridge. The ocean poured in, scouring out the strait. That real deluge ran for many years, and it drowned the whole world he had known."

"But he survived?"

"On a floating log. He rode it all the way down to the overflowing lake, and got ashore alive. He wandered north to the fringes of the retreating glaciers, and south again when winter came. For a long time he was alone—but not so lonely as he once had been. He had learned how to think. Without knowing it, he was already at work on that basic invention.

"In time, he found a friendly people. They must have been distant kinsmen of his own band, because they spoke a similar language, but among them red hair was good magic. Although he had learned to question such beliefs, he joined the tribe. With the beginnings of that invention and the accidental advantage of his red hair, he soon became a leader.

"He found a mate, and had a son. He might have become a successful savage patriarch, as time went on—and might never have completed that first real step toward civilization—but for the deluge that still pursued him.

"The hunting range of his new people had been in the lowlands around another lake, in the eastern end of that great basin, and now they were caught between the fresh water and the salt flood rising. He began urging the tribe to move to higher ground, but the wise old men opposed him.

"They were afraid of the uplands, because the great birds of prey that nested in high places were supposed to be the dangerous spirits of their dead—not even the notion of reincarnation, you see, was indigenous to the Karian planets."

The explorer smiled somberly.

"And migration was needless, the wise men said. The waters were merely angry because some impious man had been taking fish without making the proper ceremonial apologies to the spirits of the lake; they would recede when the guilty fisherman had been discovered and drowned.

"The red-haired wanderer, however, had seen the Atlantic pouring down through that widening gap in the land, and even the thawing ice that fed the flood; he knew that no mumbo jumbo would ever send it back. And the brothers of his new wife were fishermen. He tried to save their lives.

"Rashly, he challenged the wise men. He made a song to give his own conflicting explanation of the deluge—when writing and psionics were both unknown, such mnemonic chants were the only records. He armed the threatened brothers with copper, and persuaded them to help him build a raft.

"His protests and the color of his hair halted the sacrificial drownings for a time. His wife and her brothers were troubled by his quarrel with

the wise men, however, and they refused to embark with him on the raft when the rising waters floated it.

"In the end, when the tribal lands had dwindled to a tiny island, the frightened wise men lost their regard for red hair. They recalled that the stranger had come down from the haunted highlands. The overflowing sea, he himself admitted, had been following him half his life. Clearly, he was the guilty one.

"Even his friends had to give way to the logic of that. Half convinced that he was some monstrous spirit in human shape, his wife begged him to untie the raft and go while he could. But he wouldn't go alone. Before he could persuade her to bring the child and come with him, the tribal elders seized him.

"He was held that night in a guarded cave. He could hear the rising waves outside, and the wise men chanting around a sacred fire, preparing to drown him at dawn. Under that pressure of necessity, he completed and revealed his invention.

"He made another song, and sang it to his captors. When his wife and her brothers heard it, they rescued him from the wise men, and followed him aboard the raft. The winds and currents carried them southward, to the new north coast of Africa. He led them ashore and back into these highlands. Before they died, they had settled here at this oasis.

"Outwardly, they were still savages. They wore the skins of animals or nothing at all, and their first dwellings here were pits in the ground. Most of their weapons and tools were still made of stone or bone or even of fire-hardened wood, but that red-bearded genius had invented the essential implement of civilization.

"Already, during their wanderings, that new device had given them the beginnings of cultivation. The old inventor used it, during the last years when he was too feeble for physical toil, to discover the first wonders of mathematics. One of his own grandsons, with its aid, invented a crude sort of picture-writing to help preserve his precious songs.

"In another five hundred years, using that indispensable device, his descendants were making simple experiments with magnetism and static electricity. Their discoveries led, in a few more centuries, to more dangerous work with atomic fission —fortunately, with his invention, they were better prepared for the impact of the atom than these real savages who rediscovered it here so recently. By the time those great epidemics had begun to threaten their survival, his heirs had gone on beyond the atom to unlock the greater energies of the smaller neutrino. They escaped to the stars, carrying that greatest invention."

When the slight man paused, the sweating inspector cleared his

throat imperatively.

"Well?" he demanded. "What was it?"

"Don't you see? But then you weren't conditioned." With an expression of condolence, the scientist nodded at the finder. "Why don't you let the inventor tell you, with his own mnemonic song?"

The big man glared at the psionic instrument.

"The thing hurts my head," he muttered. "And it's too hard to understand. Can't you just give me your own translation of the chant?"

The explorer glanced at the native timepiece ticking on his wrist and shrugged regretfully. "Remember the time you allotted me?" he murmured gently. "I'm afraid it isn't long enough."

"Can't you just tell me—"

"Put on the headset, if you want to know."

Yielding to that sudden firmness, and somehow humiliated before the sacred elation of the man he had condemned, the inspector put on the headset. Once more, the instrument made him uneasily aware of the psionic wonders denied him. Staring at that fragment of old bronze, he saw nothing else. He heard nothing, until the explorer spoke.

"The song begins with a set of common platitudes," the slight man said. "With the obvious axioms of intelligence—but they weren't platitudes, remember, to those savages who were preparing to drown the inventor at dawn. Those statements were fresh discoveries then, full of an unspent force."

The inspector's head was already throbbing, but impressions from the finder had begun to crowd his mind again. The tall prisoner stood beside a fire, bound with rawhide things but undefeated. The red firelight gleamed on his blood-matted beard, and glinted on the black water lapping close to his feet, and flickered over the frightened men waiting to kill him. A young child cried, somewhere in the dark. A sobbing woman hushed it, and then the prisoner sang.

The big man tried to catch the words, but the effort merely increased that squeezing pressure on the top of his head. His hands came up to snatch off the headset.

"Don't." The explorer's low voice had a quivering urgency that stopped him. "You can understand it all, if you will only try. Because the inventor begins in a very simple way, by telling how the conflicting errors of the wise men had taught him to doubt everything, and how he learned to look for the truth. Just listen to him."

Reluctantly, the inspector settled the headset back into place. He sat for a few moments frowning with the mental effort the finder required, and then loosened the headset impatiently, turning to the explorer with a look of puzzled disappointment.

"Is that all it was?" he muttered uncertainly. "Just a way of thinking?"

"Wasn't that enough?" the sci-

entist said quickly. "He taught men how to think. In that song, he declared the freedom of thought, against habit and ignorance and fear. What he really invented was nothing less than the human mind."

He smiled gravely at the fat man's startled face.

"I know the brain already existed," he said. "Just as the neutrino did, before it was harnessed to the interstellar drive. Those savages who hoped to appease the deluge with a human life had brains with all the cells of ours, but they hadn't learned to use them."

"That may be true," the inspector muttered grudgingly, "but still I don't entirely understand—"

"Try again." The slight man gestured urgently at the finder. "Words can't say enough. Only psionics can show you the full meaning of that man's achievement. He was a genius. With his own revealing intuitions, after he had established his own mental independence, he realized the capacities of the liberated mind far more fully than these blundering savages around us do today —in spite of all the belated efforts they call psychoanalysis and parapsychology."

The inspector shook his head stubbornly. "Could men have existed as you say they did, for thousands of years before him, without knowing how to think?"

"Too few do, even now." The explorer grinned wryly. "Possibly, of course, the science of thought had been invented by other men before him — although few enough minds ever reach the caliber of his, even with the best conditioning. But he passed on the art. Fighting that night for his life, he used all he knew to force other men to begin thinking for themselves — and the process, painful as it may be, has never yet entirely stopped.

"But let the finder show you."

Gingerly, the inspector adjusted the headset again. In a moment his thick hands came up apprehensively to take it off, but something checked him. He paused and nodded and sat back again, with an awed intentness in his bulging eyes. His hands relaxed and fell.

After a long time, he removed the instrument as reluctantly as he had put it on. For a moment he sat peering at the explorer, as if too deeply moved for words. His fat features trembled to some conflict of emotions, and he gasped suddenly for breath.

"That makes a difference," he whispered huskily. "Do you know, I could see myself in that savage— even if he had no soul to be reborn. The troubles of his unhappy youth were the same that have followed me all the way from Kares II, and I found the answers to most of my doubts in his song."

Bent over the finder, staring at that shapeless flake of old metal and smiling a little at the forgotten things it had revealed, the explorer seemed not to hear him.

"That makes all the difference."

He raised his rasping voice, to get the little man's attention. "I intend to learn how to think—if those savages did it, without psionics, so can I. And then I'm going back to Kares II. Another cycle is running there; Rigel will be approaching again, and the wise men preaching their old faith of sacred death and miraculous rebirth. I think my people need that first invention."

He rose abruptly in that hot narrow space between the shelves and benches, disturbed by the slight man's silence. Sweat poured down his bloodless face. His fat hands shuddered and clenched again, and he shook his head unbelievingly.

"Don't you worry about Atlantis!" he shouted desperately. "I'll take care of everything. I'll carry back your artifacts, and all your psionic notes and records. I see now why men must know the truth—"

Dismay took his voice. He reached anxiously to touch the worn little man at the finder, and stumbled numbly back. The smiling man was dead.

THE END

THE ANALYTICAL LABORATORY

In recent months, Astounding Science Fiction has introduced a goodly number of new authors; our policy is, and has been, that I buy stories, not author-names. An "old favorite," under that system of buying, means someone who has been able to take on any and all competition the years have produced, and keep up their accomplishment. A new favorite, on the other hand, faces the question: "You did it once; can you keep it up?"

The scores printed on these pages show that steady competition.

APRIL ISSUE

Place	Story	Author	Points
1.	Temple Trouble	H. Beam Piper	2.01
2.	A Stitch In Time	Sylvia Jacobs	2.55
3.	Dog	Oliver Saari	3.50
4.	The Peddler's Nose	Jack Williamson	3.98
5.	The Weapon	Fredric Brown	4.21
	Prodigal's Aura	Raymond Z. Gallu	4.21

And the one new author seems to have done very well indeed!

THE EDITOR.

WINDFALL

BY CATHERINE C. DE CAMP

The old Gentlemen had retired to the Home; normally windfalls coming to such aged people became the property of the Home. But this one didn't work that way — of all things the Home did not want, it was an immortal "Guest"!

Illustrated by Orban

Old Julius Bassett looked upon the world as if it were a lemon—a lemon, moreover, that had gone bad in a spot or two. For one thing, the Home had proved just as dismal as he had expected. Rules, rules, rules! Why, a fellow couldn't even chat with a friend in the parlor of the women's building except on Wednesday and Saturday evenings and Sunday afternoons!

Besides, the fact that he could not now change his decision to go there was proving harder to take than he had thought it would. Not that he had anywhere else to go, of course. But ever since he had met Milly — warm-hearted Milly who had a smile for everyone in spite of the pain in her rheumatic hands—at a Saturday Social at the Home, he'd fingered the idea of a couple of rooms in an apartment hotel and someone to talk to whenever he wanted.

Last year, finding himself pushing seventy with no job, few savings, no prospect of building up a patent-law practice all over again, and no posterity to rely on, he had blown his remaining four thousand three hundred forty-nine dollars as an entrance fee into the Home. Hadn't been too bad at first. But now—Bassett glowered at the back of old Mr. Wetmore—a senile wreck who talked all the time about the amorous conquests of his youth—and thought sourly of the other dodderers who shared his gilded jail. Not too well gilded, either. His glower made him

look more like a snapping turtle than usual.

"Hey! Mr. Bassett," said Jimmy, the attendant, tapping his shoulder, "your nephew, Mr. Ayre, is here to see you."

Bassett came out of his chair by slow jerks, a snapping-turtle who has begun to find the years telling upon him, and tottered toward the reception room. Before he had taken the fatal step of immuring himself in the Home, he had hinted broadly to Bob Ayre that he would like to move in on him. But Ayre, nobody's fool, had suddenly turned deaf as the Sphinx and satisfied his conscience by coming to see his crotchety relative regularly once a month. This visit was an unexpected extra.

"Hello, Uncle Julius," said Ayre. "Here's another book. How are you coming on Toynbee?"

"Unh," said Bassett. "Knows a lot, but I don't take any stock in that mystical whatsit, that Kingdom-of-God stuff. Next time, wish you'd get me"—he fumbled in his pockets and

came up with a piece of paper — " 'Ladies Whose Bright Eyes,' by Ford M. Hueffer. Good yarn—read it forty years ago—guy gets conked on the head, or something, and finds himself back in Medieval England."

He passed the slip to Ayre, then noticed the signs of suppressed excitement in his nephew's behavior.

"Here," he said, "what's on your mind, Bob?"

"Where can we talk?"

"Thought so. Come up to my room— No, you can't smoke in the bedroom. They're afraid one of us old galoots would get careless and burn the place down. The dive, I should say."

"It looks pretty comfortable," said Ayre paying elaborate attention to replacing the cigarette in its case.

Bassett snorted. "Sure. Comfortable. Tonight's hamburger night; tomorrow's stew. Don't you envy me? 'The meek shall inherit the earth'. Yah! just six feet of it. I found that out too late— But shoot."

Ayre said, "Do you remember a man named Sidney Lipmann?"

"Uh-huh. The big pharmaceutical man. Gave him his start, in fact. That was when I was practicing on my own, back before I joined Harrison & Zerbe. He was just a busted young inventor, the way they all are, and I paid the costs of his patent myself on that stuff . . . what's the trade name? . . . stuff all pregnant women take. Anyway, that got him started and made him a big bug. Haven't seen him in years. I remember when he— But what about him?"

"He's dead."

"He is, is he? Too bad. Ought to have looked up more of my old contacts before signing my life away in this sinkhole of creation, but I couldn't go to folks with my hat in my hand. Never could ask favors! Probably why I never got a raise all the years I slaved for old man Harrison. Well, supppose Sid Lipmann is dead; what about it?"

"He remembered you in his will."

Instead of showing signs of joy, Bassett looked at his nephew with narrowed eyes.

"Did he, eh? Now isn't that nice? Too bad he didn't think of me a couple of years ago. How'd you know about this, and what did I inherit?"

"I know his son, Henry Lipmann. Their firm competes with ours, you know. And the legacy is a stack of patents."

Bassett kept his mouth shut like a trap for a few seconds, then reluctantly allowed two words to escape: "Worth anything?"

"You can't tell, of course; but they might be worth all the gold in Fort Knox."

"What on?"

Ayre took from his inside pocket a folded copy of a United States patent. "Here's the main one: 'The compound diphenylorthochlor-benzoalumino-pyrosulph— Well, anyway, it's a folic-acid derivative and described as a tissual antideteriorant.' Does that mean anything to you?"

"Tissual antideteriorant? Bet he made that up. Suppose it's some dope to keep tissue from deteriorating. What sort of tissue, Bob?"

"Yours. Mine," said Ayre.

"Oh. A perpetual youth serum, is that it?"

"You're right on the beam, Uncle."

"Is this some sort of joke on Sid's part? Always struck me as a pretty decent fellow, though crazy like all inventors. Now, what am I supposed to do—grow a beard and set myself up in the snake-oil business?"

"This serum works," said Ayre soberly.

"How do you know?"

"Because we've tried it in our own lab. Henry Lipmann gave us a gallon of the solution and asked us to try it out to check their results, which they didn't believe themselves. As head physiologist, I was in charge of the project. We have one old hamster who should have been dead three months ago, but he's as chirpy as ever. This may not be immortality, but it's the next thing to it."

"Hm-m-m. Let's see that patent. How about the rest of them? Thanks. Hm-m-m. I see Sid's name on this one. Was he working on it himself then?"

"Yeah. He was hot on the trail of it when he kicked off."

"And the others are all assigned to him as employer. Don't like composition-of-matter patents much; too easy to upset on the law-of-nature defense."

"You're the patent expert, not me," interrupted Ayre. "However, you'll notice he also got all the manufacturing processes covered. No, he has a pretty good little network there, and anybody who tries to circumvent all those patents has his work cut out for him."

"Hm-m-m. Guess so, Bob. The old man looked up keenly. "You know the conditions I came in here under?"

"You gave them all your cash, didn't you? Isn't that the usual arrangement?"

"Yes and yes, but that's not all. I also contracted to give 'em any property I might come into in the future, in return for life maintenance. That's usual, too, you know."

"Oh," said Ayre.

"Sure. That's how come they get my old-age check signed over to them. Seemed to me I was doing the smart thing. The doc told me I could never work again; and even if the food is pretty awful here, I still eat more than I could buy with that lousy little pension. But now—"

"I see. I see. Isn't there some way of getting out of that contract? It doesn't sound quite legal to me. I'm not a lawyer, but isn't there some rule about promising to pay somebody something you haven't got?"

"Not in this case. Been fought out, and the courts have upheld the old-age homes." Bassett thought a moment. "Has the will been probated yet?"

"No. It'll take a little time; Lip-

mann's estate was in something of a tangle."

"What about the other terms of the will?"

"Conventional enough. A whopping big trust fund for his widow, a lump sum to his married daughter, and the business to his son Henry. Then there were a lot of little bequests—"

"What sort of chap is Henry Lipmann?"

"Nice enough guy, but kind of woolly-headed. Full of high ideals. He's young yet, though."

Bassett snorted. "Social consciousness," he snapped, looking like the Communist concept of a wicked old capitalist.

"Exactly."

"Damn social consciousness. The plague of our age—"

"Here, what are you kicking about? You wouldn't have any pension without it."

"And I'd be dead of starvation, and serve me jolly well right. Should have spent more time looking out for myself instead of being so bent on being faithful and hard-working that I never even asked old man Harrison for a raise! Say, I hope you mad scientists are keeping your traps shut about this. Might be full of dynamite."

Ayre nodded. "Sure. It's company policy to keep all experimental work confidential; and since this is in the family, I've taken extra precautions against leaks."

He rose. "You'll be getting a letter from Lipmann's lawyer—"

"Oh, you going?"

"Yep. Take care of yourself, Uncle." There was a new warmth in his handshake.

"O.K., Bob," said Bassett. "Nice to have seen you. I'll study those patents and sound my keepers on the prospects of getting out of my contract. Wouldn't it kill you, huh? Here I work like a dog for fifty years; and when I finally get a break, I'm hog-tied! Like that man in the myths who was up to his neck in water but couldn't drink . . . Tantalus? That's me."

As Ayre departed he said: "You must come down to the city and have dinner with us soon. G'bye." Under other circumstances even this vague invitation would have profoundly astonished Bassett; for his nephew had never asked him to dinner except at Christmastime. But today Bassett was immune to further shock.

Throughout the afternoon, Bassett brooded in sullen silence over the stack of patents. His mind licked over the claims one by one, finding a refined intellectual pleasure in testing them for loopholes. Because of the nature of the patents, only one of them, a process patent, had a drawing—a flow chart with the name of the attorneys, Nahas & O'Ryan, in a lower corner. Nahas & O'Ryan must know their stuff; why hadn't he dared to hit them for some little clerking job when the dissolution of the firm of Harrison & Zerbe had left him out in the cold? With his

long reputation in the patent-law field— Oh well, too late now. Still, these patents were well-drawn, no question; even the United States Supreme Court with its anti-patent prejudice would have a hard time throwing these out unless the infringer could prove a plain anticipation.

And what about the concept of the patents as distinct from their aspect as property? Even if the new invention didn't amount to immortality, anything that would add a few decades to this short life would be welcome.

So there should be millions in the invention—even after that bunch in the Treasury Department had taken their cut. But how—how to realize these millions? He had no wish to let the Home garner the money if he could help it. While he was not openly at war with the Home, their relations were in a state of unfriendly neutrality; and nothing had happened since his arrival to endear them to him.

Julius Bassett sought out the Home's assistant manager, the executive officer who handled complaints and generally rode herd on the inmates.

"What can I do for you, Mr. Bassett?" asked Mr. Keogh.

"Just answer some questions," said Bassett hesitantly. After fifty years of kowtowing to a demanding superior, Bassett found it hard to stand his ground in any business relationship, and he hated himself and the world for this weakness. "Do your patients . . . I mean guests . . . ever get fed up and try to leave?"

Keogh looked wary. "It has been known to happen," said he with an artificial smile, "but after they've had time to think it over, they generally change their minds. They conclude that the Home is not such an intolerable place after all."

"Suppose I wanted to leave?"

Keogh shrugged and spread his hands. "We have no legal power to detain you. There's the door, and you can walk out of it any day you so decide. Of course, that wouldn't terminate our contract with you."

"You mean that property clause?"

"Precisely. Sometimes an individual gains admittance to our institution, signs over all his property to us, and then comes into a windfall and regrets his previous decision. But inasmuch as we adhere to our part of the bargain, we naturally expect our guests to do likewise."

"Keogh," said Bassett, with a sudden rush of uncontrollable anger, "don't it make you feel like a . . . what's one of those spooks that sucks . . . a vampire? A vampire sucking the blood out of a lot of poor old codgers, eh?"

Instead of being affronted, Keogh smiled again. "You'd be surprised how often I've heard that, Mr. Bassett. Any time you entertain the wish to inspect our books, you're welcome to do so. We're a nonprofit institution and have nothing to conceal."

"Didn't say you had," said Bassett hastily.

"As for those windfalls, we depend on them to make up for the guests who come in with almost no property and then linger on forever, requiring a lot of expensive medical care. That is how most old-age homes are run—unless they have a large endowment. And we, I regret to say, are not that fortunate."

"Well," said Bassett, jerking to his feet. "Go ahead and skin your flints. Just asking 'cause I'm curious, that's all."

After Bassett had plodded out, Keogh slipped into the manager's office. "Charlie," he said, "I suspect old Bassett's up to something," and he told what had happened. "I'll make you a bet that he's anticipating a windfall."

"Hm-m-m," said the manager. "If you're betting on it, it's a sure thing. Let's turn his description over to the dicks now in case he tries a skip." He buzzed for his secretary. "Miss Logan, please take a letter to Anton V. Havranek, Investigations. Dear Mr. Havranek: I inclose herewith—"

Bassett, however, made no effort to skip. After several days of thought, he wrote his nephew—he never squandered the microscopic allowance the Home gave him on telephone calls—and asked him to drop in as soon as possible.

"Bob," said Bassett when the physiologist arrived, "have you tried that stuff of yours on a human being yet?"

"No."

"How do you think it'd work?"

Ayre shrugged. "It might kill him, but judging from the way it works on animals, the effect would vary with the age and health of the specimen. On you, for instance, I'd expect that—over a period of several months—it would improve your general health and that regular shots thereafter would keep you going for maybe three or four decades more."

"Would you call it rejuvenating?"

"To some extent, yes, on an older person whose tissues had deteriorated. Not that I'd start dating the girls, if I were you. On a man in his forties, like me, it shouldn't have a rejuvenating effect; but it might prolong my life well past the century mark. Not that I'd have nerve to try it on myself until it had been thoroughly tested. Too dangerous. If only we could find a few old birds willing to risk their remaining years—"

"You're looking at one of those old birds right now."

"You?"

"Me."

"Mean you'd—"

"Mean I'd. Feel a scheme coming on. How long d'you suppose the Home would try to hold me to my contract if they learned I was going to live forever? How long, huh?"

Ayre eyed his uncle uncertainly. "Of course, Uncle Julius, this stuff's not genuine immortality-syrup—"

"Never mind; all it has to do is multiply my life-expectancy by three or four, and *poof,* the cost of keeping me goes way up beyond what they've got out of me. How's the probate of that will coming, by the way?"

"It's due up in Surrogate's Court in about three weeks."

Bassett winced. "Not enough time. Maybe we could persuade young Lipmann to stall— You say he's full of ideals. Well, tell him how hard I worked, and what a poor old fossil I am and everything, and how if he don't delay the probate, the patents will go to the Home, which would make his dad spin in his grave like an ultracentrifuge . . . you get the idea, huh?"

Ayre looked dubious, but promised to see what he could do. After all, if Uncle Julius was rich and free of the Home and Ayre his only relative—

After his nephew had gone, Bassett approached the assistant manager again. "Mr. Keogh, when's the doc due round again?"

"Tomorrow," said Keogh. "Is something ailing you?" he added in a tone so hopeful that Bassett found it positively ghoulish.

However, the old man hid his pique. "Naw, except that I thought it was about time I had a real checkup. Don't mind asking him to give me a good once-over, do you?"

Keogh didn't mind. Hence when the Home's physician made his rounds the next day, he gave Bassett a thorough diagnostic examination and, at the examinee's insistence, wrote up a full report on the weakness of Bassett's heart, the hardness of his arteries, and the unreliability of his kidneys. Bassett saw that Keogh got a copy, then wrote Ayre asking for an appointment at his laboratory as soon as possible. Ayre telephoned that he could come next day, and at the appointed time Bassett tottered on his walking stick to the nearest bus station.

He had never been in the laboratory of the Mahoney Pharmaceutical Manufacturing Company before, and found it fancier than he expected. It was less like the laboratories he was used to, cluttered with discarded pieces of wire and rubber tubing and old copies of technical magazines, and more like those gleaming *ersatz* labs one saw in the movies, with all apparatus neatly in place and white-coated actors pretending to be scientists but not fooling anybody who knew science at first hand.

"So this is where you roll your pills?" he said to Ayre. "Where's that critter you were telling me about—the one that's lived months longer than he ought to."

"He's in here," said Ayre, and he led his uncle into a long room where the smell and the squeaks told of the presence of thousands of experimental animals in the aluminum-painted steel cages on wheels along the walls. Each cage was, in fact, a multiple unit with a number of drawers, each identified by a card with elaborate code numbers on the front.

Ayre read the cards and pulled out one drawer. He then raised the top, showing an animal something like a large brindled mouse with a short tail. The animal waddled about with a dignity absurd in so small a beast and seemed not to mind Ayre's scooping it up in his hand. "There he is."

"Got a name?" asked Bassett, touching the creature in a gingerly fashion.

"No, just a number. I'd name him after you, Uncle, except that he has a sweet, friendly disposition." Ayre smiled to indicate this wasn't to be taken too seriously.

"Huh. Every time I acted sweet and friendly, somebody handed me a sock in the puss. Like when old man Harrison sold out, and then blackballed me to the attorney who took over his practice. But never mind that. Got your needle ready, Bob?"

"Sure."

Ayre daubed Bassett's skinny arm with alcohol-soaked cotton and picked up the needle. "Have you made your will, by the way?"

"What would I do with a will, huh? I've got that contract, remember? You just go ahead and jab; and if it don't work, the Home will plant me cheap."

Ayre jabbed, pressed the button of the hypodermic, and withdrew the needle.

"Didn't hurt," said Bassett. "Don't feel like a young sprig of twenty, either. How often do I have to go through this?"

"We don't really know; you can't tell accurately from animal tests how it will work on a man, you know. The way I figure it, we'd better start with shots a week apart and string them out at longer intervals later on."

"Uh. Say, how about that will probate?"

"Well, Henry Lipmann wasn't keen about a delay, but when I put it to him real strong, he said he'd ask his lawyer to ask the court for a delay of a few weeks."

For the next few weeks life at the Home continued much as usual: hamburger Monday, stew Tuesday, pork and beans Wednesday, spiced with a visit to Milly— When Milly told him that he'd never looked so spry and that he'd better be careful because the new arrival, Mrs. Eason, was setting her cap for him, it was all Bassett could do not to tell her his secret. But he remembered in time that if anyone overheard him, the jig would be up; so he hastily opened the novel his nephew had secured and spent the next few calling days reading aloud to Milly about gentlemen who tied their ladies' gloves to their helmets, lowered their lances, and rode forth to slay dragons and right the wrongs of the world.

But Milly was right; Julius Bassett was feeling better than he had felt in years. As early as his third visit to the laboratory, he began to suspect that the walk to and from the bus stop was somewhat less of a struggle. By the fifth visit he was sure of it.

"Bob," he said on that occasion, "that will's due to come up for probate again soon. Can't we get Henry Lipmann to stall some more?"

"I wouldn't like to ask him to," said Ayre. "After all, he doesn't owe me anything; in fact, my outfit's his main competitor."

"Then fix a date between him and me, and I'll ask him," snorted Bassett with surprising self-assurance. "Don't think I'd let a million dollars slip out of my hands just because I was too shy to ask somebody something, do you?" He was thinking of Milly in the apartment hotel and of intrepid knights who did battle for their ladies' sakes.

Ayre sighed. He rather dreaded introducing Bassett to young Lipmann for fear his uncle would go off on a tirade about the degeneracy of these socially-conscious times.

He need not have worried. Lipmann, a solemn, spectacled youth with curly black hair, listened with every appearance of respect to Bas-

sett's account of giving his late father his start in life when he secured the elder Lippman's first patent applications.

Bassett ended: "I always had the greatest respect for your father. A square shooter. Now, what do you think he'd have wanted?"

Lipmann looked at his hands. "He . . . uh . . . wanted you to have the patents, or he wouldn't have drawn the will the way he did. But I don't know what my— Just why do you want us to postpone the probate?"

"You know Bob's giving me shots of your father's serum. Well, if the Home sees I'm not getting older, but younger instead, I think they'll listen to reason and let me out of my property-contract, before they hear about the patents." Bassett looked more cheerful than any turtle ever looked, since the first granddaddy of them all heaved himself out of the Messosoic seas.

"But . . . but is that entirely honest?"

"What d'you mean honest?" and Bassett broke out a disarming leathery smile. "As long as the will ain't probated, I haven't inherited a thing, have I?"

"But . . . but—"

" 'Course, if those fellows at the Home ever heard about the patents and thought they might be worth something, they'd never let me go. I know 'em. Talk a line of idealism, but once they get their claws on some poor old duck who comes into a little money, they're a bunch of blood-sucking vampires. Won't actually steal anything, but they'll figure out a way to drain off the surplus—and make it sound like they're helping humanity, too."

"Well . . . uh . . . how long do you think it'll take you to convince them?"

"I'll ask for another medical check-up tomorrow; that'll show some improvement. Then I figure six more weeks of treatment will do the business."

Lipmann clucked uncomfortably.

"Want to see justice done, don't you?" Bassett pressed him: "Want to carry out your father's wishes?"

"Yes but—" Lipmann cleared his throat. "Everybody's not as interested in justice as I am, Mr. Bassett. My mother and sister, I don't mind telling you, were . . . uh . . . not at all pleased by that bequest to you. In fact, they wanted . . . they tried to persuade me to sue to set aside this will in favor of an older one that didn't make anywhere near so many bequests to old friends and institutions, and that didn't give away the tissual antideteriorant patents at all."

"What did your lawyer say to that?"

"Oh, he . . . ah . . . said there was an outside chance of upsetting the latter will on grounds of incompetence because Father had been sick in bed for some months before he made it, and died a couple of weeks later. And we could show that he hadn't been at his best mentally during that time. It was as if lying

there in bed he'd remembered a lot of people he hadn't thought of in years.

"On the other hand, the lawyer said the will itself looked sound and reasonable enough to him. Nothing eccentric . . . you know what I mean . . . no cutting off members of the family or anything like that."

"Hm-m-m," said Bassett. "How would this do, boy? Tell your lawyer to go ahead and file suit to upset the last will in favor of the earlier one. That will satisfy your mother, hold up the probate and give me time to get loose from the Home. Then you can call off the suit, and everything will be jake."

"Ahem. I don't know. My mother and sister might—"

Bassett leaned forward, looking more like a turtle than ever, and gave young Lipmann the business. Ayre, remembering the line about "He holds him with his glittering eye; he cannot choose but hear," was amazed at how plausible a high-powered salesman his aged uncle had become. Of course, he could not know that beneath his uncle's unstarched shirt beat the heart of a knight-at-arms in mortal combat to protect his lady.

Aften ten minutes Lipmann gave in, muttering unhappily: "O.K., O.K. I only hope nothing goes wrong—"

At the next visit from the physician, Bassett succeeded in getting another diagnostic examination. The doctor looked at him speculatively.

"This is remarkable, Mr. Bassett. Ordinarily I think I'm doing all right with the Home's guests if they don't fall further apart between my visits. But you seem to be actually improving. Heart's stronger; specimen's better—"

And when Bassett got another examination six weeks later, the doctor compared his three reports and whistled.

"I can't believe this. There must be some mistake, somewhere."

Bassett grinned. "No, Doc, don't worry. There's no mistake. Ever hear of tissual antideteriorant?"

"Only a rumor. Some lab's experimenting with it, isn't it?"

"Right. And I'm the guinea pig. Or rather, hamster. Now, maybe you'll step into Mr. Keogh's office with me and back up my statements?"

Bassett buttoned his shirt, gripped the astonished doctor's elbow, and briskly marched him into the assistant manager's office.

"Mr. Keogh," began Bassett, "about that contract of mine—"

"Mr. Bassett, I informed you on a previous occasion—"

"Just a minute, Mr. Keogh; just a minute. Tell him what you found, Doc."

The doctor did so. Keogh looked blank. "Are you trying to say that Mr. Bassett is actually becoming younger each week?"

The doctor nodded, murmured something about having an appointment, and left.

"Of course," said Bassett pleas-

antly, "nobody knows how far it will go. They tell me there's no danger of my turning into a college boy; but for practcal purposes you may consider me immortal. And you gentlemen have a contract to support me as long as I live."

Keogh gulped and was silent for a space. Then he said, "This is all very irregular. I shall have to consult the manager."

He stepped into the adjoining room; and Bassett with his improved hearing could detect a hurried conversation. A moment later Keogh returned, followed by the manager. Bassett was surprised to see that he was smiling.

"May I congratulate you on your improved health, Mr. Bassett? No doubt those treatments you have been taking at the Mahoney Pharmaceutical Manufacturing Company are responsible for your remarkable rejuvenation."

Bassett was alarmed. "How'd you know that?"

"We feel obligated to keep ourselves informed about all our guests —for their own protection, you know. I don't think you realize, Mr. Bassett, that we are your friends and are genuinely interested in your welfare. Aren't we, Ben?"

Keogh nodded confirmation, but the sour look he gave Bassett showed there was some question as to the extent of his benevolence.

"And so we'll gladly keep you with us and hope you'll live to be two hundred." The manager paused: "Incidentally, we have also learned that you have been willed some patents which, of course, become the property of the Home."

Bassett's alarm became despair. He'd been a fool to hope! He was beaten! He bowed his head, like a knight awaiting the *coup de grâce.* Then he thought of Milly, and his dreams of them together; and he rallied his wits for one last, desperate attack. An idea struck him with the force of lightning.

"Gentlemen, you'll never get your hands on those patents. You'd suppress them just to keep your miserable business going for as long as the patents are in force. I've already told young Lipmann to have his lawyer break the will; and I'll urge him to get that serum into production as soon as he can so that old folks here and everywhere can go on and on and on."

The manager's smile faded into a tight-lipped grimace. "Call Havranek, Ben, and check that statement about the will being broken."

When Keogh returned with a curt "It's true," the manager gave Bassett a stare that would have frozen sea water. Then he relaxed.

"Well, well, Mr. Bassett, aren't you being a bit disloyal to the Home? But no matter. As far as serum for everyone goes, it's a splendid idea—only our guests don't have the kind of money such treatments would cost. Now, do they?"

Bassett narrowed his eyes. He was no longer fighting for himself, not even for Milly, but against in-

justice to all the old folks in the Home.

He said, "No, but they won't need money. The lab must have lots of human guinea pigs . . . I mean hamsters . . . before putting such a serum on the market. They'll gladly pay taxi fare for any of your guests who'd volunteer for treatment. I'm going to tell 'em all about it tonight."

The manager turned white. "You can't do that!"

"Who's to stop me? Said yourselves you couldn't legally stop any of us from going out and coming back in, as long as you hang on to our property." Bassett gulped, amazed at his own temerity.

The manager frowned, then said cautiously, "This whatever-you-call-it serum—how would it be if we made a deal, you and the Home? Say fifty-fifty on all profits? And you leave the Home today, now. O.K.?"

Bassett settled into the folds of his collar, like a turtle preparing for a nap. He rubbed his mouth to cover a little smile.

"Why, Mr. Humphries, you wouldn't want me to be disloyal to my friends, now would you? No . . . I'll stay."

"Just a minute. You are sure you haven't told a soul here about this serum?" As Bassett nodded, the manager exchanged an anguished glance with Keogh and hurried into the inner office. A moment later he returned with a document.

"Here's your contract, Mr. Bassett. I'll have the attendant pack your bags and bring them down to you. But before you go, I must ask you to sign an agreement to have no further contact with anyone at the Home, now or later."

Bassett felt punch-drunk. Victory had come so fast, so incredibly fast. Free, free—rich and free! He reached out his hand for the contract; then drew it back abruptly.

"Eh, what's that you said?"

"You must sign an agreement never to contact anyone in the Home as long as you live."

"Can't," snapped Bassett, and he blew his nose hard to hide the tears which suddenly stung his eyes.

"Why not?" The manager's voice was edgy. "You've got what you want, haven't you?"

But Bassett already knew he hadn't got what he wanted at all. What good were health, money, power if there was no one to be proud and pleased, no one to care!

"I've got to see Mrs. Milly Minter—something I got to ask her. I can't go without asking, if I was to stay here forever." He was too upset to notice the effect of his words on the anxious managers.

"Something about the serum?"

As Bassett shook his head, the manager sighed. "O.K., Ben, send for her. But we'll be here during the interview, Mr. Bassett, listening to every word you say."

Milly was a walking Victorian miniature as she fluttered into the room ahead of her nurse, a lace

handkerchief hiding her gnarled hands. But behind the prim facade, her eyes sparkled like Christmas candles as she smiled and said, "'Afternoon, gentlemen. Why Julius Bassett, whatever are you doing here? I hardly recognized you—looking so handsome and stern and all."

Bassett tugged at his collar, cleared his throat, and cast an appealing look at the cold face of the managers and the nurse. Milly sensed the tension and threw him a life line: "Has something happened, Julius?"

"Milly, this ain't the time and it ain't the place and I can't explain why I'm leaving, but—"

The Christmas candles in Milly's eyes flickered out. "Leaving, Julius?"

When Bassett saw how forlorn and frail she looked, he forgot his audience, his aching embarrassment, and hurried on: "Will you come with me? We'll get married. I've got it all figured out— I'll take good care of you, Milly."

"Of course you will, Julius." The candles all twinkled again and danced over Bassett's unbelieving face. "Well, whatever are we waiting for?"

Julius Bassett tasted triumph for the first time in all his life. He squared his shoulders, drew Milly's arm through his with old-school courtesy, and turned to the astonished manager.

"Will you kindly send our things to the Plaza Hotel as soon as convenient? I'll sign your agreement there. Good day."

The following afternoon Julius Bassett showed up at Henry Lipmann's office with his nephew in tow. Bassett looked under sixty, poised, vigorous, with a flower in his buttonhole and a devilish swish to the walking stick which he carried from habit born of the days when he relied on its support.

He wrung young Lipmann's hand cordially and said, "Well Hank, my boy, I'm a free man now, thanks to your starting that lawsuit to break your father's will."

Henry Lipmann seemed more tongue-tied than usual. "Now, Mr. Bassett . . . you see . . . well, I've been thinking . . . it doesn't seem right to exploit a mon-monumental discovery like this for financial gain."

Bob Ayre exploded: "Why not? You don't mean you're planning to go on with that suit, do you? My uncle's got his rights."

He turned to his uncle, expecting vitriolic corroboration. But Bassett was benign.

"Bob, boy, keep your shirt on. I understand what Hank's trying to say. Came here to say it myself, really. A discovery as important as this ought to . . . uh . . . belong to all the people. I mean, life's the greatest gift . . . it don't seem right to ask a price for it."

Ayre looked at his uncle blankly. "Uncle Julius, do you know what you're saying? Those patents are

yours—and they're worth a fortune! You—"

Young Lipmann cut in. "I agree with Mr. Bassett; those patents should be free to all. They will be in seventeen years anyway. And if any lab can produce the stuff, think of all the lives that will be saved!"

Bob Ayre turned stubborn. The empires he'd been building with his uncle's inheritance were rapidly dissolving into pipe dreams, like gold in mercury. He snatched at an idea.

"You two lion-hearted idiots—you make me sick!" he said. "Free patents—lives saved—have you thought of the effect of that? Don't you know the world's population is bursting at the seams now? That all arable land is already farmed; that there are countries where, no matter what you do for them, people will starve because there just isn't enough land to feed them? And it's getting worse every year, with millions more people being born!"

He pounded the desk. "So you propose to cut the death rate down to a fraction of what it is now, and the population instead of growing by millions every year will grow by hundreds of millions! So soon you'll have the earth so crowded there won't be a wild animal or a stick of timber left; and people will be eating each other for want of other food! So you'll have atomic wars of extermination just to get farm land!"

"But what can we do about it?" cried young Lipmann holding his head in his hands. "The patents are public property—will be in seventeen years anyway, whatever we do."

Julius Bassett quietly took command. Far into the night he and Milly had discussed the antideteriorant serum and the patents he'd come so near to owning and now didn't even want. They had thought of the hope that extra years of life might give to old folks everywhere. They had thought of the problems, financial and social, that living great-grandfathers and great-great grandfathers would make of the young. They had concluded that maybe death wasn't so cruel after all, if you'd had your fun and done your work. Yet, civilization doesn't stand still. Here was a new discovery; here were new problems that had to be met.

"Hank's right," he said, "the patents run for only seventeen years. And since they are public records, there's no way to keep the stuff secret, now that the patents have been issued. Bob's right, too, in a way. People ain't ready yet for thirty-forty more years of life. They need to be educated up to it. If we keep a tight control on the manufacturing and distribution of the serum until the patents expire, it'd hold off the crisis and give the world at least a chance to get set."

"That sounds like a good idea," said Lipmann, solemnly cheerful once more. "But how would you handle this control, Mr. Bassett?"

"If I were you, I'd set up a non-profit foundation—the Sidney Lipmann Institute, after your father, Hank—to control the patents. I'd apply treatments only to the . . . uh . . . select few, but it wouldn't be a matter of wealth. I'd set up a committee to choose great scientists, statesmen, artists, and such people—whoever seems most useful to mankind. And I'd propagandize to warn the world to do something about natural increase. I'd take it up with the United Nations. I'd—"

Young Lipmann blinked excitedly behind his thick glasses.

"It would take a man with a real sense of social responsibility to decide whom to treat and whom to turn away!" he said. "And the educational program would be a colossal job. Say, Mr. Bassett, will you take the post of Director of the Institute? Say, at twenty thousand dollars a year?"

"Yes, Hank, I will. And I'll want you on the Committee for Selections."

"Uncle Julius," pleaded Ayre, "don't let this starry-eyed idealist talk you out of a million bucks, a billion, maybe, by offering you some job! Think of your old age; think of your . . . er . . . heirs."

Bassett's eyes twinkled as he regarded his nephew thoughtfully. "What's happened to your social-consciousness, Bob? Oh, you'll get along, boy, the way you always have, without any legacy from me."

He looked out of the window and drew a slow, contented breath before he continued: "And I . . . I've got my health, my home, my work . . . world's work . . . to do, and only seventeen years to do it in. If I do it well, maybe the Committee will think me worth my salt and keep me going on serum. If I fail, they'd do right to scrap me, the way you'd scrap your old car."

He glanced at his heavy gold pocket watch, then snapped it shut with an air of authority.

"I have a dinner engagement this evening, Hank. But I'll be in touch with you tomorrow. Good night, gentlemen."

THE END

★ ★ ★ ★ ★

THE ERROR OF THEIR WAYS

BY GORDON R. DICKSON

Usually, guns and bullets make for war, and it becomes necessary to hide. But this time hide, gun, and bullet were twisted around a bit — into a pattern of peace-through-greed!

Illustrated by Orban

Markun the Smith did not like Hardak the Forester. Hardak did not like Markun. And the long wait at the spaceport was making both of their tempers touchy.

I cursed the government dispatch ship, which was overdue. Government dispatch ships are always overdue. I cursed the new governor, a political appointee who would probably be worse, if anything, than the lurid news reports had pictured him. And I cursed the short-sighted practice by which the Federated World Governments got rid of political unwanteds—by assigning them to responsible posts on the outer planets. Worlds like Arlanis needed the best of men to guide them, not the worst; and the new governor, coming in on the dispatch ship, was a money-grubbing pompous old egotist, according to the news reports I'd read.

Then, to calm myself down, I reached for my hip pocket to feel the reassuring crackle of my resignation sheet. At least, *I* would be out of it.

Hardak stirred restlessly at my right side.

"It is wearisome waiting," he boomed, suddenly, with a side glance at the Villager, "particularly with all this stink of smoke around."

The Smith snapped his head around and glared at him. Then he scratched himself ostentatiously with his third arm.

"*Pfaugh!*" he grunted in his deep voice, "these wood lice are getting all over me."

I stepped between them.

"Hold it, boys," I said, "take it easy."

The two Arlani looked down at me, disgruntled. I am over a meter tall—good size for a human. But these barbarians were double my height and four times my weight. Moreover they were both fighting men. Still, I was authority personified, the Accredited Representative of the Federated Worlds Government, and they hesitated. What might have happened, I don't know, for at that moment we heard the first, far-off, high-pitched whistle that told of the dispatch ship's approach.

The sound silenced the Arlani, as it always does, and they were tractable as lambs while the ship was landing. This sort of thing was visible magic and they held it in healthy awe. The ship dropped prettily on its flaming jets and I looked at it with gratitude, thinking that the next time it came back, I would be getting on it for passage back to the Inner Systems. Then, I had no more time to daydream, for the gangplank was down, the new governor was trotting out, and my Arlani were bristling at the very sight of him.

To begin with, he was a fat little man of better than middle age, with a white, bushy mustache — and the Arlani abhor fat. To them, fat spells cowardice, indecision, treachery, and all the traits unbecoming in a male.

"Now boys—" I began warningly, and then the new governor was upon us. Ignoring the Arlani, he trotted straight to me, hand outstretched.

"Well, well, my boy," he burbled. "Pleased to meet you. You're Smithson, aren't you? Well, well. My name's Fife, Gregory P. Fife."

"Hi!" I said shortly, giving his hand a quick pump and letting go. "Forget about me and pay some attention to the boys, here, before we have a rebellion on our hands. And speak in Arlani." He had addressed me in English, although I knew he must have been psycho-conditioned into a full knowledge of the native language before he left the Solar System.

"What? What? Oh!" he said, and turned toward my two friends who were now standing side by side, ready to make common cause against this new enemy.

"Greetings!" said Fife. "I am glad to meet you my . . . er . . . children. I can see that we shall get along well together. Ha! Yes, indeed. I shall do my best to keep you happy and . . . er . . . contented. I understand that, if anything, you are a little too fond of fighting each other; but we mustn't carry it to extremes now, must we? I—"

The Arlani, who had listened to the first part of his address in shocked puzzlement, now began to stiffen with rage. I leaped hurriedly into the breach.

"The eminent governor," I snapped hastily, "has heard of how Korbay the Forester and his young men burned down the hut of Gezik of the West Village. He is very angry. If such a thing should happen again, he will give the offender mud to eat."

Markun and Hardak looked from me to the governor and back again,

in astonishment; and I could read the indecision at the back of their green heads. *Can this,* they were thinking, *be what the little fatball really means? Ayah! Maybe this is some new kind of human!*

I was gambling upon the fact that the Arlani had never yet caught me lying to them—and it worked. They reversed their long spears and extended the butts to Fife in a gesture of submission.

"At your good will, lord," boomed the Smith, and Hardak was not more than half a second slow in echoing him.

"Tell them you'll hold council tomorrow noon," I hissed in Fife's ear.

"Eh? Oh! Council will be held at noon tomorrow," said the governor. "Now go!"

The two gigantic savages retrieved their spears, clashed shields together in token of good faith, and went off in separate directions. I hurried Fife to the governor's bungalow.

"Hah!" he said, when we were comfortably settled on the verandah, drinks in hand. "That was quick thinking on your part, Smithson. Very good, indeed. I'll mention it in my first report. Yes, indeed."

"Don't bother," I said, grimly.

"What?" barked the little man.

I tossed my resignation in his lap.

"Read it and weep!" I said. "I've got you off to as good a start as I

could, and now I'm taking off."

His bushy eyebrows rose on his pink forehead. Slowly he unfolded my resignation, looked at it, and as slowly folded it up again. Then he cleared his throat.

"Mr. Smithson," he began, in a new voice, "may I call you Tom? The full name seems unnecessarily formal."

"If you like," I responded dryly.

"Tom," he continued, "I don't intend to pry into your reasons; but I can't help jumping to the conclusion that your resignation may be the result of hearing all that unfortunate fuss which governmental circles made about my past position."

"If you mean," I said, "the business of your milking the natives of Minar II in order to fill your own pockets, yes, I heard about it, and, no, it doesn't make any difference to me. I don't care whether you're an angel in shining armor or Satan himself. Morality standards don't mean so much out here on the edge of the Federation. But, frankly, it takes a man with steel guts whether he's good or bad, to hold these barbarians in line. And, just as frankly, I don't think you've got the guts."

There was a moment of silence; and then—

"Tom," said Fife, "I admire your plain speaking, but don't you think I learned how to handle aliens on Minar II?"

"You learned how to handle one kind," I answered bluntly. "You learned how to handle a bunch of weak humanoids who were corrupted by traders half a century before your time and would do anything for a handful of coin."

"Trade," barked Fife, "is the lifeblood of any civilization. Before I came the Miharians were using a primitive barter system. I merely showed them the error of their ways."

"And made yourself a nice little pile in the process," I said. "O.K., we won't argue the point. The thing is, though, that the Arlani, both the Villagers and the Foresters, consider trading as work for females. They hold it in contempt. The only thing that keeps them from cutting each other's throat and ours is a constant show of muscle. Until we came, it was unthinkable that two strange Arlani, meeting each other for the first time, should not immediately fight. How else could they possibly tell which one was to order the other around? And, on top of that, this Villager-Forester feud has been going on since time immemorial."

"The last governor kept it from breaking out," Fife pointed out, shrewdly.

"He did," I said, and my voice thickened a little at the memory, "until one day a Villager lost his temper and stuck a knife into him. Marquand pulled the knife out, handed it back to the Villager and ordered the headman of the Village to give him a beating. Then he walked back to the bungalow here and collapsed. I was away at the time, and he bled to death before I could reach him."

Fife's face paled beneath its habitual pink.

"Did the Arlani know the knife wound had killed him?" he asked.

"They suspected," I said. "But the main thing was that they saw Marquand place law and order above revenge, and it awed them. It's things like that that have kept the Arlani in line until now. Tell me, Fife, could you do what Marquand did?"

He looked at me.

"No," he said. "I don't think so. But I think I can run this planet. And I may need your help." He beamed suddenly, and the normal pinkness returned to his face.

"So, my boy," he burbled, "I think I'll just hold your resignation, without accepting it, until conditions warrant your release. You can, of course, go over my head to Colonial Center. But that will take several months, at least."

I stared at him.

"You louse," I said. He laughed.

"Come, come," he said. "No hard feelings. Exigencies of government. Have another drink, and then suppose you show me around the nearest Village. I'd like to see some examples of native handicraft."

It was late afternoon when we came to the Village where Markun the Smith was headman. There were, actually, nearer Villages, but since Markun was the head of the Village Association, his Village would have to be visited first to avoid giving him serious offense. We drove in among the thatched huts in the official tractor, and parked in the square.

Fife looked around him, puzzled, a curious look on his pink face.

"Something the matter?" I asked.

"Gad!" he said. "They pay no more attention to us than if we were a couple of ants."

"Arlani manners," I said shortly. "It would not only be impolite, but dangerous, for anyone to speak to you before the headman did. And, being a visitor, it is your duty to go to the headman, rather than have him come to you. Come along."

We got off the tractor and strode over to the smithy. Markun, surrounded by a couple of young male helpers, was hammering a new point on a plowshare. I mean that literally. Metal was scarce on Arlanis and plowshares were made of fire-hardened wood with a metal point fitted on them. He took no notice of us until I spoke to him.

"Greetings, Markun the Smith," I said. "The new lord would like to look at your Village."

The brawny savage dropped the hammer he had been holding with his third arm. It fell with a clang on the anvil and I felt Fife start slightly, at my side.

"Let him look, then," he growled. "Greetings, lords."

"We would not walk through the Village without you," I said.

"Oh, it's not necessary—" began the new governor and I jolted him with my elbow. This was all according to convention.

"I have work to do," boomed the Smith, feigning reluctance.

I did a good job of pretending to work myself up into a rage.

"Miserable headman!" I roared. "Your lords demand that you accompany them through your Village. Follow or die!"

"I follow," snarled the Smith. He strode forward, thrusting one of his helpers aside so that the youth went reeling almost into the coals of the forge.

We stepped out of the smithy and turned down the street. Markun, in spite of his talk about following, stalking some three meters in front of us.

"Remember this," I hissed in Fife's ear. "His honor demands that he disagrees with everything you say and resist every command you give him. Your honor demands that you insist."

Fife nodded. "Tell him," he said, "that I'd like to see some of the samples of native handiwork."

"Oh no, I won't," I answered. "That's woman's work. He'll start with his fighting men and work on down the line through the male youths in training, the old men who do the cultivation, and finally to the women. *Then* we'll see the handiwork."

"Nonsense," fumed Fife; and, before I could stop him, he had trotted along to Markun's side.

"Stop!" he barked. "Halt!"

The Smith, startled by this sudden change of procedure, came to an abrupt standstill and wheeled on the governor.

"I wish to see those things that your women make," said Fife.

Markun was nonplussed. The new lord was not interested in his men of war. Was this, perhaps, some veiled insult to the effect that his warriors were not as capable as women? He was puzzled, and, being puzzled, reacted in the typical Arlani way, by losing his temper.

"Am I an animal, to be ordered about and insulted in my own Village!" he screamed, waving his three arms above his head. "Am I a woman, to be sent to the women?"

By this time I had come up to Fife, who was standing, white-faced, facing the almost berserk native.

"Make it stick!" I said to him in English. "Make it stick now or we're both goners. You've insulted him; and you've insulted his warriors by implication. He'll have to answer to them for passing them over in favor of the women. You've got to answer him and at the same time give him an answer he can give to his men. I can't speak for you now—he's too far gone for that. Say the best thing you can think of; and whatever you do—don't back down."

Markun continued to bellow at the top of his voice. By this time, the warriors, disregarding custom, had begun to swarm out of their huts and surround us. They listened attentively. Markun's ravings were half-addressed to them in order to show that he was defending their rights.

Fife looked at Markun steadily.

Slowly, the pallor left his face and his normal ruddiness returned. He stood still and waited until the native should pause for breath.

Markun eventually did. But by this time he was keyed up to the limit of tension, hair-triggered to attack at the first wrong word. He paused for breath, and waited.

"Markun," said Fife, slowly, "you are a man of war."

The Smith looked at him.

"So also," said Fife, "your fighting men are men of war, but they are not equal to you. Your young males will one day be fighting men, but now they are boys and not equal to your fighting men. Your old men are cultivators and will never fight, so they are not equal to your young men. And your women are not equal to your men, but they are still Arlani.

"But below all these are the beasts of the plow. And among them the greatest are the males, the lesser the young males, the lesser yet the old males, and the least the females. But you, Markun, when you hitch them to the plow, do not consider whether greater or less, but merely that they are beasts, for the least of the Arlani are that far above all beasts.

"So, Smith, I say to you that the least of the *humani* are that far above all Arlani. That to a lord the Arlani are as beasts. They are only Arlani. Smith, take me to the female Arlani!"

I think that it was the sheer audacity of Fife's speech that carried the day. Markun, for all his ragings was not stupid. He wanted an out as badly as Fife did and this throwing down of the gauntlet to all his kind shifted the responsibility from his individual shoulders. Furthermore, the more fantastic an individual's arrogance was, the more the Arlani admired it. At any rate, the Smith suddenly caved in. His arms came down in submission.

"At your good will, lord," he grumbled; and, turning to the assembled Villagers, roared them back into their huts.

So, he led us to the work huts of the women. I must admit it was something to see. Female Arlani are large-boned and thick-fingered, but they have the patience of the eternal hills; and their pottery, their weapon handles, the woven cloth from which they make garments, and their leather goods are finished with a perfection that is difficult to reconcile with their warlike natures. It was the leather goods in particular that drew Fife's attention. There were few of them, but the hides from which they were made had a dark, soft sheen. Fife bent down and lifted one of the skins from the lap of a female Arlani, whose large, powerful hands were squeezing and twisting it into softness after the tanning process.

"Where do these come from?" he asked me.

"A large forest animal," I said. "The Forester Arlani practically live off them. They eat the meat and sew the leather into clothes. The

Villagers only kill the few occasional ones they find raiding the crops."

Fife's eyes glowed.

"I've never seen anything like it," he murmured. "What they wouldn't pay for leather like this in the Inner Systems."

I laughed.

"Getting ideas already, governor?" I said. "If you're thinking about making something out of hides like that, you might as well give up the idea. It's been thought of before."

"And it didn't work?" asked Fife. "Why not?"

"A number of simple reasons," I answered, "but chiefly because never in the memory of Arlani has a Forester co-operated with a Villager. You see, the Foresters have the hides and use them, but they haven't the secret of tanning them that the Villagers have. The Villagers won't go into the forests to hunt for fear of the Foresters, so they can't get any more than the few hides that walk in on them, so to speak."

"Don't they trade back and forth?" asked Fife.

"Nope," I said. "They steal from each other, but they don't trade."

"Hm-m-m," said Fife, regretfully.

"Sorry to spoil your hopes of making money," I said, somewhat nastily, I'm afraid, "but there's nothing here that will help. Come on and look at the warriors, now. You can't put that off any longer."

So we went out of the women's huts and into the huts of the fighting men. These were in a sullen mood, in spite of Fife's clever argument, and it was only the new governor's obvious approval of their weapons and bearing that averted further trouble. It was a situation that troubled me; and, on the way back to the bungalow, after looking at the boys and the old men in the fields, each guarded by a small knot of the warriors then on duty, I spoke to Fife.

"Look," I said, "you did a good job back there at the Village, but you've left Markun's men in an ugly mood. They can't take it out on us, and I don't think they'll take it out on each other; which means that the Foresters are liable to be due for a raid. Consequently, I think it'd be a smart idea if I took off right now and made an unofficial visit to Hardak. If the word gets out that I'm visiting the Forester chief, there's less likely to be trouble while I'm there; and tomorrow we can smooth things over at the council."

Fife beamed at me.

"By all means," he chortled. "You know best, of course, Tom. By all means."

"Then I'll drop you off at the bungalow," I said, "and head off for Hardak's camp."

It was full night when I reached the clearing where the tents of the Foresters were pitched. Not that the hour made much difference, for the moon of Arlanis was a particularly brilliant one. But it was not as easy to associate with the Arlani at night

as it is in the daytime. A great deal of their hunting and fighting is done in the dark, and they are liable to be jumpy and nervous when you try to hold them in conversation.

I began, however, to feel uneasy by the time I was within half a kilometer of the camp. Male adult Arlani have an odd sense which does not seem to be either sensory or extrasensory, but a curious blend of both; it is the capability to *feel* the presence of other living beings which happen to be within several hundred yards of them. By now, Hardak's scouts and sentinels should have felt my approach and come to meet me. But, so far, there was nothing.

I continued on through the alternate patches of light and dark, feeling decidedly nervous. But still no Foresters came to meet me. It was not until I had almost reached the edge of the clearing that I was challenged.

A young Arlani of about my own size leaped suddenly out of the shadow to stand at the side of my tractor: "I am Jekla."

I pulled the tractor to a halt.

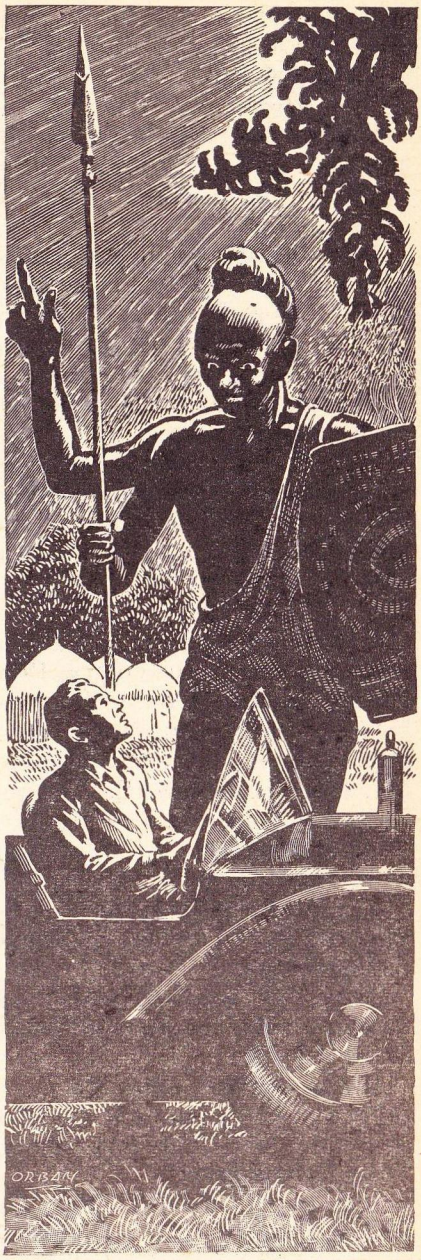
"Greetings, Jekla," I said. "Where are your men of war?"

"With Hardak," replied the youngster. "At your place, lord." He threw out his chest, flattered with the importance of conversing with me."

"At my place?"

"At the Hut of the Lords."

I swore under my breath. Hardak back at the bungalow, and Fife there alone to meet him. Why, I won-



dered? And then a sudden realization came to me.

"Jekla," I said.

"Yes, lord."

"Do the Foresters know that the two lords paid a visit to the Village of Markun the Smith?"

"Yes, lord."

I wheeled the tractor and headed back the way I had just come, leaving the boy gaping. It was just like an Arlani to become suspicious on hearing that a new overlord had been to see his rival, and I could not blame Hardak. I could only blame myself for underestimating the strange speed with which news traveled on this barbaric planet. It was a mistake I had made more than once before.

However, when I got back to the bungalow, there was no sign of Hardak and his men. And the light shining out the bungalow windows seemed peaceful enough. Still, there are better planets to take chances on than Arlanis, and I went up the steps and through the front door with a blaster in my hand.

Fife looked up from the book he was reading, and clucked his tongue disapprovingly.

"Tom, my boy," he said, "you shouldn't point the thing at people like that."

I holstered the weapon.

"A gun in *my* hands is the least of your worries," I said grimly. "Was Hardak here?"

"Oh, yes," answered Fife. "He seemed annoyed that I'd gone to visit Markun, first. But I calmed him down."

"How?" I asked suspiciously.

"Well," said Fife, "I thought I'd kill two birds with one stone. I told him that if he'd bring in some of those hides for me, I'd get him and his men some solid missile firearms."

I stared at him.

"You're insane," I said finally, in a weak voice. "You're stark, staring, raving mad."

"Why?" he asked. "This is a class N planet. The governor is authorized to issue solid missile firearms if he believes it will contribute to the natives' welfare. And I can ship the hides to the Inner Systems for tanning and dressing."

I had an idiotic desire to laugh.

"Why you fool," I said, "don't you know that part of the secret of that leather is a secretion from the hands of the female Arlani that gets worked into the leather when they handle it. It can't be duplicated."

Fife looked astonished.

"What?" he said.

"Not to mention the fact," I continued, "that Hardak's promises are worth less than the effort it takes to utter them. The first thing he'll do with those guns is to wipe out us and then all the Villagers."

"Nonsense," said Fife. "He gave me his solemn word that he would use the weapons only for hunting."

"When did you say the guns would be here?" I asked.

"I ordered them over the matter transmitter," said Fife, a trifle sheepishly. "They'll be here tomor-

row morning. I said I'd let him have them at council tomorrow afternoon."

This time I did laugh.

"Then you really have nothing to worry about from Hardak," I said. "The Villagers should take care of us very nicely. What do you think Markun will do when he sees us handing guns to his traditional enemies?"

Fife chewed nervously at one end of his mustache.

"Maybe I could give the Villagers something at the same time," he said.

"Sure," I answered, derisively, "sure. Why don't you get on the transmitter and order some nice harmless knives so the Villagers can make bangles out of them for you to sell in the Inner Systems?"

And with that, I flung out of the room. If I'd stayed there, I would have been tempted to blast him down in his chair.

The morning of council dawned bright and clear. I had ignored Fife and breakfast. Today I had no appetite for either, and I was sitting in the office, checking my blasters for the hundredth time when Fife came to call me to my place.

"Say, Tom," he said nervously, sticking his head in the office door. "They're here. Hardak and Markun and about a hundred fighting men with each of them. Aren't you coming?"

"Get out!" I shouted; but I got up anyway and followed him out.

They were squatting on the open ground before the bungalow, two groups of them. The Villagers were on the left, the Foresters on the right. I took a quick glance at the two leaders. Hardak had a smug look on his face and there was one of vague suspicion on Markun's. I guessed that Hardak had kept the news of the guns pretty much to himself; and that just enough had leaked out to put the Smith on his toes.

We took our seats. The two leaders rose to their feet and extended their spears, butt foremost.

"At your good will, lords," they chorused.

"Greetings," replied Fife. I shot him a quick glance out of the corner of my eye. He did not seem unduly alarmed. Either he was a good actor or else he had not realized the seriousness of the situation. I was betting on the latter.

He rose to his feet.

"Greetings, my children," he continued. "It is . . . er . . . pleasant to see you all together here, sitting like brothers at one feast." There was very little brotherly appearance in either host, but Fife went smoothly on without seeming to notice this.

"The new lord," he said, "loves his children, the Arlani. He admires the strength of their warriors. He is proud of the sharpness of their weapons and the skill of their women —particularly, the skill of their women.

"The new lord has looked with

pleasure upon the hides which the Villager women have worked. He desires hides like these; many hides, and his heart is sad that the Villagers do not have many of these hides to give him, so that he may give them many things that they would want."

He stopped. There was a mutter of puzzlement from the warriors of both groups.

"The new lord has looked with approval upon the men of the forest. The Foresters are strong hunters. They kill many of the beasts from which the hides are taken. This pleases the lord. He would like to see them kill more of these beasts and give their hides to their brothers, the Villagers, so that their women may work them into softness to please the lord."

By this time, the Villagers were staring at the Foresters in open-mouthed astonishment, and vice versa. The idea of trading between the two factions was as novel to them as the notion to an Earthman that he share his lunch with a rattlesnake.

"So," continued Fife, reaching into a box at the left of his chair and holding up a single-shot firearm. "The great lord has decided to give them magic weapons to help them kill many beasts."

Astonishment passed from the Villagers' countenances. This was something they could understand — favoritism on the part of the overlord. An ugly murmur ran through their ranks. Fife held up his hands.

"Silence, my children," he said, "the new lord is just. He has decided to give the Foresters magic weapons that spit little pellets. But, at the same time, his heart is saddened. For it has been whispered in his ear that the Foresters may turn these magic weapons on their brothers, the Villagers."

Now, it was the Foresters' turn to be dumfounded. What else? they seemed to be thinking.

"So, the new lord has decided to give the Villagers a present, too, so that it can be seen that he loves his Arlani brethren equally. He has decided to give his brothers the Villagers the little pellets that the magic weapons spit, in return for the hides that his brothers the Villagers will give him." Fife stopped suddenly and drew in a deep breath.

"The time for the giving of presents is now!" he shouted.

There was a dazed moment of indecision, and then the two rival leaders came forward, bewildered, but retaining enough presence of mind to scowl at each other. They halted in front of the verandah and I noticed something that I should have seen before. Each carried as his present a hide of the type that Fife wanted; only, of course, Hardak's was a stiff, ungainly thing, while Markun's was sleek as silk. Fife paid no attention to the hides. He turned first to Hardak.

"To my brother of the Forest," he said, "I give, without expecting any return, the magic weapon."

Hardak reached out gingerly,

took the gun and hefted it cautiously.

"And to my brother of the Village," continued Fife, turning to Markun before the Forester had time to offer his hide, "I give, in return for the beautiful hide which he has brought me, the little magic pellet which goes in the magic weapon." And, with a gracious smile, he handed Markun a shell, taking, in exchange, the hide which the Smith was carrying.

"Thank you, my brothers," he cried, holding up the hide. "I am pleased with this gift, and my heart will be gladdened by all such that are brought to me. Let my brothers of the Village and Forest now give presents to one another."

There was a breathless hush in the clearing. The idea of giving presents to each other was novel enough, let alone the concept of trading. Finally, Hardak's empty third hand inched out cautiously toward the shell in Markun's right hand, the hand that held the untanned hide following close behind it. For a split-second Markun almost drew back. Then his hand that held the shell crept forward cautiously, while the other groped forward for the untanned hide.

The four hands approached each other, and locked. The eyes of Hardak and Markun were fixed on each other. Their great chests rose and fell in tense breaths; and for a second it looked like deadlock, with neither one willing to release what he held. Then, slowly, Markun's hand uncurled from around the shell, and Hardak allowed his fingers to relax so that the hide was drawn out of his grasp. Then, both Arlani stepped back a pace, each holding what had been in the other's hand a moment before. History had been made.

For the first time in the history of Arlanis, a Village male and a Forest Male had touched hands in other than mortal combat.

"My children," said Fife, beaming down on them, "go in peace."

"Well," said Fife, afterward, as we sat in the bungalow, he with the hide spread contentedly over his knees, I with a much-needed drink in my hand. "Shall I send in your resignation now, Tom?"

I looked at him.

"Frankly," I said, "no. You've started something new around here. I'd like to stick around just to see what comes of it."

"Then you don't think," answered Fife, "that it's the beginning of a new era of peace and prosperity?"

"I don't," I said. "They'll find some way of getting around your trading system and back to fighting again. Then what will you do?"

"Why," said Fife, with his eyes twinkling, and his pink cheeks glowing, "I'll just have to think up something else to show them the error of their ways."

THE END

THE CARE AND FEEDING OF MAD SCIENTISTS

BY L. SPRAGUE DE CAMP

The scientists may not be mad, but they can drive the director of the laboratory that way. And if he doesn't care and feed properly, they will be mad — and won't work at anything so thoroughly as ways and means of getting a new director. Even a headache-pill laboratory can't cure its director's headaches!

Illustrated by Orban

You could hardly have science fiction without scientists, mad or otherwise. A check of the current issues of eight science-fiction magazines shows that about a quarter of the stories deal with scientists, either puttering in their laboratories or plunging into trackless wastes on expeditions. As a result, we readers have acquired a certain mental picture of how laboratories and expeditions are run.

Well, are they run that way?

Yes and no. The pictures in the stories are sometimes accurate—especially when a scientist writes the story—and sometimes not. If they have any consistent fault it is one of omission. That is, there are certain practical problems and difficulties in managing scientists and their activities that are seldom touched upon in the stories, though any scientist or scientific administrator will weep on your neck for hours about them.

To begin with, who or what are scientists? People who practice science. To save type in a chase for definitions we might as well include engineers as "applied" scientists, though some of the "pure" scientists may object. The two classes are not very different as human types, except that you might say that pure scientists are like engineers only

more so; or that engineers are more "average" than pure scientists.

Now, scientists vary just as other people do. There are wise and foolish ones, sober and dissipated, solitary and gregarious, courteous and boorish, puritanical and lecherous, industrious and lazy, and so on. They do as a class show certain *tendencies*. For one thing they are all people of high intelligence, because even to be anchor-man in the graduating class at one of our tougher Institutes of Technology one has to be up in the top four or five percentile of the whole population; and to get through a Ph. D. examination in science puts one up in an even more rarefied stratum. The scientist may be a fool about some things, but he must have that basic mental power to become a scientist at all; he cannot be a moron in any strict metrological sense.

Being more intelligent than the average, scientists perhaps tend to be more reasonable, rational, and judicious than most people. When conflicts of interests or ideas occur among them, there is a better chance —but a chance only—of settling the conflict by reason and discussion. All of which does not prevent some scientists from getting into love-life troubles, falling for obvious hoaxes and swindles, or embracing pseudo-

scientific doctrines like Spiritualism and Marxism.

Dr. Sheldon, the varieties-of-human-physique-and-temperament man, thinks that scientists tend towards his ectomorphic physical type and cerebrotonic temperament. From what I have seen of scientists I am inclined, on a basis of subjective impressions, to agree. The ectomorph is the thin man, and the cerebrotonic is the thoughtful, introverted, nervous, self-controlled, subdued individualist. He likes to work by himself, prefers ideas to people, and ages well, becoming wrinkled and leathery instead of paunchy and jowly. The psychologists class him as a schizoid.

Every time I attend a meeting of the alumni of my college—California Tech—I look around the circle of lean, slowly wrinkling men with sober faces behind steel-rimmed glasses gleaming over the highballs, note the careful gestures and precise speech, and chalk one up for Sheldon. How different from a conclave of salesmen or politicians.

Of course we have here a chicken-and-egg problem: Are they scientists because they lacked the physical strength to compete with other boys in sport and combat and thus directed their energies in other directions? Or are they thin and under-muscled because they never had enough interest in food to eat enough to fill them out? I don't know and doubt if anybody else does.

Some scientists are interested in arts, games, and sports in addition to their work. Einstein's violin is famous and I know several who paint. Others take an attitude of wilful Bœotian ignorance towards interests outside their particular field. Many read science fiction because, as one explained: "In the stories the experiments always work."

Most of them are sociable in the specialized way that writers and other practitioners of numerically small professions are sociable: They like to congregate with the few others of their kind, but find the general mass a bore. Most of them make good matrimonial risks if the girl doesn't mind such quirks as refusing to come to meals until they have finished some recondite train of abstract thought. According to the statistics the sedentary ones like chemical engineers make better-than-average husbands, but some of those whose work requires extensive travel and exploration, such as anthropologists, are poor matrimonial risks.

The usual accusations against scientists of absent-mindedness, lack of interest in great wealth, and a tendency to treat a date with a girl as a problem in advanced sociodynamics, have a grain of truth. However, a couple of late science-fiction novels, Stewart's "Earth Abides" and Norris' "Nutro 29," each presented a hero evidently intended as a typical scientist. The egregious characteristic of these men was, let's say, *lack* of character.

Isherwood Williams and Thomas Hightower are weak, pliant, easy-going, irresolute men, content to drift with the tide.

Now as far as my acquaintance with the breed goes, that is not at all typical. For of all men, scientists are on the average the world's most stubborn and refractory individualists, usually inoffensive, but capable of pursuing any objective on which they have set their sights with the fanatical intensity of mania. When people call scientists "mad" they refer to this quality. If that were not the case, they would never undergo the long and intense educational process that it takes to make a scientist.

Which brings us to the main question: How do you govern the ungovernable? Should you even try?

But before we get into that subject there are two other varieties of fictional scientist, common in stories but extremely rare in fact, who require comment. One is the rich scientist. Rich scientists are rare because a boy born rich is unlikely to develop the necessary drive, while poor scientists seldom have either the commercial acumen or the time and opportunity for financial manipulations to get rich.

There are exceptions: I once knew a young scientist who inherited a pot of money, built his own lab with it, became one of the country's leading biophysicists, and is now an authentic bigshot, serving on committees to advise the President what to do with the Atom and so forth.

But for practical purposes the rich scientist is like that other familiar fictional character: the supercolossal hero seven feet tall, with tawny hair and smoldering ice-blue eyes—and never mind the mixed metaphors—broad of shoulder and mighty of thew, who pulverize platoons of dastards and "liberates" droves of wenches as easily as we common clods put on our rubbers.

Now, it is not true to say that no such person ever lived. There was one once: King Harald III of Norway (1015-1066) whose fantastic career out-Conaned Conan. Harald the Roughneck *was* seven feet tall; he *did* lead his army bellowing battle songs and cutting down foes like ripe wheat with a two-handed sword; he *did* hew his way at the head of the Byzantine Emperor's Varangian Guard through the Muslim hordes to Jerusalem and back half a century before the Crusades officially began, and so forth. But the type has never been.

The other fictional type is the beautiful lady scientist. As a matter of cold fact most lady scientists range from plain to downright ugly, even though Dr. Beebe did have a very photogenic assistant, a blond girl ichthyologist, some years back. The reason is simple. Ugly girls tend to go in for science just as skinny boys do, because they can compete in this field with their fellow-beings better than on more conventional grounds.

Now comes the problem of putting our scientists to work and keeping them at it in an efficient manner. Well, where and how do scientists work?

A rather small minority—geologists, meteorologists, biologists, archeologists, et cetera—go on expeditions between stretches of office work or teaching. The rest work in laboratories, governmental and private. The private laboratories are those of manufacturing companies, universities, and other institutions like museums and medical centers, and a few well-fixed individuals. A little over a billion dollars is spent yearly on scientific research in the United States, half by the government and half by private agencies.

Among private organizations, colleges and universities tend to specialize more in pure science—abstract problems about the nature of man and the universe—while the other kinds favor applied science—engineering research on practical problems leading to improvements in ways of making and using things. However, just as there is no sharp distinction between these two kinds of research, so there is no sharp distinction between the organizations performing them. Many colleges and many industrial laboratories solve problems in both fields. Some of the laboratories of manufacturing companies do much basic research while others concentrate on specific problems.

Moreover these organizations do a lot of work for each other. A manufacturing company, for example, may rely upon its own engineers for ordinary design and improvement of its product, but resort to a university or government laboratory for advice on drastic new departures and difficult problems. The university laboratory likewise may at the same time perform engineering research for a manufacturer, research in sociology or economics for the government, and investigation of a problem in pure science for itself in order to advance the knowledge of mankind.

The "laboratory"—using the word in its broadest sense—will comprise a group of buildings or a single building or a part thereof, with equipment and personnel. This will be divided into parts, called "divisions" or "sections" or "laboratories" or whatever, each specializing in some field or branch of science. Then each of these subdivisions has two more or less distinct areas: the office space where the scientists have their desks—separate cubicles for the higher-ups; a general deskery for the rest—and stenographers, and a "laboratory" proper where the physical work is done.

A "laboratory" in the last sense is seldom so neat and shiny as it appears in movies about noble scientists. Instead it is cluttered with odds and ends of electric cable, tubing, wire, glassware, stands, pencil stubs, mechanics' lunches, old technical magazines, ash trays made of discarded scientific paraphernalia,

and so forth. Let some officious person "clean it up" and the scientists scream that they can no longer find anything: "I've been saving that roll of copper-nickel-iron wire for a year to use in Project 8663-B, and now just when I have a use for it—"

There is no very serious problem in hiring a young scientist to work in a laboratory. That is one reason there are degrees: so that the young scientists come neatly ticketed. Hence if you have work to be done in biochemistry you hire a biochemist.

But then the trouble begins. If he turns out to be no good you fire him —but how do you know when he is no good? Maybe the problem you gave him was inherently insoluble, so it is no discredit to him that he failed to solve it. On the other hand if he fails to solve several problems and then some other man succeeds, the first man doesn't look very good. I have known a third-rate scientist who would repeatedly turn in nice neat reports, carefully calculated and composed and reasoned — and every time the report would be rendered useless by some glaring basic error in scientific assumptions.

Then, in most lines of work there is a rough correlation between a man's general work-habits — neatness, agreeableness, punctuality, et cetera—and the merit of his work. But with scientists this does not apply. Some very good scientists are disorderly people who keep irregular hours and snarl at everybody. It takes a good administrator to weigh the worth of the men under him and to see through such superficialities as sloppiness of appearance or disagreeable personality.

Well, how do you get a good administrator?

Ah, there's one of the hardest nuts of all to crack. In most organizations, when you wish to choose a man to head the outfit or a section thereof, you pick the one in that group who has shown the most ability in his assigned work in the past. Now, if your outstanding scientist is also a good administrator you're in luck and there is no problem. But this doesn't happen any too often, because the qualities that make the best scientist are not at all those that make the best administrator. The scientist often cares little for people and doesn't get on well with them; the administrator must be an expert on people and must get along with them. The scientist is usually bored to tears by bookkeeping, finance, time-checks, organization-charts, and maintenance problems; the administrator must seize all these with a sure and confident grasp.

Does it follow that the man who knows the most about accounting, organization, and the like is the best lab administrator?

No, because here you run up against another paradox. A laboratory cannot be closely compared with a production, sales, teaching, or policing organization, all of whom can show results that can be

measured in simple units: dollars, arrests, and so on. A production department produces things that can be simply evaluated; a laboratory produces knowledge, and nobody knows what the knowledge will be worth until a year or a decade or a century has elapsed.

But the administrator, playing nursemaid to a gang of idiosyncratic geniuses, must justify his fat salary. Unless watched he is likely to impose upon the laboratory a degree of regimentation, organization, and paper work that actually cuts down the productiveness of the group.

In large organizations there is a natural tendency for paper work to increase with time. Each executive thinks of some daily or weekly or monthly report—on hours, progress, equipment, et cetera—which, if he could only make everybody turn it in faithfully, would give him a much clearer picture of what is going on in his organization. So he institutes this report, but seldom thinks to abolish any of the reports established by his predecessors. As a result the paper work increases until the scientists are actually spending a fifth or a quarter of their time writing reports.

These contradictions and difficulties are least evident in laboratories that do cut-and-dried engineering tests. Such outfits run in a routine manner, with one engineer bossing a gang of undegreed technicians, in much the same manner as a production department.

But as soon as any originality or thought is allowed you have "research," and the more research you have, the "purer" the science, the greater are the administrative difficulties. The troubles also increase with the size of the organization, reaching a maximum in government labs and those of great private companies like du Pont and Bell Telephone.* Though oceans of ink have been spilled on the respective merits and faults of capitalism and socialism, from the point of view of the ordinary working scientist or engineer, the difference between working for the government and for a large corporation could be put in your eye without discomfort.

Experience shows that for profound theoretical research in pure science, men work best when working alone or in a voluntary association of two or three brains, and when given the greatest possible freedom. On the other hand for solving practical engineering problems, or applying known principles, the best results are had by well-organized teams of specialists seeking well-defined objectives. University laboratories, which go in more for pure science, therefore tend towards the former type of organization—if you can call it that—while industrial laboratories, devoting themselves more to practical engineering, incline towards the latter.

The good administrator is the one

*I said great companies *like* them, not necessarily those two companies themselves.

who can tell what is the optimum degree of organization and control for his particular group doing his particular kind of work. He must be able to manage his geniuses, to spur them on, and to protect them from uninformed outside interference without pampering them to the point where they take advantage of his liberality—as some scientists, like other people, will do if encouraged.

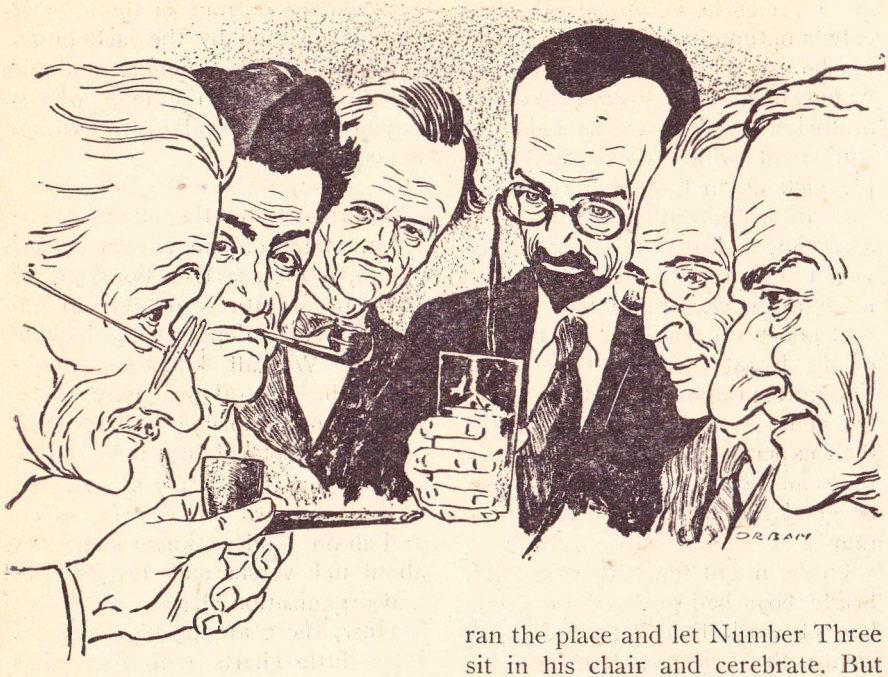
He must watch out, for instance, for the scientist who has been working for a long time on a problem and is hesitant to apply the crucial test for fear it will prove that he is on the wrong track, and who therefore goes on indefinitely refining his apparatus and devising subsidiary tests and generally fiddling around. The administrator must prowl around the laboratory enough to keep track of what goes on without driving his charges wild by constantly breathing down their necks. He must be able to ask for clearly defined results without imposing upon the scientist his ideas of how the results should be obtained—and at the same time be ready to offer sound advice if asked, or to take corrective action if the scientist obviously has got off the track and is getting nowhere.

One authority recommends that a good laboratory administrator should be somebody like a patent attorney, who has had plenty of contact with science without himself being primarily a scientist. Another suggests: "All administrators should be women, of the aggressive but motherly type. I think they would possibly do a very good job, being willing to provide for their mad little creatures in return for a kind word now and then, and no ego build-up."

As a practical matter the administrator, even if not primarily a scientist, should have a pretty good grounding in science, so that he shall be able to judge his juniors' results and make intelligent suggestions when asked. Also, many technical people get huffy when asked to take orders from nontechnical people, whom they regard as virtual illiterates.

Well then, suppose you pick your administrator from the ranks of nonscientists who still know enough science for the task. What do you do to reward the scientist who has worked long and well for you and who in a more conventional organization might reasonably expect to be promoted to command of the group? For while most scientists are *not* extravagant hedonists with violent power-complexes, they do—like other people—like to live reasonably well, and their egos demand at least some satisfaction in the form of promotion and pay-raises.

Sometimes, as I said, a good scientist is also a good administrator, in which case there is no problem. But sometimes you have to cook up a scheme for raising a scientist's pay and rank without actually putting him in charge of a department. You call him a "consultant" or a "senior



engineer" or something, and reward him by giving him more freedom and less paper work instead of the reverse, which is the normal lot of the executive.

As an example of the absurdities inherent in this paradox, there was a world-famous physicist who worked on the Manhattan Project at Los Alamos during World War II. To give him a rank commensurate with his standing in the field the United States Government had to hire him at one of their top rates, which meant that when the organization chart was drawn up this man was Number Three in command at Los Alamos. Ordinarily this meant nothing; Numbers One and Two ran the place and let Number Three sit in his chair and cerebrate. But the time came when Numbers One and Two were both away at once and our hero found himself acting director. A maintenance man came in to see the director and gave the physicist a long report on some perilous fire hazard that he had found, which should be attended to at once. When the maintenance man had finished, the physicist looked at him vaguely and said:

"But that has nothing to do with physics!"

And thereupon he rolled up his eyes and withdrew his soul once again into the Nirvana of the higher mathematical physics.

The scientific administrator's lot is a pretty exacting one. He has to

go as far as he can to give his scientists optimum working conditions, but he can seldom go so far as they would like. They would like laboratories stocked with unlimited equipment which they could simply pick up in the stock room and walk off with, without even signing a receipt, and a minimum of supervision and reports. Then the administrator would not know what was going on, and when Congress or the Front Office or the Faculty Committee came around to ask what his geniuses were doing to justify their expense he would have a tough time answering—which would not be good for next year's appropriation.

Or he might find that one of his bright boys had gone off into some line of work that happens to fascinate the scientist but that has nothing to do with the over-all objectives of the organization.

On this last point, a lot of trouble would be saved if the administrator would make it quite clear to the scientist when he hires him, just what is expected of him. If the man is employed to do dull routine tests on hydraulic valves he should be made to understand that fact clearly, and if he doesn't wish to test hydraulic valves he does not have to take the job. But if the scope of the job is not made clear the scientist may get a bright idea for an improvement in rotameters and neglect the valves for his wonderful new discovery. And then trouble pops and the administrator is caught in the middle between the outrage of the scientist who is insulted by the lack of appreciation of his genius and the equal outrage of the man who is paying to have valves tested and expects just that.

Another thing the administrator has to watch out for is over-organization, a disease that flourishes in large organizations in general and governmental departments in particular. We all know something about the general principles of organization; authority must be congruent with responsibility, fields of authority must be sharply demarcated, objectives must be clearly stated, and so on. And we know something about line versus staff organization and organization charts.

Now, there are people who love those little charts with their lines and boxes as a pig loves mud. If given a free hand they will think up so many interlocking relationships and lines of authority and committees, and ordain so many committee meetings and consultations and memoranda in octuplicate, that the organization will be paralyzed by sheer complexity. No organization will work very well if it is so complicated that even those running it can't understand it.

To give an example, during the late war I once had charge of the War Production Committee of the Naval Air Material Center in Philadelphia. This was the governmental equivalent of a labor-management committee in private industry, and

was supposed to process suggestions for increasing production. Somebody in Washington set up the most elaborate scheme you ever saw, according to which several hundred people in the shops and laboratories were to be organized into *five* levels of committees. The shops elected the first set of committeemen, who in turn elected the second from among their number, and so on.

As this was too complicated to be workable we simplified it to a mere four levels and went ahead. We had three hundred sixty committeemen working about one hundred fifteen hours a week on WPC work, plus five full-time employees —including Lt.-Comdr. de Camp— and three part-time officials spending another two hundred fifty hours a week on this activity. And most of the "work" was sheer waste motion. The useful part of it could have been done by a mere handful of people spending a fraction of the time, while the rest actually produced instead of talking about production.*

Over-organization is especially pernicious in dealing with scientists, who mostly like to work by themselves and who to some extent became scientists so that they could do so.

And speaking of line and staff organization, there are two ways of handling the minimum routine work and paper-shuffling that must be done. One is to divide it or rotate it among the scientists, so that each gets his fair share of drudgery. The other, which is better if the organization is big enough to afford it, is to set up service departments to handle such matters. A scientist is not normally expected to clean the floor under his desk; you hire a janitor for that. By the same token you can take much routine letter-writing, material-ordering, and the like off his shoulders by providing expert help.

On the other hand he will probably have to do a certain disagreeable minimum of drudgery no matter how he hates it and no matter how well-organized the laboratory is. For instance, he will have to write his own progress reports, or at least dictate them, because nobody else knows enough about his particular work to do so intelligently. And if you don't make him turn in progress reports, he may die on you, leaving a mass of mysterious wires and tubes whose meaning nobody knows.

Even a "pure" scientist, relieved as far as possible of administrative and routine tasks, will have to learn something of administration in order to manage his assistants. True, some very special scientists like mathematicians work without assistants — without any equipment save a pencil and paper and some reference books.

But most laboratory scientists as they rise in their field are given big-

*I am happy to say that some months before the end of the war, the admiral and I agreed to abolish the whole monstrosity, and I was allowed to go back to gadgeteering.

ger projects that require the help of extra hands and brains. A young scientist may start out all right until he reaches the point of having six or eight assistants. Then he runs into trouble because he has to get along with one technician who is a chronic loafer, another with a sneering-disagreeable personality, another who steals laboratory equipment to sell, and so on. Then, despite his lofty boasts of neither knowing nor caring about the black art of human relations, he has to learn it or else.

So much for laboratory scientists. There remains the matter of scientific expeditions. Here you need not worry much about paper work and over-organization, because the ordinary expedition is too small. It may comprise anywhere from one person to a few score; expeditions whose personnel runs into three or four figures, like the Navy's recent reconnaissances to the Antarctic, are very exceptional. And a few score people is still small compared to the six hundred-odd researchers of General Motors Research, or du Pont with more than eighteen hundred scientists and an even larger number of technicians.

Expeditions, however, have their own peculiar troubles—troubles not often brought out in the stories. The bigger the expedition and the more remote and rugged the place it is going, the more acute the difficulties will be. These troubles are personality conflicts, and any expedition of more than a half-dozen members is likely to have them.

For one thing exploring attracts not the prosaic, steady, average type of person, but the aggressive and unconventional individualist. When you crowd a lot of people of this type, of varied backgrounds, together for long periods, suffering from equatorial heat or polar cold, tempers get short and personalities grate. Faults of character that would be overlooked in civilization show up with glaring distinctness. Moreover if the conditions are to be rugged, the leader must pick comparatively young persons to stand the hardships, and being young they have not developed the self-control and tolerance that might enable an older group to get along.

A candid account of many expeditions would reveal a distressing story of feuds, hatreds, mutiny, and outbursts of temper. The leader of such an expedition is in a difficult position. When a man turns out to be no good after it is too late to send him home, he can't simply shoot the twerp. All he can do is relieve him of all duties connected with the expedition. And then he has the character underfoot for months, sulking, intriguing, and plotting absurd revenges.

But when the explorers get home they feel ashamed of having acted in such a childish manner. Hence in writing up their experiences—or, more usually, having a ghost do it for them—they tend to gloss over

their personality troubles, and so most written accounts of expeditions give a deceptive effect of sweetness and light.

One of the most famous American expeditions of the last thirty years operated in a far country for several successive years, and one year the scientists actually threatened to strike if two of their number were not excluded from further participation. These two, while pleasant enough ordinarily — I met both of them—became hogs when the supply and variety of foods was restricted. Thus when the jelly was passed at dinner one of them would take all of it. Another member almost caused a massacre because he ribbed and kidded a young native government official attached to the expedition, until the young man left in a fury and reported to his government that the group was really a secret military expedition.

However, from what I have been able to gather, most of the personality-troubles are caused, not by the scientists, but by the other personnel: aviators, mechanics, photographers, and so on. Scientists are by and large fairly easy to get along with if you don't expect too much of them. Their general tendency is to concentrate on their own recondite researches and to pay little attention to each other and none at all to other human beings.

All these troubles are compounded when an expedition is mixed as to sex, for after a few months in the jungle or on the Greenland ice cap even the average lady scientist looks good. More than one such mixed expedition has come home tearing its collective hair trying to figure out how to effect assorted trades of husbands and wives. When one mixed expedition was sent out some years ago, the people who managed it seriously considered sending the men across the ocean in one ship and the women in the other, to defer as long as possible the evil day when sex would rear its beautiful head.

If an expedition must be mixed, it probably works best when it is small and consists entirely of married couples. If the director brings his wife but does not let anybody else bring his, you have a source of friction. And if you mix married couples, single people of both sexes, and married people without their mates, you are asking for trouble.

But anybody who tries to manage people or activities for any purpose is asking for trouble, which is no adequate reason for giving up a worth-while project. A successful expedition or laboratory is not one that has no personality or administrative troubles, but one that achieves its objectives in spite of them.

THE END

FOR THOSE WHO FOLLOW AFTER

BY DEAN McLAUGHLIN

Sometimes a race must end; the physical nature of its sun may force that. But a race is more than a group of living protoplasm — and that something can live forever.

Illustrated by Orban

History fades into fable; fact becomes clouded with doubt and controversy; the inscription molders from the tablet: the statue falls from the pedestal. Columns, arches, pyramids, what are they but heaps of sand; and their epitaphs, but characters written in the dust?

Washington Irving

The city had been built to remain throughout eternity. But time passes slowly and the years are long.

The ruins were not merely old. They were ancient. They had been old when the pyramids were still unbuilt. They antedated Babylon and Ur of the Chaldes. They had been crumbling when the long-dead cities of Persia were built from the fresh mud of rivers that long ago dried and left their channels to dust and the desert.

Johnathan Millar could sense the antiquity of the ruins, though he could never have rationally analyzed the feeling. It was, perhaps, the knowledge that this fallen city had been young in the days before a *thing* had risen in prehistoric jungles and moved on two feet instead of four. That, and the sight of these immense hills of rubble which even yet revealed the traces of a master architect. That the traces remained after all these centuries was in itself a testimony to the craftsmanship involved.

Millar walked among the fallen towers, shining his flashlight into the deep shadows, wondering where work should be begun. The city had waited for a hundred thousand years —it could wait another week while plans were drawn for systematic excavation.

Archeology wasn't easy, neither at home nor here—especially here. Deduce a whole culture from a few fragments of millennium old pottery and a broken tool; study a rusted sword and learn why it had fallen, and where its people had gone. Difficult enough with one's own race—but with a totally foreign race, now completely vanished, and on an alien

world— Could it be done?

So Millar surveyed the ruins with a strange combination of feelings: anticipation, curiosity, and pessimism.

Johnathan Millar had planned with himself his tramp through the ruins; leave his camp and his companion archeologists and students to enter the ruins at the western rim, then circle to the north and return to camp by skirting the border.

From above, the ruins had seemed large. Now, amidst the toppled masonry and shattered metal skeletons, Millar realized their true immensity. When they were newly built, millennia ago, the structures had been larger yet, and more orderly. Then it had been a city; now it was rubble—mountain after mountain of rubble. Its builders had been a great race—they must have been great, to build so masterfully and so well. But now that race was gone. Why? And its works had fallen as the race itself had fallen.

"The evils that men do live after them. The good is oft interred with their bones."

No, that was not right. What was, then? What words might befit themselves to this monument of a race dead since before the birth of man. This was not evil. These ruins were a tribute, an epitaph, and a eulogy, all in one.

Millar passed beyond the edge of the ancient metropolis, through the periphery of lesser rubble, and on into the green grassland beyond. Darkness was coming on—the days on this foreign globe were shorter than those of Earth—and from where he now was, his camp was invisible, being obscured by a gentle ridge. To check his bearings, Millar mounted a hill that lay to his own westward and hence, he supposed, north of the camp.

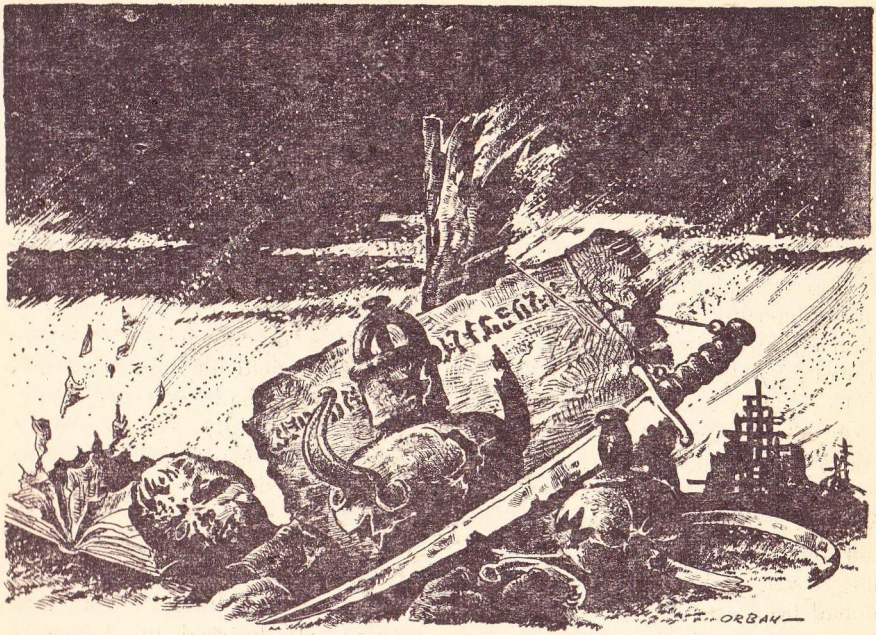
And so it was. From the peak of the hill, he quickly found the camp through his field glasses. It was almost where he had expected it to be. He was mentally congratulating himself as he made his way down the southern slope.

He came upon the cavern near the base of the hill. He thought momentarily that it was natural, but then he saw that its outline was too regular. He beamed his flashlight into the orifice. The light penetrated far within, but it did not reveal the farther wall. And the cross section was a perfect circle. This cave had never formed, it had been built.

Millar felt a temptation to explore the cave now, but reason told him otherwise. The days were too short, and the sun which was not The Sun was rapidly moving to keep its astronomical appointment with the horizon. It was necessary that he reach camp soon, or else become lost in the night.

It was, however, with a curious mind that he continued toward camp.

"I'd say it was evolution," de-



clared one of the older archeologists. "The dinosaurs evolved themselves out of existence. Overspecialization. Maybe that's what happened to them." He was white-haired but robust, and his name was common: Robert Smith. His voice was strong and held a conviction which he himself lacked. But discussion had been ignited.

The light of the open fire illuminated—even if it did not enlighten—the faces round about it with its flickering spears and blinking shadows. Smith glanced from face to face, seeking the one who would reply to his statement. It was a young post-grad, Alfred Nieheimer, who spoke out.

"You've missed something, sir. They had something the saurians didn't. They had brains and could think. These ruins I submit as evidence to that. I think they lost out because they didn't evolve."

Smith grinned. This boy had ideas. And he was quicker than his more experienced comrades. Nieheimer would go places and do things. "All right, youngster," he challenged, "explain yourself."

Nieheimer spread his hands before him, palms down. "Well," he shrugged, "you know the law of natural selection—survival of the fittest. Only those who are fit to survive to propagate the race. Those most fitted have the greatest chance of survival and hence, to propagate. That way, non-survival characteris-

tics are weeded out, and the strongest survival characteristics are most likely to be inherited by the next generation.

"But that rule only applies to animals. Man, and they—whatever *they* were—aren't like animals in that they're intelligent. They can apply their intelligence to medicine, thereby enabling the unfit—those who are susceptible to illness or deformed, or simply inferior—to survive and pass on their characteristics. That may be good ethics and so forth, but it's hard on evolution. The bad characteristics aren't weeded out. They're passed on. Gradually, the race is polluted with these bad characteristics. So an intelligent race doesn't evolve constantly. It evolves until it reaches a state of civilization wherein medicine is highly developed. Then degeneration sets in; the civilization collapses and the race returns to barbarism. Then evolution begins again. The race rises and then it falls again. In an intelligent race, evolution isn't a straight line march. No upward and onward about it. It's a circle, a cycle."

Smith felt pleased. The idea had merit. But it also had flaws. "A fine exposition, Mr. Nieheimer, but there are several points *you've* missed." He paused and grinned at the primitive fire—so much more satisfying than the efficient camp stove. "First, you neglect the possibilities of genetic control, and second, you assume that their ethics were similar to ours."

Apparently, Nieheimer had mis-evaluated Smith's opening remarks, for he opened his rebuttal with: "Neither point saves your own theory. Genetic control would prevent overspecialization as well as degeneration, and as for ethics"—he hesitated, formulating his argument—"in an intelligent race, our own ethics are more likely than those of the dinosaur. A race which could build a city like this must certainly have had ethics similar to our own. A high degree of civilization is impossible without consideration of individuals. A short review of history will show you the results of totalitarian ethics."

So far so good. Smith tried for another weak spot. "You say that the degeneration would halt at a point and evolution recommence. This race, I remind you, is gone!" Like a second-rate actor, he stretched out an arm toward the silent ruins, hidden now in the darkness under the constellations that were subtly different from those seen from Earth.

"No defense of your own theory," Nieheimer rejoined. "And a series of evolution-degeneration cycles would cause, in the long run, a general downward trend, since non-survival characteristics are more prevalent than pro-survival ones. There's only one right way, and many, many wrong ways."

Smith frowned. There were still flaws, he felt, but he could not find them immediately. To Nieheimer and to the group, he said, "That's slippery logic, son. A few too many

maybes. But it was a merry chase. We'll have to compare notes five years from now and see who's right—you, me, or the other guy. However, I'd guess it was some ignorance on their part, one way or another."

Reading between the lines, Nieheimer grinned back at him, and let the discussion drop.

Shortly thereafter, the camp quieted down as its occupants sought their tents, for the nights, like the days, were short.

And the night was dark, for unlike Earth, this world had no moon.

Millar returned to the cave—or tunnel, as he now considered it—in the morning. He had hoped to bring a student, preferably Nieheimer, with him, but that hope had come out a poor second to necessity, and supplies for the camp and for the digging were still coming in. His colleagues he would not invite, since each had his own interests.

When he set out, fully equipped for a full day of exploring, he had been amusing himself with a motto—the one he, or was it someone else, had invented on his first field trip—a motto for archeologists, and particularly the junior members of an expedition: "We do history's dirty work." But the motto was quickly forgotten when, as he crossed the ridge that intervened between cave and camp, he paused to view the ruins.

The color of white—a bleached, chalky, bone-white — predominated, but red, pink, blue, gray, and purple appeared here and there, forming a crazy-quilt pattern in the tumbled waste. And it suddenly struck Millar that the foundations of those ancient structures must have eroded completely away since the city's desertion and before the coming of man. Nothing else would explain the extent of ruin, for no wall remained, and no pits were to be seen.

And he felt, too, the sudden conviction that the city had been built to withstand all but that one threat. Those towers must have been built to endure the most powerful blows—the hurricane's wind, the volcano's fire, the shaking of the earth itself—for even now the carrion-cleaned skeletons of buildings remained, twisted by their sudden, ancient fall, but whole and strong and rustless under the open sky.

For they had been a race of builders, and they had known their art.

He was still pondering when he reached the cave: how many thousands of years—or millions—must a city stand untended before the earth on which it is built is swept away by the elements? He did not know, but the wild-guess estimates staggered him.

The hill which the cave penetrated was spotted with weed-grown outcroppings of weathered, slatelike rock, and the slopes were strewn with the flattish fragments. How high, he wondered, had the hill been when the city was new? Millar realized, then, that the ruins had once

rested on its slope, so very long ago.

The cave mouth was rimmed side, top, and bottom, with a thick, black ring which merged flush with the slope of the hill, as if the two had eroded away together. Indeed, upon investigation, Millar found that to be the case. The thick, black shell was practically indestructible from within. Its inner surfaces refused to chip when Millar tried to take a sample. But the material crumbled when he touched the outer surface. It made him wonder, and gave him a feeling of respect for the builders of this ruined city. They had known the arts of structure well. They had, it appeared, wished the tunnel mouth to remain uniform with the hillside for an interminable time, though they themselves might vanish.

Where are these great kings now? he thought.

Millar unclipped his flashlight from his belt and entered the tunnel. It was quite roomy and could have accommodated a pleasure car without trouble. Nor did its large diameter appear to diminish as he continued inward.

When he had advanced several hundred feet, Millar turned to gauge his progress, and saw that the tunnel had veered slightly to the right and downward, like a descending spiral. When next he looked back, the entrance was gone, and there was no light save that from his electric torch and nothing to see but the undecorated black sides of the passageway.

His footsteps echoed away into the distance, preceding him and bringing up the rear. And Millar suddenly felt very much alone. There was a sense of time and lack of time, of youth and age, of what was past and what was yet to be. And as an overtone, the echoing and re-echoing of his footsteps, a constant, persistent sound of cycling intensity.

How far he walked, or how far he descended on the downcurving spiral tunnel he could not guess. He passed no side passages, a fact which relieved him, for a branching tunnel would confuse him on his return trip. Once his flashlight dimmed, and he was forced to replace its discharged batteries in the dark before continuing onward.

Finally, however, he reached the end of his walk. An abrupt dead-end wall blocked the entire passageway. In it, filling most of its area, was a square, massive portal—closed. But in the wall at its side was a wheel, and below the wheel, and attached to it, were a series of linked shafts. Millar recognized it as a mechanism for opening the door, but saw also that one shaft was missing. He found it lying on the floor at his feet. Fitting it into place, he turned the wheel. It yielded smoothly to his weight, a fact which surprised him.

But had it been a simple doorway, or a test of mentality?

Air rushed into a previously unobserved vent above the door, as if there were a vacuum beyond it. And so it might well have seemed for, as

it later developed, there was.

It must have been of great volume too, for Millar felt the air rush past him and heard the howl of wind vibrate down the tunnel. He sat down to relax, as there might be a long wait.

There was.

He had eaten the lunch he had brought, and again recharged his flashlight before, the pressures having equalized, the door swung softly open. Beyond he found another, similar door, also open, and after that, a series of such portals.

And beyond the succession of bulkheads, a large room.

It was oblong and rectangular, and about the size of the waiting room of a metropolitan railway station. Millar entered from one of the longer walls, and, moments later, there was light. The source of illumination he could not determine, but the entire room was revealed at once. He snapped off his flashlight and slung it on his belt. Then he began an examination of the room.

The most arresting feature was at the foot of the opposite wall. There, a semicircular trough ran the entire length of the room and vanished under an arch at either end. And resting in the trough, like a ship in its slip or a bullet in a gun, was a large, capsulelike object, its diameter only slightly less than that of the trough, and hence roughly equal to that of the tunnel outside.

The capsule's ends were hemispheric, and its midsection a cylinder. A section of the body, a full half rotation, was removed from the upper surface, revealing the hollow interior. Shining his flashlight inside, Millar could find nothing that could be thought of as controls, though he felt certain that this was some means of transport. Perhaps it was automatic. But the most arresting feature about the capsule was that at no point did it touch the trough in which it rested. Several inches of air space lay between car and track. Millar supposed that magnetic repulsion was employed, but the exact process escaped him.

Puzzled, he turned his eyes to other features of the room. Acting as a backdrop to the capsule and its track, was a painting that covered the entire length and height of the wall. He had noticed it before, but the unusual vehicle had overshadowed it in his interest. Now he studied the painting.

A city rested on the gentle slope of an old, eroded mountain, a mountain that was little more than an oversized hill, both in shape and appearance. The towers of the city revealed a mastery of architecture; their bold angularity and colored fingers of stone blended into a composite of functional and aesthetic beauty. That, he thought soberly, was how the city had appeared before time had begun its work.

To the left side of the painting, where the slope was at its highest, a portion of the mountain was pictured as being cut away, and there was thus revealed a black spiral, looking like a coil spring stretched wide,

descending down into the earth. It began far below the surface of the slope, and it ended in a room that was obviously the room in which it was a mural. From the painting, Millar saw that the track in which the capsule lay led off on each side, to turn downward into vertical wells. Then, at some undefined depth, the tracks leveled off, to join in another chamber. The entire tube system was a cycle of two stations with one-way traffic over the entire length.

One other feature of the room caught his attention. Beside the portal of his entrance, the wall was engraved with a group of pictographs which indicated that one straight line mark was equivalent to one planetary year. These drawings served as an explanation for the long series of marks in the wall immediately below. Close spaced and in seven horizontal columns, the marks extended the length of the room and beyond into a side tunnel. At the juncture of the wall and floor was mounted a rail, not unlike the brass rail in a bar. Investigating, Millar found that the rail served as a mount for the device which made the marks. This machine was deep in the side tunnel, apparently on its way out, since it trailed an eighth line of marks behind it.

Millar felt a chill when he realized the meaning of those marks. Thousands of feet of closely spaced scratches in the wall, each one denoting a year. And those years were twice as long as Earth's.

The thought of that great span of time, ironically, returned Millar to awareness of the present, and, on consulting his timepiece, he found it was late afternoon. Further exploration of this place, he decided, must wait. His immediate task was returning to camp before nightfall, which would not be long in coming.

Even though he hurried, the afterglow was fading and an alien evening star was bright in the sky before he reached the camp.

And when at length Millar lay beneath his blanket under the sky in anticipation of sleep, he pondered briefly of the strange quirks of destiny. Here was a race which had been, from all appearances, greater than man now was. But they had not conquered the stars as men had conquered, and now men were poking in the ruins of that long-dead race's greatest structures. What an injustice of fate!

Why, he wondered, had they failed in that conquest of space, despite their obvious scientific advancement? And why had they vanished? Why were men here, while they were not?

Perhaps he knew the answer. Perhaps it had been given him the preceding night by Nieheimer.

He began to feel drowsy, and he was suddenly glad that this world lacked a moon to shine in his upturned eyes.

He awoke in early morning with cold rain on his face. He grabbed up his blankets and took shelter in one

of the tents, where he should have slept in the first place.

He fell asleep again.

When day came, rain was still falling. He determined nevertheless to visit the tunnel once again. But he went neither alone nor on foot. Their vehicle, specially built for travel over undefined, wild routes in all types of weather, bumped, jolted, and squished over the rises and into the hollows that lay between the camp and the entrance to the subsurface vault. Nieheimer, the student, was at the wheel, while Millar was trying to keep his eagerly eaten breakfast in place. The vehicle may have been built for rough terrain, but not his stomach.

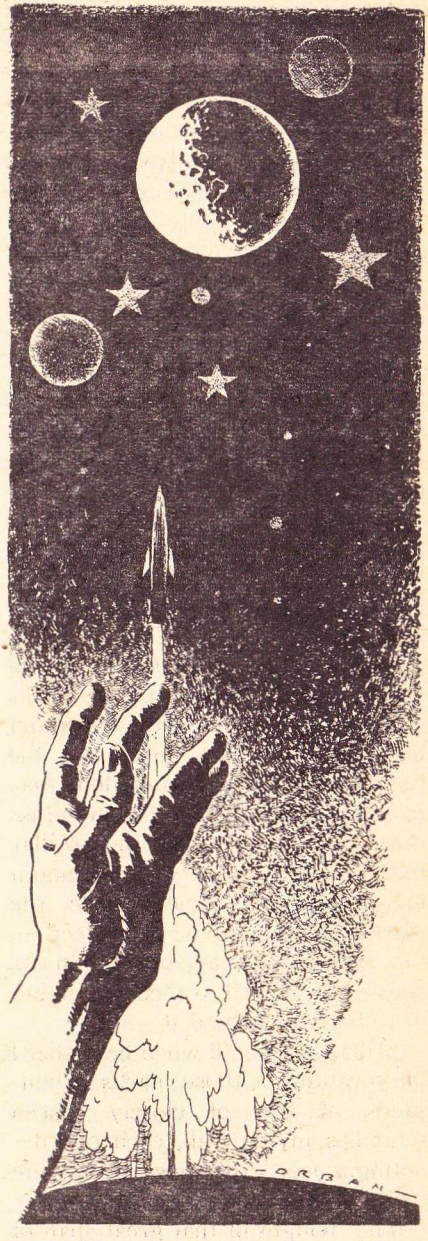
"Why didn't you let the others come? They wanted to, you know," asked Nieheimer, suddenly spinning the wheel to avoid a particularly large rock outcrop. Millar almost fell from his seat as the machine lurched.

"No sense in it," Millar answered. "I'm the only one going down."

"Hey, wait a minute. I thought I was taking the drop, too."

"Wish you could, but there's no telling what condition the tube's in. A hundred thousand years isn't exactly yesterday."

They approached the tunnel. Rain was still falling, and Millar saw the outer edge of the tunnel lining washing away with a little stream of water. Some water fell into the cave, and the floor absorbed it like a sponge. A small rivulet undercut the



threshold, and a large segment crumbled before their eyes.

Nieheimer switched on the headlamps and drove on in. The sound of rain on the canvas canopy stopped. Another sound began as the engine's hum reverberated on the walls, but there was none of the ghostly echoing such as Millar's footfalls had raised on the previous day. Nor did this passage through the tunnel require as much time.

They left the machine at the first portal and continued on foot. In all, there were eight doorways. Each of the eight doorsills were waist high in the middle, tapering to a foot at each side. They clambered over these, using their flashlights to see the way. The chamber at the end of the tunnel became lighted as they entered.

Millar left Nieheimer there. "Take photos of this place," he directed, "and any notes you think worth while. You know. If you feel up to it, you might find out how long this place's been here." He indicated the close-spaced marks on the wall. "If I'm not back by an hour before sunset, go back to camp and report. Get me?"

Nieheimer nodded. He looked disappointed.

Millar stepped down into the capsule. He examined the interior more carefully than he had before, using his flashlight in the shadows. Nothing but padding.

The capsule was roughly the size of a large surface freight-carrier. Thus, he could hardly see Nieheimer, who stood near the edge of the trough. Millar called up, "I don't know if it'll start. I can't find any controls."

But even as the words left his tongue, Nieheimer vanished from sight as a canopy closed over the opening. There was a loud *click* as the plates met. There was no light except for his electric torch, and Millar was relieved that he had none of the claustrophobia that had troubled men of earlier times. The car began to move gently, but in the direction he had not expected. He lost balance and fell on the padded floor.

The floor tilted under him, and he knew suddenly that he was falling. He floated free of the floor and reached out for support. There was none in reach.

He drifted toward the far side. Watching it come closer, he noticed that he was also sinking toward the nether end of the capsule, as current orientation identified it. And then he was no longer falling, as his body touched the padding below him, which presently sank under his weight. His weight increased, and he now felt the capsule tilting back to its original plane. He tumbled away from the end of the capsule, rolling into the midsection, which was once again the floor. He felt a gentle deceleration, and a final stop. The canopy slid back and let in light to augment his flashlight. He extinguished the latter.

He scrambled out, no easy task

against the curved side. The room to which he had been carried was small, only slightly longer than the capsule itself. The walls at either end were even more confining. Before him was an arched passage, the end of which was hidden in semi-darkness.

Entering, he followed its course for several hundred dim-lit yards before reaching a point where the sourceless light grew brighter, and a new, sharp sound broke the rhythm of his echoing footfalls. Startled, he twisted 'round toward the sound's source—the left-hand wall of the passage.

Before his eyes, a thin line opened in the smooth surface, reaching from ceiling to floor. The line became a niche, the niche an opening, the opening a portal.

At first, there was little light beyond the threshold, and that meager illumination centered about and radiated from a giant sculpture before him. The form of this statue was plainly animal, but to Millar it was both alien and ugly. It revolted him and he turned his eyes away.

It was then that he knew the room was large, for the light around the statue, though reasonably bright, did not reflect from the walls, but faded before touching them. Between the portal and the statue were rows and columns of squat, black shadows, while in a line from one to the other was a wide aisle. The statue's size, he now realized, was much greater than he had previously supposed.

He faced the statue again, and though its ugly alienness disturbed and disquieted him, he walked toward it. At once, the sphere of light about the sculptured figure expanded, yet so slowly that Millar could follow its expansion with his vision, see the light come creeping down the broad aisle and embrace him. And spread slowly on throughout the room.

It was as if a voice had cried, "Let there be light!" for there was light, filling the room to the brim, from floor to ceiling and to the four walls. The room was glowing from all sides, and there were no shadows.

And the room was large. Its width was a thousand yards, its length two thousand. The alien sculpture was a thousand feet from floor to crown, and the ceiling higher by nine hundred yards.

The shapes huddled on the floor that had been shadows when first seen were machines, and all of them alien and strangely designed. And towering above them like a master over slaves, stood the statue. The ranks of the machines were ordered and obedient. The walls at the sides and behind Millar showed tier after tier of galleries, and lining the walls, close packed, were heavy metal cabinets. Their purpose was clear: the knowledge of a vanished race.

They built this vault, thought Millar, confirming his suspicions, *as a monument—to themselves.*

And somehow, in the thrill of his discovery, all thought of their conceit disappeared.

The fourth wall, partially eclipsed by the statue, was unencumbered with the galleries of the other three. It bore, instead, an inscription. The characters were strange, quite unfamiliar, save for a few that Millar had seen among the ruins of the city which lay on the plain above this vault. Their meanings were unknown.

To see the whole of the inscription, even though he could not read it, Millar walked down the aisle to a point beyond the statue. His glance turned from side to side, but avoided the figure itself. Once beyond it, though, he lost interest in the machines that thronged the floor. It was almost as if he had heard a command for he looked up again at the wall before him.

But now the symbols had meaning, and the inscription was more than a mass of engraved stone. It seemed that a voice was speaking in his mind, repeating in translation the words on the wall.

Telepathy—with a dead race? Mechanical, perhaps. Or was it mere imagination? At the moment, such details were unimportant and Millar did not question. His mind was absorbed in understanding that which had been written by those who had built and furnished this vault, and had left a likeness as guardian of their treasure.

He stood with the monstrous statue at his back and read.

To you, who by your intelligence and your curiosity have reached this vault, we, as agents of our race and of our civilization, offer that which you find herein. Whether these relics will be of use to you and your people we have no way of knowing, nor have we knowledge of your identity, neither individual nor race. The future is doubly barred to us, and such matters are for destiny to decide.

But race is of no importance to us. Though our race may still exist, we ourselves will long be dead, and it will not matter. It may be vanity for which we seal this residue of our culture beneath the soil. Partly, at least, that is so. But it is also our hope that this detritus of our dying civilization may be of aid to you to whom the future belongs, although for us they failed.

These do we offer you: our history, our arts, and our science. But our science may be primitive to you, and our art may be maudlin or formless. Then have we nothing to offer but our history. May it show you truths it concealed from us. For though we see our culture falling all about us, as earlier cultures of our race likewise fell to ruin, the reason is lost to us and the causes obscure. Our culture is vitiated; the vigor of youth has deserted it in age. We know not why. And truly, if we knew our shortcomings, we would rebuild rather than erect this monument. May you succeed at that wherein we have failed.

And if, as it well may be, you possess already that knowledge which we could not find, then accept this vault for what it is, a vain and empty gesture of a culture that did not survive the trial of existence.

If this be so, then, even though you are flesh that is not of our flesh, still you are men and therefore command our respect. Let us have at least the honor of your own respect.

Though we know that for us they were not enough, it is our hope that these, our offerings, may help you in your struggle for survival. It may be our vanity that so directs us, but that does not diminish the sincerity of our hope. And it may well be our vanity, for no culture, nor any race has failed completely if its memory remains.

The vault was so immense his footsteps made no sound as he turned and walked away: Past the giant statue which was now no longer ugly, but possessed with dignity and greatness; past the long rows of silent machinery, an archeological treasure-trove; past, finally, the portals, which were lined on either side with the records of a dead race, an encyclopedist's dream of Paradise.

And once beyond the threshold, he paused at a soundless command, turned, and gazed once again on that magnificent likeness of a man who was not human. As he watched, the light retreated from him, leaving shadows and darkness behind. The light vanished slowly, until only the far wall was illuminated. Like a planet in transit, the statue stood, a majestic shadow, a black bulk against the carved inscription.

They didn't know their own minds, thought Millar, *as we know ours.*

The portal closed before his gaze.

Nieheimer was waiting for him when he reached the upper chamber. The student helped Millar out of the capsule with a strong arm. Millar noticed idly that the device did not rock in the trough when his weight was shifted, though capsule and track never made contact.

"Find anything?" Nieheimer asked. His tone was as studiedly casual as his mind was wildly impatient.

Millar's reply was sober. "I learned why we are here and they are not," he said, and proceeded to voice the thoughts that were in his mind. "To succeed, an intelligent race must have a frontier, or lacking that, an understanding of itself. We have both: we've reached the stars, and we know our minds. They had no moon, to beckon them on as we were beckoned, so they did not conquer space and thereby lost their frontier. And they had not the knowledge that would let them do without one. So now they are gone."

Then, as an afterthought, "How old is this place?"

"I don't know," Nieheimer answered. "The machine was stopped."

"Stopped?"

"Yes. Not broken, and it had plenty of power. It was just"—he shrugged—"stopped."

"Why? Do you know?"

"Well, you know how a radium clock works. You seal some radium in a box and figure the time by the drop in radiation. By math, it keeps on radiating forever. Well, that's how their machine measured time. Here's all that's left."

And he held out a small, dull gray brick: pure lead.

They had built their monument to last for all time. In that, at least, they had been successful.

THE END

BOOK REVIEWS

"Journey To Infinity." Edited by Martin Greenberg. Gnome Press. New York. 381 pp. $3.50

Like its predecessor, "Men Against the Stars," this is an anthology organized "around a central idea . . . which, taken in its entirety, tells a complete story." Where the first anthology told the story of Man's race to the planets, this newest venture attempts a science-fictional History of Man.

Two stories by A. Bertram Chandler and E. E. Smith start off the volume with tales of Atlantean prehistoric civilizations. Then comes Fredric Brown's excellent "Letter to a Phoenix," first printed in these pages, followed by Theodore Sturgeon's "Unite and Conquer," a narrative in which our civilization narrowly escapes atomic extinction. Jack Williamson's "Breakdown," poses the problem inherent in the conflict between an expanding technology and a static greed for power; and a trilogy of tales about travelers on the far planets, "Dance of a New World," by John D. MacDonald; "Mother Earth," by Isaac Asimov; and C. L. Moore's "There Shall Be Darkness," culminates in the recessional of Fritz Leiber's "Taboo." Man again attempts to conquer the stars in Cleve Cartmill's "Overthrow"; Judith Merrill's "Barrier of Dread"; and the final story, "Metamorphosite," by Eric Frank Russell.

It can at once be seen that the anthology contains stories by the leading writers of science fiction. Yet despite this advantage, the idea does not quite come off. The fault, if any, may be attributed to the exigencies imposed upon the anthologist. He could select only those stories which were appropriate to his framework, and was thus forced to include the second rate as well as those excellent stories which make up perhaps half the book. "Journey to Infinity," unfortunately, does not measure up to its predecessor.

Villiers Gerson

"The Illustrated Man," by Ray Bradbury. Doubleday and Co., Inc. Garden City, N. Y. 256 pp. $3.50

It is this reviewer's belief that there are few authors in the field of science fiction who can write as well as Ray Bradbury. His stories contain an extra dimension—the sense of reality.

In his new book of eighteen stories, Bradbury unifies the anthology with a rather fantastic device: the narrator, viewing living pictures of the Future tattooed upon an Illustrated Man, sees the stories unfold under his eyes. Yet the mood of the stories included in this volume makes the invention acceptable.

Many of the tales will be new to the readers of this magazine, although a few of them have been anthologized in other collections, including the notable "The Man," about the spacemen who discover that they have landed upon a planet which the Redeemer has just visited; "The Exiles," that strange story which tells of the death of fantasy upon Mars; and "Zero Hour," in which a terrifying and unknown extraterrestrial race uses children as Fifth Columnists in an invasion of Earth. There are other stories printed here for the first time, such as the beautiful "The Rocket Man," about the son of a dead spaceman, and the struggle within him between the lure of space and the demands of duty and security. One of the best stories in the volume is "The Fire Balloons," which tells, with massive and moving simplicity, of the attempt a good priest makes to convert the ancient Martians.

Here are beauty, humor, adventure, whimsicality, horror, and, above all, irony, in a book which demonstrates that its author is one of the most literate and spellbinding writers in science fiction today.

Villiers Gerson

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"The Stars, Like Dust," by Isaac Asimov. Doubleday and Co., Inc. Garden City, N. Y. 224 pp. $2.50

Interwoven with the intricacies of plot which characterizes a tale by Asimov, this new science-fiction novel relates the experiences of one Biron Farrill, a planetary princeling in the Galactic Empire of the far future. The Empire is under the dominion of the aptly named Tyranni, a short, squat humanoid race which has consolidated its position as dictator of the Galaxy in the short space of fifty years. Previous attempts to overthrow the dictatorship have failed, yet Farrill, aided by the beautiful Artimesia, princess of Rhodia, and her cunning cousin, Gillbreth oth Hinriad, essays the attempt. He is captured by the Tyranni, but he and his compatriots escape and search for the Rebellion World, a well-established mysterious civilization producing gigantic weapons for the forthcoming war against the dictators. Just as their

long search seems to be successful, treachery leads to their recapture. The solution to their individual problems and to those of the civilization for which they are fighting comes in an intricate twist which, to this reader at least, was unexpected and wholly Asimovian.

Though Mr. Asimov can be relied upon to control his plot with a knowing hand, his characterizations are the weak spot of the book. Both protagonists and antagonists are unidimensional, and considering that the basic story is by no means a new one to the SF *aficionado,* it is only because of Mr. Asimov's skill as a storyteller of suspense that "The Stars, Like Dust" proves to be engrossing.

Villiers Gerson

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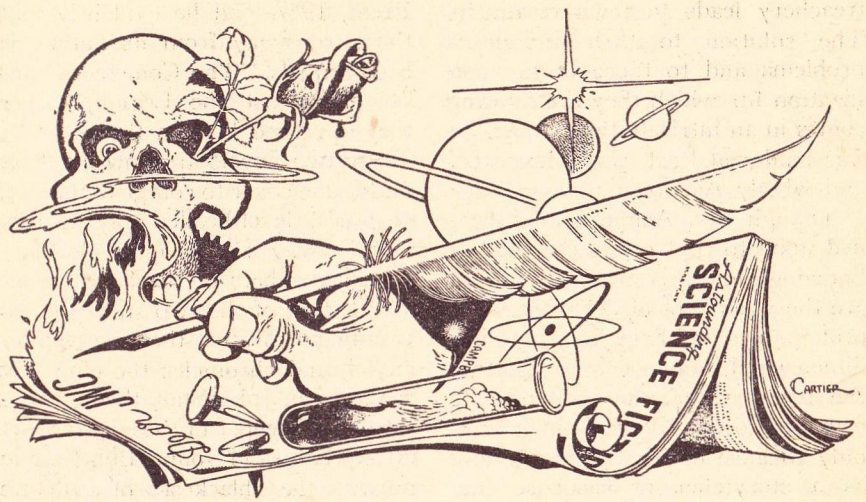
"The Cometeers," by Jack Williamson. Fantasy Press, Reading, Pa. 1950. 310 pp. Ill. $3.00

Old Giles Habibula, wine-bibbing, dubious veteran of the Legion of Space and of a number of less mentionable professions, has always been one of Jack Williamson's happier creations. He tended to run away with the frank space operatics of "The Legion Of Space"—Fantasy Press, 1947—and he evidently took the story away from its author in both sequels, "The Cometeers" and "One Against the Legion," when they appeared here in the late '30s. These two novels are now available under one cover to complete the saga of Giles, level-headed Jay Kalam, and brawny Hal Samdu, with assorted members of the Star family.

The first of the two stories opens twenty years after the first volume ended, and chronicles the efforts of the Legion, John Star, the beautiful Aladoree—keeper of the super-weapon AKKA—and young Bob Star to outwit the blackest of villains, Stephen Orco, and the stellar invaders from the green comet. In "One Against the Legion," even more Habibula's story than the first, the framed Legionnaire, Chan Derron, struggles against the mysterious criminal, the Basilisk, the female android, Luroa, and the Legion itself to vindicate himself and save the Stars and mankind. These are smoothly written space-action plots, but lock-picking, blue-nosed, complaining Giles Habibula, the Falstaff of science-fiction, gives them the plus factor that has made them popular for fifteen years.

P. Schuyler Miller

★ ★ ★ ★ ★



BRASS TACKS

Dear Mr. Campbell:

In re: title of the editorial in the April issue—pp. 4-5. The words *"casus"*—masculine; meaning "case" in Latin – and *"causa"* – feminine; meaning "cause" in Latin—have different meanings both in the language of ancient Rome and in English. Consequently, the phrases *"casus belli"* – case for war – and *"causa belli"* – cause of war – have different meanings as *"soi-disant"* popularized—Latin—technical terms of international law.

On the basis of the above I presume that the title of the editorial was intended to be *"causa belli"* – or, better in the plural: *"causae belli"*; causes of war.

Unfortunately the phrase *"causus belli"* does not convey the intended meaning. One will look in vain for the hermaphroditical word *"causus"* in any Latin dictionary. There is no such word. I am, therefore, afraid that the gender of the first word in the title, *horribile dictu,* is wrong. *"Casus" and "causa," joined in un-*grammatical marriage, must have produced the un-Latin *"causus."*— Solon Cleanthes Ivrakis, 1737 Cambridge Street, Cambridge, Massachusetts.

Mea culpa!
It's been a quarter century since I was actively engaged in disliking Latin!

Dear JWC:

I can't write you without mentioning the fact that I lucked up on "Who Goes There" years ago when my leg was broken. If anybody ever tops that tale, I'll let you know. In the February, '51, issue, however, "Assignment in the Unknown" approaches it for sheer horror of idea. Put "Hideaway" right behind it. Better than some written around the same general plot. "The Friendly Man" and "Fair Prey" are my kind of story—off-human critters, that is. I should say that the author of "I Tell You Three Times" either read the same book on mental therapy that I read; or else wrote it. Now they're doing it with machinery! Let's just mention "Franchise" and "Historical Note." The gimmick in "Franchise" was too obvious, I thought; or perhaps it is my incisive amateur-lawyer mind. "Historical Note" was good fantasy; and I enjoyed it as such; but science . . . well! Cheers for the cover. Striking.

I wish I could agree with Poul Anderson that birth control is the answer to an overpopulated Terra; but in my observation it has always been the more desirable elements of society who restrict themselves to small families, while serfs, and sharecroppers continue to multiply on their merry and multitudinous way, eventually to inherit the Earth. Those elements which are basically most subversive of the society of free men seem to me to have much more than an edge in any attempt to limit the birth rate. So let us start finding some habitable planets out in the wild black yonder.

The idea of a synthetic language has intrigued me almost from childhood. No super-efficient language will ever evolve; it will have to be contrived. English is said to have the shortest basic word list, and yet, in spelling, pronunciation synonyms, and homonyms, it is a most confusing language. Spanish is excellent for unvarying pronunciation, but its grammar seems utterly illogical to me, its double negatives utterly against all good taste, and its prepositional phrases for the most part utterly insane. It seems impossible to me to be really logical in some languages. In building a synthetic language, it would, I think, be necessary first to construct an ample, but at the same time tractable and palatable alphabet. This alphabet, to be the basis for a really efficient language, would have to be partly a word-alphabet, like the Chinese, and partly a phonetic alphabet, like the Indo-European. Most commonly used words must be the shortest in speech and represented by a word-letter apiece. Take it from there.—David C. Hodge, 130 Montrose Avenue, Morristown, Tennessee.

People don't seem to be sufficiently interested in precision to learn a new language!

———

Dear Mr. Campbell:

While running through my old copies of the Sigma Xi's *American*

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JULIUS UNGER • 6401—24th Ave. Bklyn. 4, N. Y.

Scientist, I found an article by G. Evelyn Hutchinson, of Yale University, in the issue for October, 1944. In it he reviews a paper — L. F. Richardson, "Generalized Foreign Politics". *Brit. J. Psych.,* Monogr. Suppl. 23: 1-91, '39—which he retitles "A Calculus of Good and Evil" which will, no doubt, be of interest to you and perhaps also to the readers in Brass Tacks. Mr. Richardson attempts to treat the relationships of potentially belligerent nations in terms of a deductive mathematical theory. He begins — and I paraphrase Mr. Hutchinson — with a generalized pair of nations, each proclaiming that its intentions are peaceful, but that menaces it faces are such that it feels it must take adequate steps for defense. The simplest expressions of this common attitude is the following pair of differential equations:

$$dx/dt = ky, \quad \text{and} \quad dy/dt = lx$$

Where x and y are armaments and k and l are termed defense coefficients. This situation is obviously unstable, with the rate of armament of each nation depending upon the other's armament, each one spurring the other on by its own efforts to arm, *ad nauseum,* until war occurs. A restraint upon this is the cost of armament and upkeep, which is postulated, and these, αx and βy, are assumed to be proportional to x and y. In addition, psychological stimuli, or grievances, are also postulated and considered to be constants, represented by g and h. The final equations then are:

$$dx/dt = ky - \alpha x + g, \quad \text{and}$$
$$dy/dt = lx - \beta y + h$$

Ideally, x,y,g and h would all be zero, corresponding to no armaments and no grievances. Unilateral disarmament becomes:

$$dx/dt = -\alpha x + g, \quad \text{and}$$
$$dy/dt = lx + h$$

which is unstable unless y is kept equal to zero by outside control. The point representing equilibrium corresponds to the historic concept of a balance of power. The stability of the equilibrium depends upon the defense and fatigue coefficients, and independent of grievances as defined, the balance being stable if $lk < \alpha\beta$. Even with positive grievances and considerable armaments, the situation is stable if public reaction to cost of maintenance is great enough in both countries.

Statistically, an index was established for seven great powers from 1922 to 1938. The index: X = Capitalized defense — 0.786 mean (imports + exports). This index rose rapidly in Germany from 1933 on.

The final parts of the theory develop the theory for three and then for n nations. The most important conclusion relates to the question of the effective continguity of the nations. In the past, it might have been appropriate to treat each nation as being affected only by its neighbor. Today, or very soon, developments in transportation and communication have, or will bring about, an

abolition of geographical factors with regard to threats and anxieties. Assuming two bounding nations for each nation, the condition of stability for n nations is found to be that λ be negative, where, with the limited transportation of the past,

$$\lambda = -a + 2K,$$

and at present, with unlimited transportation,

$$\lambda = -a + (n-1)K$$

where a is the fatigue coefficient and k the defense coefficient between nations—both assumed constant for all nations. Since n is at present greater than three, the effect of increasing communications is to increase the value of λ. Introducing mathematical values into the theory gives a value of $= + 0.43$ year^{-1} for the period 1929-1937; we know too well that the value was positive and the balance unstable during this period. In any case, so long as the defense coefficients are positive, the only stable and satisfactory procedure is to reduce n to unity, i.e., to set up a world super-state. Balances of power are demonstrably becoming less and less satisfactory, so as to be almost useless at present. End paraphrase. A grim reckoning, sir! — Richard A. Barkley, La Jolla, California.

The conclusion is not correct. There is another stable state: when n = 0, a permanent condition of stability results. This can be achieved by adequate application of Hydrogen bombs.

(Continued from page 7)

child somehow falls in a river. The human beings around display remarkably little awareness of that phony "self-preservation first" idea. The child is rescued.

And somehow the Army's Medics seem to be very poor students of Nature; they don't seem to know that "first law." The Medics are not noted for waiting till things quiet down before going in to bring out some fellow man. And if any cock-eyed chairborne philosopher wants to say it's because they are required to go in—discuss it with some man the Medics brought out.

No, man has instincts all right—but they're uniformly fine, strong and clean. You don't get such degenerate, and repulsive behavior as civilized man has shown in any animal; only Man, with his far greater mind power, can completely overcome his basic instincts if he chooses.

And no such unsane behavior could be instinctive; instincts are genetic behavior patterns that have been field-tested, tried and found workable. It is so inescapably logical that an instinct *has* to be sensible to continue in existence, and so appallingly obvious that the more disgusting acts of civilized man are *not* sensible, that blaming those acts on instincts is, quite clearly, the sheerest nonsense.

It is, perhaps, time we stopped blaming the most characteristically human acts on "animal instincts," and started examining civilization. Only civilized man commits such crimes against Man and God; so long as we refuse to face that fact, so long as we seek to escape that responsibility by blaming it on "human nature" or "animal instincts," just that long will we fail to find the source. And until we find the source, we cannot stop the poison.

Man is *not* inherently evil; his instincts are good, in the highest ethical sense, because they had to be in order to permit the race to survive. But there is most assuredly something around civilization that warps men's minds. And it's been around for a long, long time.

Which would you hold possessed the higher sense of right; the Spartan parents that exposed their newborn child on the hillside, or the wolf that, seeking to protect and feed its young killed the baby and carried it home to feed its cubs?

And where, on the other hand, was that "first law of Nature" when Roger Young, to save the lives of his companions, deliberately stepped into the machine-gun fire of the enemy? Or when such incidents occur as those that produce newspaper headlines "Stewardess Saves Ten—Dies Trying To Save Others"?

And if that self-preservation business *were* a "first law," why is it that you feel a deep, warm sense of pride in being human when you hear of such things, instead of a reaction of annoyance that anyone could be so stupid, so silly, as to endanger himself for someone else's benefit?

THE EDITOR.

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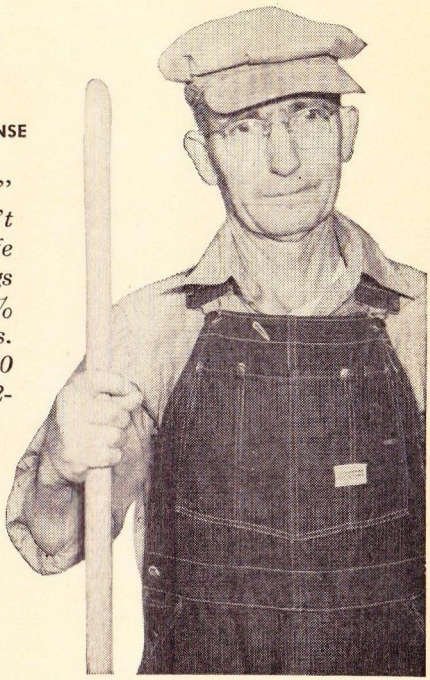

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