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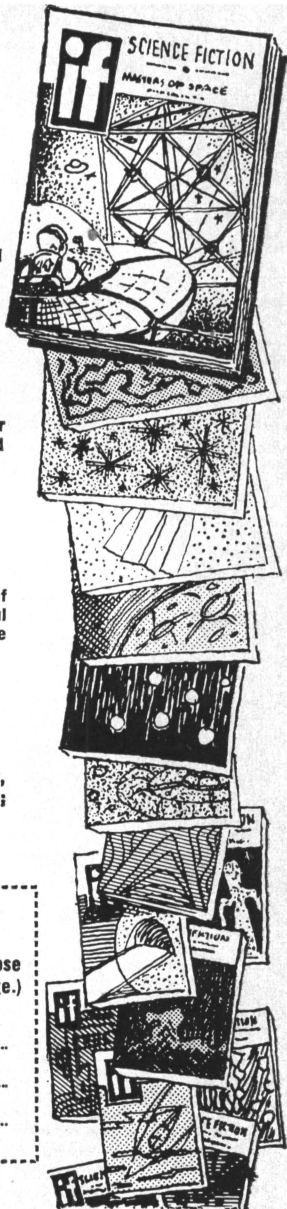
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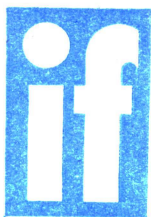
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# worlds

# of



# science fiction

MAY, 1963

Vol. 13, Number 2

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## All New Stories

### COMPLETE SHORT NOVEL

THE GREEN WORLD BY HAL CLEMENT ..... 7

### NOVELETTES

DIE, SHADOW! BY ALGIS BUDRYS ..... 61

SINGLEMINDED BY JOHN BRUNNER ..... 81

ANOTHER EARTH BY DAVID EVANS & AL LANDAU ..... 100

TURNING POINT BY PAUL ANDERSON ..... 115

### SHORT STORY

RUNDOWN BY ROBERT LORY ..... 77

### SPECIAL FEATURES

THAT THERE OPPOSITION (Editorial) ..... 4

NONPOLITICAL NEW FRONTIERS BY THEODORE STURGEON ..... 97

HUE AND CRY by *The Readers* ..... 128

*Cover by John Pederson, Jr. from Turning Point*

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# THAT THERE OPPOSITION

A conversation-jockey on a nighttime Philadelphia radio show said (we can't quote exactly) that though he used to be a science-fiction reader, he no longer bothers with it, because all the things which used to excite his imagination have become today's fact. Notice that "all".

Mr. Russell Kirk, in his good collection of spooky tales called *The Surly Sullen Bell*, includes a dissertation on the Gothick tale, in which he says (and we quote): ". . . stories of the supernatural have been supplanted by 'science fiction'. Though the talent of H. G. Wells did in that *genre* nearly everything worth undertaking, a flood of 'sci-

entific' and 'futuristic' fantasies continues to deluge America. With few exceptions, these writings are banal and meaningless . . . Having demolished, to their own satisfaction, the whole edifice of religious learning, abruptly and unconsciously they experience the need for belief in *something* not mundane; and so, defying their own inductive and mechanistic premises, they take up the cause of Martians and Jovians."

*Time* Magazine, which we will not quote, deposes and says that sf is suffering from a played-out vein of literary ore, and that it will have to rest until the average man on the street becomes a little more familiar with science's more remote and sub-



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to a  
few

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tle discoveries, which, *Time* opines, are not able to support good story telling.

Alfie Bester gives us, in *F&SF*, another and apparently final bleat in his oft-heard, captain-hates-the-sea speech; sf doesn't live up to its responsibilities and he wants no part of it.

These are some, but not all, of the facets of opposition to sf. To us, the Philly night-jar was simply saying that he does not read enough sf to know what he's talking about; *Time*, which never seems to have understood the field, reveals at last that it thinks science fiction is and should be about known science, thereby eliminating all the speculation which is really what sf is for, and as for Alfie . . . well, may he find in some preferred field the inspiration which gave us *The Demolished Man*, and a fraction of the awe and honor his unique quality gained him when he was with us.

Mr. Kirk, now, voices with some passion an opposition to what he thinks we believe in; it is difficult, after a quarter of a century in the field, to know where he got this conviction. We have never been aware that sf writers, or readers, or indeed scientists, one and all worship godless materialism. It seems to us

that sf has and does express all degrees of religious devotion, right across the spectrum from Clarke's *The Star* to Boucher's *Balaam*. Can you accuse Heinlein of atheism? Or—well—Sturgeon? Bradbury is one of the most God-infused human beings we have ever met.

We become increasingly aware of the nature of the opposition. To be fair, we should say a nature of etc. Have you ever observed the difficulty with which a genuine, intelligent, knowledgeable American patriot discusses and defines American democracy? In the articulate portions of the radical Right, no one seems to be able to produce a clear, simple declaration of aims and principles. Devoted members of the clergy traditionally spend months, and months of years, expatiating on theological points.

The easy definitions come to the opposition. If you want a short snappy definition of American democracy, ask a Communist. Any left-winger can dispose of all organized religion with the back of his hand. The entire television industry can be fluffed off by anyone who has never owned a set.

In other short sharp words, you can define and oppose anything if you're ignorant enough, and if you're ignorant enough, you do.

THIS



# THE GREEN WORLD

BY HAL CLEMENT

ILLUSTRATED BY GIUNTA

**The planet was an enigma —  
and its solution was death!**

I  
A zoo can be a rather depressing place, or it can be a lot of fun, or it can be so dull as to make the mind wander elsewhere in self-defense. In fairness to Emerald, Robin Lampert had to concede that this one was not quite in the last group. He had been able to keep his attention on the exhibits. This was, in a way, surprising; for while a frontier town has a perfect right to construct and maintain a zoo if it wishes, one can hardly expect such a place to do a very good job.

The present example was, it must be admitted, not too good. The exhibits were in fairly ordinary cages — barred for the larger creatures, glassed for the smaller ones. No particular attempt had been made to imitate natural surroundings. The place looked as artificial as bare concrete and iron could make it. To a person used to the luxuries provided their captive animals by the great cities of Earth and her sister planets, the environment might have been a gloomy one.

Lampert did not feel that way. He had no particular standards of

what a zoo should be, and he would probably have considered attempts at reproduction of natural habitat a distracting waste of time. He was not a biologist, and had only one reason for visiting the Emerald zoo; the guide had insisted upon it.

There was, of course, some justice in the demand. A man who was taking on the responsibility of caring for Lampert and his friends in the jungles of Viridis had a right to require that his charges know what they were facing. Lampert wanted to know, himself; so he had read conscientiously every placard on every cage he had been able to find. These had not been particularly informative, except in one or two cases. Most of the facts had been obvious from a look at the cages' inhabitants. Even a geophysicist could tell that the *Felodon*, for example, was carnivorous — after one of the creatures had bared a rather startling set of fangs by yawning in his face. The placard had told little more. Less, in fact, than McLaughlin had already said about the beasts.

On the other hand, it had been distinctly informative to read that a small, salamanderlike thing in one of the glass-fronted cages was as poisonous as the most dangerous of Terrestrial snakes. There had been nothing in *its* appearance to betray the fact. It was at this point, in fact, that Lampert began really to awaken to what he was doing.

He was aroused all the way by McLaughlin's explanation of a number which appeared on a good many of the placards. Lamp-

ert had noticed it already. The number was always, it seemed, different, though always in the same place, and bore signs of much repainting. It bore no relationship to any classification scheme that Lampert knew, and neither of the paleontologists could enlighten him. Eventually he turned to McLaughlin and asked — not expecting a useful answer, since the man was a guide rather than a naturalist. However, the tall man gave a faint smile and replied without hesitation.

"That's just the number of human deaths known to have been caused by that animal this year." It did not comfort Lampert too greatly to learn that the year used was that of Viridis, some seventeen times as long as that of Earth. For the *Felodon* the number stood at twelve. This was not very much when compared to the annual losses from tigers in India during the nineteenth century. But this reflection was not particularly consoling. The human population of Viridis was so very small compared to that of India.

Lampert examined the creature thoughtfully. It was of moderate size as carnivores went — some four feet long without the tail — and looked rather harmless as long as it kept its mouth shut. It was lying in the center of the cage, so it was difficult to judge the length of its legs. It showed no trace of the tendency displayed by many captive animals, of lying against a wall or in a corner when relaxed; and there was none of the restless pacing so characteristic of Earth's big cats under similar circumstances. It sim-



ply lay and stared back at Lampert, so steadily that he never was sure whether or not the cold eyes were provided with lids.

"I never liked reptiles back home, but I think I like these creatures less." The voice of Mitsuitei, the little archaeologist, cut into Lampert's reverie.

"Don't let Hans or Ndomi hear you mention them in the same breath with reptiles," he answered.

"Well, I'm not fond of frogs, either."

"I'm afraid that wouldn't make them much happier. These are not even amphibians."

"They certainly are. I've been told that they lay eggs in water and have a tadpole stage—"

"I should have said they aren't Amphibians with a capital A. That is, they don't belong to the order Amphibia, since they are not genetically related to the corresponding order on Earth, as far as we know. Sulewayo gets quite peeved at people who try to lump terrestrial and extraterrestrial creatures in the same order. I believe that whoever decides things for biologists has decreed that on Viridis the dominant order is to be called Amphibids. It's a quibble, if you like. But I can see why they insist on it."

"Mph. So can I. Even now you sometimes run into people who go to great length to make you admit that there are pyramids both in Egypt and Mexico — and for that matter on Regulus Six — and infer from that that their makers had something in the way of common culture. I say these things are amphi-

bians, without the Capital A, because they are at home both on land and in water. And a dictionary would back me up. I don't insist that they're related to those of Earth — any more than a Mayan pyramid has anything but geometry in common with an Egyptian one."

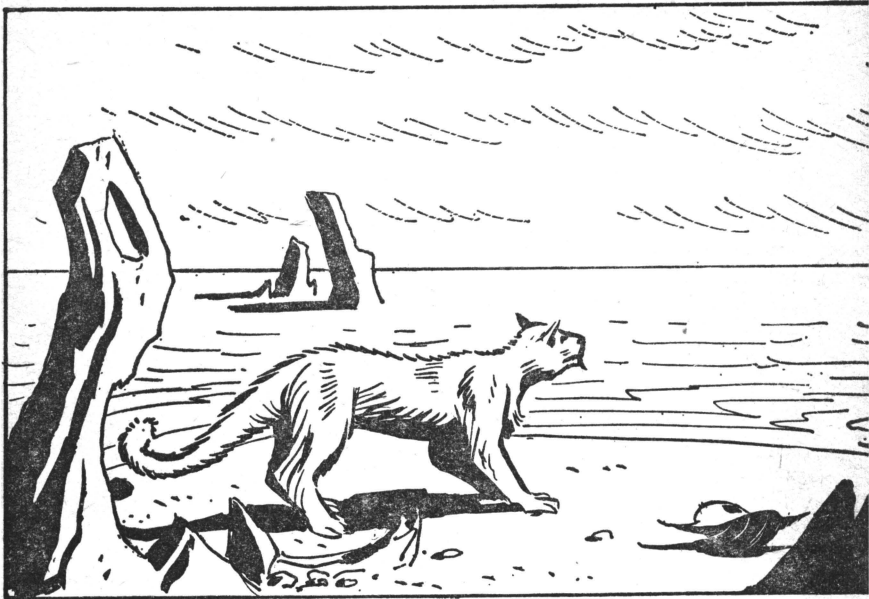
"But I've heard —"

"I'm sure you have, but it's a sore subject. I'll be open-minded if you like and admit that some Egyptian *may* have been blown across the Atlantic and taught architecture to the Americans, but I don't regard it as proved. What was that remark of yours — 'as far as we know' — in connection with the ancestry of the amphibids? That's being at least as open-minded as I was, I would say."

"In a way, yes. I don't think anyone has seriously suggested that these things originated on Earth. However, a puzzle we're here to investigate still exists. How there could be life forms corresponding to those which took a good half billion years to evolve elsewhere, on a planet which by geophysical evidence hasn't been solid for forty million? *Someone* certainly has suggested that the world was stocked from outside. But certainly it hasn't been proved. I don't think anyone has tried very hard, either. And I certainly won't, on a planet with as much radioactivity as this one.

"You think that would account for high-speed evolution?"

Lampert shrugged his shoulders, and began to stroll toward the next cage. "Ask the paleontologists. My



opinion doesn't carry much weight."

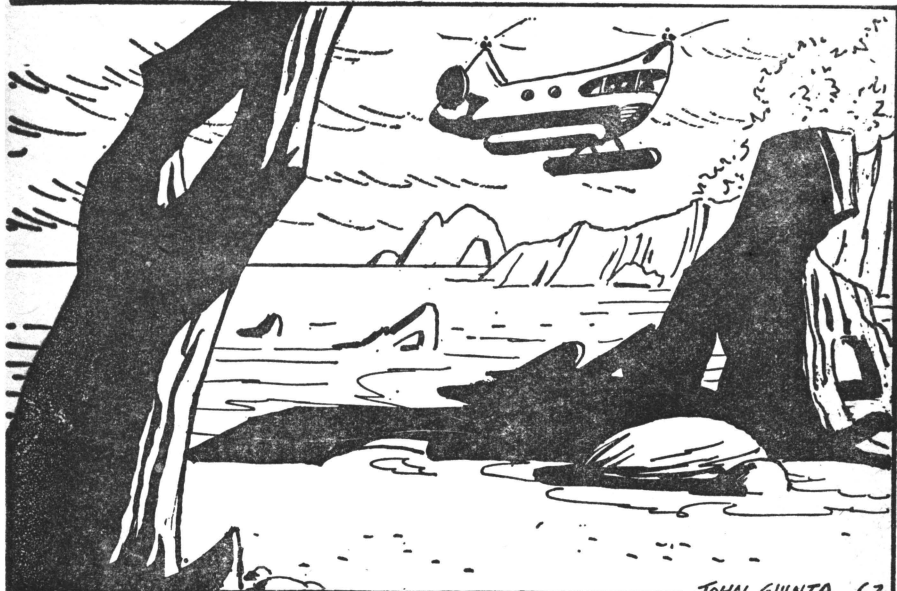
Mitsuitei nodded, started to follow the geophysicist, and then turned back to stare once more at the carnivore lying a few feet away. It stared back unblinkingly.

The visit to the zoo was one of several, which continued until Lampert, Mitsuitei and the two paleontologists were able to identify each of a dozen animals which were most concerned in the death rate of Viridis. Apparently McLaughlin was not the only guide who did this. The zoo was equipped to give a "final examination" in which any creature the guide desired could be seen on a television screen from viewpoints quite different from those obtained in front of the cages. McLaughlin proved hard to satisfy.

Lampert did not blame him. He

knew a lot about Viridis, of course. He had not only read of it in ordinary reference material, but had done much of the laboratory work on drill cores brought from the planet. His name had been one of those attached to the report giving the probable age of the planet's crust. At that time, however, the mental picture he held had been of continent distribution, rock strata, zones of diastrophic stress and the like. The question of the appearance, or even the existence, of plants, animals and people had simply never risen to conscious level in his mind.

That had changed, shortly before his arrival. The tramp spacer which had brought him and his group to Viridis had had to orbit about the world in free fall for several hours while its obsolete drive elements



JOHN GIUNTA 62

“cooled,” and the passengers had examine the planet.

Lampert, oddly enough, had been as much impressed by the night side as by the sunlit hemisphere. The latter had shown, at twenty thousand kilometers, a fairly standard land and water pattern. The most unusual thing about it had been the almost perfect uniformity of the land coloration, a light green which bespoke, or at least implied, a virtually complete covering of vegetation.

By the time the ship had circled to the dark side, however, it was much closer to the surface; and Lampert would have expected to make out luminous sparks and patches of towns and cities by the hundreds.

He saw just two, and was not  
THE GREEN WORLD

really sure of those. For the rest, the planet was a vast, gray-black circle occulting a portion of the Milky Way. It was not absolutely black, either. Its contrast with the background of the galaxy was diminished by the glow in the upper atmosphere arising from the recombination of water molecules dissociated during the day by Beta Librae's fierce ultraviolet light. The center of the circle was darker than the edges, where the line of sight penetrated through more of the luminous gas.

But even this sight, unusual as it was, did not affect Lampert as much as the lack of city lights. He had done field work in lonely, wild places before, of course; but until now he had always had the feeling of being in an island of wilderness

more or less surrounded by civilization. On Viridis it was the civilized spots which formed the islands. And very small islands they were. There was no known native intelligent race, and settlements of alien races such as the men from Earth were still few and far between.

So Lampert was prepared for McLaughlin's care in readying the group for its trip. He was even glad of it, though he would probably not have admitted to being at all afraid of the venture. He would simply have said that it was nice to have a guide who took his responsibilities seriously.

That of course, did not mean that Lampert was intending to disavow any of his own responsibilities. He, like McLaughlin, had been keeping a careful eye on the other members of the group, looking for the signs of impatience or ill temper which could be the seeds of serious trouble if the journey were prolonged. He had come to tentative conclusions about this during the flight from Earth, but was pleased to see that, apparently, men who could stand the enforced companionship of a tramp spacer were also able to retain their senses of humor in the steam-bath environment of Viridis.

Sulewayo, of course, had seemed safe from the first. A man who has spent his formative years in the Congo rain forests where his ancestors had lived for generations was ideal for this world. His sense of humor was extremely durable. Lampert suspected that it might

sometimes be a little too good. Mitsuitei, the archaeologist, had once or twice appeared to resent some of the young fellow's remarks, though not to an extent where Lampert had felt the need for introducing his own personality into the matter. Krendall, nearly twice Sulewayo's age, seemed to be a check on the younger man anyway; he was a member of the same profession, and Sulewayo would have been the first to admit his respect for Krendall's work in the field. Under the circumstances, Lampert felt that the group was well matched.

Whether it would be able to do the job it had undertaken was another matter. The news reports had spoken glibly of the expedition which was going to "solve the mysteries of Viridis once and for all." Lampert, like any other scientist, knew perfectly well that the solution of the present crop of mysteries about the planet would almost certainly be achieved only at the cost of creating an even greater number of new ones. Even the guide, who was admittedly no scientist, had expressed a similar opinion, though his was based on a general pessimism bred of familiarity with the planet. However, he had undertaken to get them to the sort of country they wanted; and from then on the problem solving was not his affair.

The scientists, whatever may have been their feeling about matters of personal safety, were eager to start, which tended to cause rapid progress in McLaughlin's animal recognition school. Another factor tending toward the same result was

that there was little in Emeraude for such men to do, except learn. The town was still small. It had a spaceport and airport, which furnished little entertainment, docks which could amuse for a while but not indefinitely, and warehouses which were completely uninteresting to geologists, paleontologists and archaeologists. There was no museum. The numerous specimens of mineral, animal, and vegetable matter collected on the planet invariably wound up on outbound spacecraft. The zoo, which the town maintained for purely practical reasons, was about the only thing that was left.

In consequence, not many days passed before all four scientists were able to meet McLaughlin's requirements. Sulewayo was annoyed by the guide's addition of a short postgraduate course in edible flora and fauna, but admitted that the knowledge might well be useful. However, he made no secret of his satisfaction when McLaughlin finally announced that, as far as he was concerned, the journey could begin at any time.

All four rechecked their equipment—that of Lampert was by far the bulkiest—and, everyone satisfied with the group's ability both to live and to work in the steam bath that was the world of Viridis, they watched the harbor on which Emeraude was located shrink and blend into the rest of the shoreline behind them. Within a few minutes only the restless surface of Green Bay was visible through the ever-present haze. . .

The jaws of the Felodon abruptly stopped moving and its forelegs straightened, bringing the fanged head up and away from the kill it had just made.

If a man had been there he would neither have seen nor heard the disturbing factor, for a thunderstorm a few miles to the west was emitting an almost continuous growl and the towering trees shut out nearly all the sky. Nevertheless the beast appeared to sense something out of the ordinary. It twisted its short but supple neck ceaselessly, rocking its head from side to side to bring first one eye and tympanic membrane to bear on the jungle roof, then the other. Sometimes it froze motionless for a long moment, and a watcher would have sworn that its minute brain was struggling with a thought. If this were the case, the thought must have been both unusual and unpleasant, for under normal circumstances nothing short of overwhelming force would have driven a Felodon from its meal. Now, however, the hind legs slowly straightened and the creature came erect. For another moment it stood motionless, took a step or two away from the body, and stopped again.

Abruptly, as though in defiance of some impulse, it turned back, lowered the murderously armed head and tore a huge mouthful of flesh from the carcass. Then, like a child leaving the cookie jar as its mother approaches, it leaped away into the underbrush, still swallowing.

Its speed was high and it did not have far to go. The jungle thinned in a few hundred meters to the

point where some sky became visible, and a short distance further the riotous plant growth vanished completely to give place to an open beach. Here the creature stopped and repeated its search of the hemisphere overhead.

This time it found what it sought.

Along the line of the beach, perhaps a kilometer out to sea, the thing came flying. It must have been utterly different from anything the Felodon could ever have seen, but no sign of fear appeared in the beast's demeanor. It stood on the beach, well away from the shelter of the jungle and certainly in full view from above, its head following the flying object and a fearful snarl — which might or might not have been its normal expression of hunger — giving its face an almost mammalian cast.

This thing was larger by far than any flying creature the Felodon knew — incomparably larger than the Felodon itself. Its details were hard to make out through the hazy air, and would have meant little to the flesh-eater in any case. The most noticeable characteristic was the steady, whistling hum that proceeded from it. There was a suggestion of motion, too, which might have been wings or might not. Actually, the thing was little more than a dark dot against the purplish-blue sky. At the moment no sunlight was striking it directly, for it was in the shadow of the thunderhead. Perhaps this prevented the animal below from being bothered by another unusual feature it possessed, though even the appearance of this last characteris-

tic produced no sign of fear when it finally came. This occurred shortly after the flying thing passed, while it was still quite close. It moved out of the shadow of the great cloud and, as the greenish sunlight struck it, the eyes of the watching creature were dazzled by a gleam of metal.

This was certainly something it had never seen, for native metal on Viridis is just about as common as it was on Earth before men began to pry it out of its ores. Viridis has an oxygen-rich atmosphere and plenty of moisture, and pure aluminum or chromium just doesn't occur in that environment.

Strange or not, however, the gleam did not appear to affect the Felodon's rudimentary sense of fear. For just an instant it paused as the flying thing hummed on into the northeast; just once it looked back toward the point in the jungle where it had left its kill — a point from which eloquent sounds were now coming, betraying the presence of carrion-eaters; just one step it took in that direction. Then it turned away as abruptly as it had from the meal a few minutes before. With the same purposeful air it had displayed on the way out of the jungle it headed down the beach in the direction taken by the flying piece of metal.

Though the animal's speed was high, the humming soon faded out ahead of it.

However, this did not seem to cause any inconvenience; the Felodon moved on, with a gait that might have been called a fast walk or a

slow run, never hesitating, never pausing. It remained silent. Smaller creatures which might have given it a wide berth had they heard the hunting call now sprang away almost from underfoot. It paid them no heed, but continued on its way while the green sun settled into the jungle behind and to its left. The fact that its recent kill was now little more than a skeleton did not seem to bother it. Perhaps it had forgotten.

## II

The humming was a little more noticeable in the helicopter cabin, but not much. John McLaughlin, sprawled as comfortably as his two meters of height would permit in its confines, had noticed the sound only at first; and after remarking to himself that they seemed to be building better ion turbines since he had left Earth, had permitted his thoughts to wander in other directions. These did not concern Felodons; the interest there was not, at the moment, mutual. The rather crowded cabin offered material enough for consideration.

McLaughlin was not a scientist by training, but neither was he the sort of guide that might have been found in Yukon or Amazon territory a few centuries back. He did not despise people merely because they were, by his standards, green-horns. He knew that each of the other men now sharing this cabin with him was an expert in his own field, even though none of them, in spite of his training, would have

THE GREEN WORLD

been able to survive for more than a day in the jungles of Viridis. After all, why should they have learned such an art? There were other things worth learning, and one could always hire McLaughlin if a need to visit the jungles developed. Since this particular party had done just that, they were evidently a fairly practical crew.

They were not talking very much, which from the guide's viewpoint was an additional point in their favor. They already knew what they planned to do, and saw no point in repeating what had already been said. Of course, if they should fail to find the area they were seeking, there would be talk—all of it aimed at McLaughlin; but he had no fear on that score. There were few enough mountains on Viridis, and of those few by far the greater number were volcanic cinder cones. When these scientists had specified a region of tilted-block or folded mountains, the guide had been more than dubious at first. It had taken him time to recall that there was a small area meeting these specifications less than fifteen hundred miles from the spaceport at Emeraude. He was not himself a geologist, but pictures and diagrams had been used freely in explaining to him just what was wanted, and he was quite certain that the party would be satisfied with what he had to offer.

A slight rocking in the hitherto steady motion of the helicopter roused him from this line of reverie. They were already several hours from Emeraude, and McLaughlin realized that he should have been

paying more attention to the course. He straightened up in his seat and looked out.

To the left and ahead was a huge thunderhead, whose satellite air currents had probably caused the variation on the helicopter's flight path. More important, there was land in sight. McLaughlin knew that the long flight across Green Bay was over. He waited, however, before saying anything. He had given the pilot full instructions as to the route before take-off, and he wanted to see whether those had been clear enough.

Apparently they had. Without asking questions or even looking back at the guide, Lampert swung the aircraft from its northerly heading onto one which paralleled the shoreline, a turn of about forty-five degrees to the right, and the helicopter resumed its steady flight.

McLaughlin did not relax. From now on the route was a little more difficult to follow, and there were not too many more hours of daylight. The shadowless night glow which made vision relatively easy after sunset did not lend itself to aerial navigation over a very poorly mapped world. He kept his eyes on the shoreline, watching for the landmarks he had not seen for many months — and then not from above. He did not see the Felodon which became so intensely interested in the helicopter. If he had, he would have attached little importance to the creature's presence, and he could not possibly have seen its actions in sufficient detail to catch any peculiarities in them.

No one else saw the beast, either. The change in course had roused most of the party from whatever lines of thought they had been pursuing, as it had McLaughlin, and most of them were looking out the windows; but they were interested in what lay ahead, not below. Sometime soon the relative monotony of jungle and swamp should be relieved by rising ground, indicating the nearness of the mountains they sought; and the helicopter's flight altitude of some two thousand feet was low enough to permit any significant rise of terrain to be visible. Sulewayo, the younger paleontologist, made a remark to that effect, which passed without comment. Real conversation did not start for some minutes.

"As I understand it, we have one more course change before we see the mountains. Isn't there a river we have to follow for a time, String?" Lampert asked the question without looking back.

"That's right," McLaughlin replied. "It runs into Green Bay from almost straight north, and about a hundred miles inland makes a turn to the east. That's general direction. It winds a lot."

"It would, in country as nearly peneplaned as this," muttered Lampert under his breath.

"The mountains you want start about sixty airline miles from the big bend. If you trust your gyro compass enough, you can head for them directly from the river mouth. If you have any doubt about being able to hold a line, though, follow the river. I doubt that there are any



good landmarks otherwise. Of course, I've only seen the area from the surface and close to the river, but I'd be very surprised if there was anything around but the swamp-and-jungle mess we're over now."

"So would I. We'll stay in sight of the river, but edge as far east as visibility lets us." The guide approved this plan with a nod, and the conversation lapsed for several minutes. The silence was finally broken once more by Sulewayo.

"I hope these hills we're looking for have something of interest. This planet is the most monotonous I've seen yet. Where it isn't jungle it's swamp; and the only difference between the two is that the jungle grows higher trees." McLaughlin's face crinkled into something like a smile, and he sat up once more.

"There's one other difference," he remarked.

"What's that?"

"In the jungle, dressed and equipped as you now are, you might live as long as a day. In the swamp, five minutes would be an optimistic estimate." Sulewayo looked down at the shorts and boots which constituted his costume, and shrugged.

"I admit the point, but I don't expect to go out this way. What I actually wear and carry, beside my professional equipment, is up to you. Also, I was referring to appearances. Beta Lyrae Nine looked almost as dull as this world from above, and I'll bet it was as least as deadly when you reached the surface." McLaughlin had never visited New Sheol, and admitted it, but it took more than that to stop Sulewayo.

"Actually, I was hoping that these hills didn't turn out to be so covered with soil that any fossils would be yards underground at the best. Do you recall any places where the rock strata themselves were exposed—steep cliffs, or deep stream gullies, perhaps?"

"Definitely yes. The big river cuts right across the range, or else starts in it. It comes out from a canyon like that of the Colorado on Earth, though a lot less spectacular. Actually I don't know anything about the country more than a couple of miles up that canyon. I was stopped on the river by rapids, and couldn't get my amphib out on either side. For the most part there simply wasn't any shore, just cliff."

"Quite a current, I suppose?" Lampert cut in.

"Actually, not very much. I went swimming in worse, on Earth."

"That hardly ties in with steep cliffs and a river cutting through a mountain range."

McLaughlin shrugged. "You're the geologist. Look it over for yourself. Maybe you'll just have to add it to the list of things you don't understand about Viridis."

"Fair enough." The pilot-commander-geophysicist nodded. "I did not mean to imply that you were not reporting accurately; but the situation you have described would be a trifle queer on more planets than Earth, I assure you. Still, with luck your cliffs will show fossils. Maybe we'll solve one problem in exchange for another. Life could be worse."

"Just hope we don't solve the first one by proving that certain geophysicists have been talking through their hats," the hitherto silent Krendall remarked.

"Eh?"

"What would you do if we found a chunk of, say, pegmatite with radioactive inclusions that checked out at half a billion years instead of the thirty-odd million you lads have been giving us as a time scale for this mudball?"

"I should check very carefully under what circumstances and in what location you found it. If necessary, I would admit that the problem had disappeared. Half a billion years would account reasonably well for the evolutionary status of this planet's life forms, though actually it took Earth a good deal longer to reach a corresponding condition. Frankly, however, I do not expect any such find. We spotted our borings rather carefully, and should have taken pretty representative samples."

"I'm sure you did. If your results are right, it just means that the problem belongs to Hans and me — and String here had better find us a lot of fossils."

"You'll have to find your own bones," McLaughlin replied. "I'm taking you to the sort of ground you want. A fossil would have to show its teeth in my face before I'd recognize it — and then I'd probably shoot before I realized it was dead."

"All right," Sulewayo chuckled. "You take care of the quick, and Krendall and I will worry about the

dead. Dr. Lampert can figure out how old the fossils are if we find any, and Take can look for stone axes."

"Or automobiles, or pieces of space-drive tubes, or other artifacts," Mitsuitei answered the implied dig. "I plan to sit back and loaf, unless and until one of you lads turns up a skull that could have held more than half an ounce of brain. I am going to be very unscientific. I believe that there is nothing on this planet for an archeologist to do, and I am not going to work myself into a lather to prove myself wrong."

"You've formed an opinion rather early in the game," Lampert remarked. "After all, remarkably little of this world has been explored. Why should there not be traces of occupation in unknown areas such as we are about to visit?"

"Because, while most of the planet remains unexplored, a very large number of places which should have furnished traces of habitation have failed to do so. We've surveyed many spots which were, or are, ideal for cities based on ocean commerce, or market centers for what could be farm areas, or spaceports. After a while you get to a point where such finds can be predicted with some certainty. As I said, I am far from certain, and it would be most unreasonable to say I was; but in the area we are seeking, I see no reason to expect anything of interest to my profession."

Lampert shrugged and brought his full attention back to the controls. The sun was slowly

sinking, bringing into bolder relief the irregularities of the ground as their shadows lengthened. However, these irregularities were still few, and the jungle roof was for the most part evenly illuminated. As McLaughlin had expected, there was nothing that could be used as a landmark. In its own way, the forest was as featureless as the ocean. The pilot kept his gaze riveted ahead, in expectation of the river which the guide had told them to expect; and presently he saw it. Reflecting the color of the faintly purplish sky, it stood out fairly well against the gray-green of the jungle, once they were close enough to penetrate the ever-present haze.

With McLaughlin nodding silent approval, Lampert swung the helicopter to the left and proceeded more nearly straight north, angling gradually toward the river. Now the jungle took on a little more feature, though still nothing that could be used for guidance. At fairly frequent intervals a glint of water became visible through the trees directly below them. Evidently numerous tributaries were feeding into the larger stream; but none of these could be seen from any distance. For the most part they were so narrow that the trees growing on each side met above them.

"I should think that one could cover a great deal of that territory in a boat," remarked Mitsuitei, after nearly half an hour in the new direction.

"You'd need an amphib," replied the guide. "A boat is all right for the main stream, but all that stuff

coming in from the sides is so shallow that you'd never make progress with anything else. I've tried most of them in my own croc. Every time I've had to crawl rather than float before I was a mile from the river."

"How is the ground? Swamp?"

"No, it's fairly solid for the most part. It doesn't show very well yet even with the sun as low as it is, but the general ground level is pushing up slowly all along here. We'll be in sight of your mountains before too long."

This declaration brought all members of the group to the windows, all five pairs of eyes covering the quadrant of vision below and ahead. The meandering river was now on their left, but just visible through the haze ahead of them was the eastward turn McLaughlin had predicted. Lampert headed a little more to the right in an attempt to cut the final corner, but the helicopter reached the winding purplish band before their goal came in sight in spite of this effort. The flyer hummed on.

The bars of sunlight admitted by the side ports had been nearly horizontal when the turn to the east cut them off. They were only slightly more so when McLaughlin gave a satisfied grunt, and nodded forward. The others followed his gaze.

Straight ahead, little could be seen because of the "bright spot" familiar to every flyer—the shadowless area directly opposite the sun, centered on the aircraft's own shadow. To either side, how-

ever, the promised hills rose out of the jungle to heights exceeding the present flight altitude of the helicopter. Presumably the canyon from which the river was supposed to emerge lay in their path. So, at any rate, Lampert remarked; and McLaughlin confirmed him.

"I'd cruise pretty slowly from here on," the guide added. "There are a number of hills on this side of the range. Even if you're not worried about running into one of them, you may want to examine them for exposed rocks."

"Mightn't it be better to find a spot to park before the sun goes down?" countered the pilot.

"It might. What I said still holds, though. You haven't much chance finding one inside the canyon without quite a long search, and it will be best to stay this side of the range until sunrise. Remember my trouble in finding a beach for the amphib while I was inside."

"All right. Can we land in jungle, though?"

"Not unless you want to fold the blades in flight and drop the last twenty to fifty feet. Hunt for a fairly high hill. They're usually somewhat bare on top, and you'll at least have room for the rotors to swing. If you don't like that, or can't find a suitable hilltop, land on the river and tie up to the shore — but again, don't try that in the canyon. You're unlikely to find anything to tie up to."

"This machine has good lights, I suppose you realize — but then, you know the planet. As far as I'm concerned, what you say goes. Are the

chances of a hill equally good on either side of the river?"

"Maybe a little better to the north. The ground looked higher that way when I came out of the canyon." Lampert obediently eased the flyer's course a trifle to the left, and everyone aboard watched the ground as it began to rise toward them.

At first the "hills" were merely low mounds, as jungle-covered as the level ground; but very quickly these gave way to higher, steeper rises on whose tops the larger trees grew very sparsely. One of these was quickly selected after a brief, questioning glance from Lampert to the guide, and the helicopter began to descend.

"We'd better take what we have now." McLaughlin amplified the nod with which he had answered the pilot. "This belt of hills is pretty narrow, and we'd be into the main range in another minute or two."

"Do you know whether the other side is as abrupt, or whether —" Lampert's question was cut short by an exclamation from Mitsuitei.

"Rob! Hold it a moment!"

Lampert was a good pilot; the increase in rotor-blade pitch under his deft fingers brought the helicopter's descent to as nearly an instant halt as was possible to anything airborne. Not until he had also checked horizontal drift did he look in the direction the archaeologist was indicating. By then, everyone else had seen what had attracted Mitsuitei's attention.

Between the hill on which Lampert had intended to land and the river were several lower eminences.



These were now almost directly south of the helicopter, and every detail upon them was shown in exaggerated relief by shadows stretching to the east. It was one of these hills which Mitsuitei was examining with the utmost care.

It was covered with jungle, like the rest; but a curious regularity was visible. The trees appeared, at this distance, to be of the usual species; but some of them towered over their fellows by a good thirty or forty feet.

This in itself was not odd. The whole jungle was studded with such projections. However, on this hill the taller trees seemed to have been planted in orderly rows. Five solid lines of them were visible, extending roughly north and south so that their long shadows made them stand out sharply. They were separated from each other by perhaps a quarter of a mile. Running at right angles to them were other, less outstanding rows of vegetation. Lampert was not quite sure that these were not the product of his own imagination, since the trees which formed them rose little if any above the general level. The whole hilltop, however, suggested something to every man who saw it. The archaeologist was the first to give voice to the impression.

"That was a city!"

No one answered. Some of the scientists must have thought that he was jumping from one opinion to its direct opposite on the strength of some rather feeble evidence; but the thought went un-

voiced. They simply looked — except for Sulewayo, who moved to turned a camera on the scene.

"Rob! Can we land there? Now?" Lampert had anticipated this question, but could have answered it without hesitation in any case.

"Sure — if you don't mind using String's method of folding the blades and falling in." The archaeologist turned to the guide.

"Will it be hard to get there on foot from this hill we're heading for?" McLaughlin shrugged.

"From two hours to a day, depending on undergrowth."

"We have torches. We can burn our way if the vegetation is dense."

"Half a day, then. You'll still have to let the steam clear pretty often. There's little wind below the trees, and the air is saturated."

"Well, that place will be worth more than a day of anyone's time. Maybe tomorrow we can —"

"Hold up a moment, Take!" Lampert cut in, before Mitsuitei could develop his plan further. "If you take String out to that hill before take-off tomorrow, what do the rest of us do for the day — or week — before you get back? What we'd better do is note this place, go on to the canyon, set up camp, get the fossil hunting going, and after our routine is set up and we know the more common dangers of the neighborhood, perhaps we can spare McLaughlin for a day or two so that you can look over your city — if that's what it is."

Lampert's last few words banished the hurt expression from the little man's face.

"What do you mean — *if?* What else could make a pattern like that? It must have been streets."

"Or a joint system in the rock below, trapping enough water — or draining enough off — to permit superior growth along the joint lines. Or a system of tilted strata doing the same thing —"

"If it's the latter, it's just the sort of thing you want, too. It should bring fossils near the surface."

The pilot nodded slowly. "You do make it sound more attractive. Still, I think we'd better follow the original plan, except that I may come with you myself when we do get around to looking that hill over." He turned back to the controls and resumed their descent. Mitsutei subsided once more to his seat. The archaeologist realized the wisdom of Lampert's decision, but did not particularly enjoy the enforced wait. His face showed the fact, until Sulewayo opened the camera he had been using and passed him the sheaf of prints on which the "city" appeared. As the young paleontologist had expected, these so occupied the little man's attention that he did not even notice the landing.

The helicopter settled to the hilltop which Lampert had chosen, in the center of a quadrangle of trees growing just far enough apart to give clearance to the rotors.

The sun was nearly gone. It had vanished in the haze as they dropped below flight altitude. McLaughlin knew that in all too short a time it would be as dark as Viridis ever

became. The nights could be dangerous. There was quite enough light to deceive a man into thinking he could see clearly, and an inexperienced wanderer might not realize until too late that details were not really distinct and that there was no clue to direction in the shadowless glow. McLaughlin himself could use the moons, but he doubted that any other member of the party could do so. They — or their motions — took knowing.

He was pleased to note that there was no general rush to the door as the great blades whistled gently to a stop. The scientists turned to him, but remained where they were. No words were spoken, but Lampert's relinquishment of command was evident. McLaughlin unfolded his length from the seat.

"There are two choices," he said. "We can sleep in the 'copter, or outside. The first will be a trifle cramped, but the second will require either a double circle of charged wire or two armed guards on constant watch. With no offense meant, I doubt that anyone but myself in this group could qualify as a night guard."

"Why a double circle of wire?" asked Lampert.

"The wire will stop only an animal in control of its motion when it makes contact. If a Felodon were to spring from a little distance, it might not like the wire — but it could hardly stop until it reached the ground, and there should then be a similar barrier ahead of it."

"We could use a lethal voltage."

"Even if you want to take the

risk — what is lethal to a Felodon will be equally so to a man — you'll have the insulation problem. There's always a darned good chance of rain before morning, and —"

"We might as well stay inside, then. We have the electric equipment, but it will take quite a while to set it up; and it hardly seems worth the trouble for a one-night stand. As you say, it will be a little crowded here. But we've all slept under worse conditions. Would anyone rather set up the fence?"

There was no answer to this question. At Lampert's direction a meal was served and eaten. Then the scientists settled down for the night, some to sleep at once, others to review plans or recheck equipment. Mitsuitei occupied himself with making careful measurements of the photographs he had been given; he was the last asleep. . .

Scores of miles to the southwest, the Felodon reached the river. It was no longer on the coast; some time since it had swerved inland. A casual compass check would have revealed that it was still heading straight for the now grounded helicopter. Even McLaughlin could not have told what led the creature on, familiar as he was with the animals of Viridis; but no one who had watched the thing since the flying machine had passed could have doubted its goal. Actually, it was now on the same bank of the river as the helicopter; but whatever guided it pointed across the great stream.

Without hesitating, the amphibid plunged into the water.

The men were awake well before sunrise. The human body takes a long, long time to accustom its physiological cycle to a change in something as fundamental as the length of day. But they did not attempt to resume flight until the green star was once more in the sky. Mitsuitei put forth a tentative suggestion that the interval be spent in a visit to the "city" site he had seen the night before, but McLaughlin vetoed it.

"Going on foot through the jungle at night is a fool's game, though I admit people sometimes get away with it. I could get you there, but even if we turned around and came back immediately there'd be a lot of time wasted. Dr. Lampert went over all that last night. Look, that hill of yours is right by the river. After we're set up in the main camp, it will be relatively easy to drop down to it. We have collapsible boats. Unless we camp above the rapids, you won't even have to fly. Even if we're farther upstream and do have to use the 'copter, the trip will take only a few minutes."

Mitsuitei had agreed, though with evident reluctance. No one else had any desire to go out; there was not enough rock exposed on the hilltop to excite the paleontologists, the hill itself presented nothing unusual to Lampert's geophysical eye, and McLaughlin was in no hurry to get to work. They waited, therefore, until the "Claw" — Lampert had recalled Beta Librae's Arabic name — had risen and the skyglow been replaced



by its emerald brilliance; then the journey was resumed.

It took, as McLaughlin had said the night before, only a few minutes. The hill where they had slept was less than five miles from the face of the mountain range. Only the haze of the night before had prevented their seeing it. The river emerged from a canyon some fifteen hundred feet in depth, a couple of miles to the south of their eastward course line.

Lampert, in hopes that the usual haze might not be too evident at this hour, climbed above the level of the cliff top to get an idea of the mountain range as a whole; but he was disappointed. For nearly an hour he cruised over the area, now several thousand feet above the western cliffs and then well below them. It slowly became evident that the range represented a single block, which had been tilted upward on the west side. The opposite slopes were very gentle, merging so gradually into the general peneplain level of the continent that it was impossible to say decisively just where the range ended. The river did originate somewhere beyond the range, cutting entirely through it, and as the guide had said, its current was not particularly swift. Lampert had much explaining to do. After all, water should have drained toward the low side of the block.

"It seems evident," he summed up his ideas as they hovered once more over the western cliffs, "that the river was here before this particular bit of block tilting occurred. This planet does have some diastrophic

forces left in its crust, in spite of its generally smooth nature. Apparently this just represents the end of a long period of rest, such as the earth has had several times. As a matter of fact, I have no business calling it the end of such a period; it might be fifty million years before the world will be generally mountainous again."

"Why do you say *again*, Rob?" asked Krendall. "According to findings of your own colleagues, this planet has hardly been solid for forty million years. Could it be this flat now if it had ever been markedly mountainous in that time?"

"Good point. I don't know, but would be inclined to doubt it. Well, we'll cancel the 'again' if it will make you happy. In any case the block forming this range came up slowly enough so that even this river, with its relatively low cutting power, was able to keep pace with it and not be deflected. Probably—" he glanced at Mitsuitei — "the rock of which it is made will turn out to be quite strongly jointed. It looks rather that way from above—the river course, I mean. A lot of right angle, or what were once right angle, bends."

"We'd better go down and look for a camp along the river somewhere," put in Mitsuitei. "Let's start at the cliff end. Then we may wind up reasonably close to that hill—and I still want to look it over, joints or no joints."

"Fair enough." Lampert eased the helicopter once more downward until they were only a few hundred feet above the jungle, moved along

the cliff face until they reached the canyon, and, very cautiously, entered. His caution proved unnecessary. The air currents in no way resembled the treacherous hodgepodge he had expected, at least not over the center of the river. A steady wind was blowing into the canyon mouth, but did not seem to be eddying very much even at the numerous bends.

To the archeologist's annoyance, two sets of rapids were passed before a place was reached where the bank was wide enough for a camp site. At this point a fairly large side canyon entered the main one from the north. Where its central stream joined the main river a gravelly area several acres in extent offered itself for the purposes of the scientists. Lampert brought the helicopter down on this surface. The surroundings looked promising; the cliffs facing both canyons looked reasonably accessible on foot for some distance, at least along their bases. Climbing appeared to be impracticable for the most part, as the rock walls rose sheer except for the occasional joints which Lampert had predicted; but the material was certainly sedimentary, and everyone but the guide tumbled out of the flyer with a glow in his eyes which promised a speedy scattering of the party.

With some difficulty, McLaughlin got them together. A site, some twenty yards square, was selected against one of the cliffs and fenced off. The big, prefabricated sheet-metal "tent" was erected and its tiny

conditioning unit installed; sleeping and cooking gear were placed inside. That completed, geologist's hammers appeared as though by magic; and McLaughlin realized that he had better do some explaining before he lost a scientist or two. Once more he called them together.

"All right, gentlemen. I admit the necessary camp work has been done, and there should be nothing to keep you from your projects. Still, there are some things you had better understand.

"Having canyon walls on all sides does not make this place safe. Every carnivore and poison lizard on this planet could get to us by way of the river — even the ones which look like land animals. Every one of them could swim under water from a point out of sight in either direction to where you are standing; and if you think he would have to come up at least once to judge your position, guess again. I don't know how they do it, and neither does anyone else; but a Felodon could submerge around the bend up there, come up behind the helicopter out of sight of any one of us and be waiting when we marched around the machine. Therefore, go armed at all times. I know you want to cover a lot of ground, and can't stick in one party; but I insist that you do not go anywhere alone. Take at least one companion. Preferably one who is not a member of your own field. If you two paleontologists are together, for example, it seems more than likely that you'll be found with your heads in the same hole in the rock. When one of you has to dig,

make sure the other has his neck on a swivel. I know this will slow your work, but not as much as if the work had to wait for a new investigating team from Emeraude—or from Earth.

"You've seen most of the dangerous animals in the zoo at Emeraude, so I won't waste time describing them. Just remember that you *won't* always hear them coming. You'll have to use your eyes.

"All right, Dr. Lampert. You're the boss, as far as the scientific work goes. Who does what, and where?"

The geophysicist gave no sign of having detected the humor in the guide's remark, but began speaking at once.

"I should say that the main canyon upstream and the side one in the same direction should be covered first. We've already used up a good deal of today, and would waste more breaking out the boats. Ndomi and I will go up the main stream; Hans and Take can take the other. Don't hurry. If anything looks good, take the time to investigate it on the spot. Of course, if it is obviously a major job, just mark it and go on. There's no sense in one man's trying to exhume a six-foot lizard skull.

"Since this region must have been sea when the limestone was deposited, there's not much chance of land animals. However, we want as complete a chronological series as possible, so do the best you can on this level. We'll try for higher formations later. There should be plenty farther upriver, if this block is tilted

the way it seems to be.

"String, perhaps you'd better go with Take and Hans. Set out when you're ready. Be back in—" he glanced automatically at the narrow strip of purplish-blue sky, then at his watch—"four hours; then we'll compare notes. After that we can either concentrate on one place or the other, or break out the boats and cross the streams, as indicated."

Twenty minutes later the parties were out of sight of each other and the helicopter. Lampert had spent the first few minutes of the walk wondering whether he had been too obvious in arranging for both the guide and Krendall to accompany the little archaeologist; but he quickly convinced himself that McLaughlin's speech had covered the arrangements pretty well.

In any case, he would probably have been distracted soon enough. The cliffs were interesting. Limestone, evidently, as expected—but rather dense, at that; maybe some barium replacing the calcium? or was the gravity different enough to destroy his judgement for such a small fragment? Probably not. He was actually using inertia more than weight in making his estimate. Anyway, the stuff was certainly a carbonate. It frothed satisfyingly under a drop of acid from Lampert's kit.

And there were fossils. Sulewayo's form was bent over a spot on the cliff face, examining minutely; but Lampert could see others from where he stood. None seemed remarkable. Most were rather evidently shellfish. He carefully refrained from giving them names according

to the genera they resembled in Earth's rocks; Sulewayo and his colleagues frowned on the practice, which could be most misleading. He could not, however, resist the temptation to think of them as scallops.

"What do you have there, Ndomi?" He knew the other would not have spent so long on any shellfish.

"Not sure, precisely. Maybe vertebrate, maybe not. What could be armor and what could be ribs all mixed up. I think I'll mark it for future reference."

"I suppose it'll be another Devonian whatsit, like everything else on this planet, when you do decide."

"Pennsylvanian would better describe the world as a whole. Barring that, you may be right. Rob, if you'd give me a hand here we could get some basic work done."

"Eh?"

"You say this is a tilted block. In lowest formations right now. I'd like to get photos and if possible specimens of as many different varieties of shellfish as possible, at each level. Then it may be possible to set up some sort of temporal sequence — and use the things as index fossils if animals do evolve on this benighted mudball. If you could get me some radioactive dates at two or three nicely scattered levels, it would also help."

"Thanks," returned Lampert drily. "I could use material like that myself. I can tell you what you probably already know — you're not likely to get anything of the sort from limestone."

"Well — intrusions are always possible."

"You watch for 'em, then." The pair went to work.

Two hours out, a little more than one back. There was no one at the helicopter when they reached it, but the other group came in only a few minutes over the four-hour limit which Lampert had imposed. A comparison of notes over the meal which had been quickly prepared indicated that the second group had gone farther in point of miles covered, but had accomplished less work. Krendall had had the same idea as Sulewayo. But he had not attempted to carry it out since his canyon did not cut across the range, and would presumably not furnish a continuous change in formations.

Lampert and Sulewayo, as it happened, had not found any evidence of change themselves. The last fossils they had found were at least superficially identical with the first. There was the usual evidence of bedding, and it had been quite evident geometrically that the walk had taken them to originally higher, and presumably later, levels; but in what must have been eight hundred feet or more of original deposit, there seemed to have been no significant change in the fossil life. What eight hundred feet would mean in point of time, of course, no one had the least idea. There was not even a good guess as to how fast carbonates might be expected to precipitate in a Viridian ocean. Anyone could compute the carbonate ion equilibrium between atmosphere and sea, but no one knew anything to speak

of about carbonate-precipitating organisms of the planet.

Mitsuitei changed the subject slightly at this point.

"We found several of the joints you predicted," he said to Lampert.

"Oh? Very wide? We didn't spot anything that was obviously a joint. But there were several small side canyons — all narrow enough for us to wade or jump their central streams — which might have started life that way."

"Ours were quite narrow, and bore traces of volcanic ash at the bottoms."

"Eh?"

"That's right, Rob. Here's a bit of it I brought back. I thought you might want a little corroboration on that one." Krendall handed over a bit of crumbly tuff as he spoke. Lampert examined it with pursed lips.

"Maybe we'd better get back into the air, and search the neighborhood for volcanoes," he said at last. "I can't bring myself to believe in two full mountain-building cycles on this planet — and if I could, I'd have a hard time swallowing the idea of these limestone layers coming up, going down, and coming up again unaltered. How deep were these volcanic deposits?"

"Variable. Shallowest in the wider joints; in the very narrow ones, up out of sight."

"Suggesting that they've been washing out for some time since the original settling. Anything organic in them?"

"Nothing turned up yet."

"Do they extend below the pres-

ent river level, or what?"

"They're at least down to it. We couldn't do any major excavating."

"If they run much below," muttered Lampert, "I'll join the roster of geophysicists who have been driven off the rails by this woozy world. Well, let's assume as a working hypothesis that the volcanic activity is relatively recent. That will at least have the advantage of keeping me sane, until something comes up to disprove it." He finished his meal in silence, while McLaughlin gave a reproving lecture on the matter of wading.

There was still a little daylight to go when all the men had eaten; and Lampert, Sulewayo and the archaeologist took the helicopter up the main canyon to check on the possibility of walking to any really new deposits.

They were sure, from changes of color already seen at various levels up the cliff face, that these existed. But it appeared that the lowest of them did not reach river level for more than a dozen miles. The distance was less mapwise, but the canyon, winding back and forth around what the geophysicist still felt must be joint-bounded blocks, went a good two miles in other directions for each one that it led eastward. Realizing this, the explorers lifted the helicopter and began checking as close to the cliffs as Lampert dared at higher levels. In this way they worked back toward the camp site. Once again it was Mitsuitei who first spotted something of major interest.

"Found another city, Take?" asked Sulewayo at the other's call.

"Not exactly. It's — well, I guess it's really a system of those joints you keep talking about. Still, it looks awfully regular." He sounded a little wistful.

"It does." The paleontologist nodded slowly. "As you say, it's probably a joint system. Also, it's probably full of volcanic ash, if my eyes don't deceive me. Rob, what's the chance of a landing on one of the shelves? There are at least three formations accessible on foot from that point; and I could get some more tuff samples to make or break your peace of mind, while I was doing my own work."

Lampert examined the area carefully. Like Earth's Grand Canyon, this one receded from time to time in shelves where softer layers of rock had worn further back, or the orogenic processes had paused to give the river a longer bite at that level. The cracks Mitsuitei had seen formed a neat crisscross pattern on the top of one of the shelves. Some of them betrayed their nature by emerging from its vertical face. It was admittedly an unusually small-scale joint pattern, at least for this mountain system, and might well contain readable evidence of the forces which had shaped the area.

However, they had only one helicopter. Lampert slowly shook his head in negation.

"I'm afraid not, Ndomi. Your shelves may be big enough, but they're not level enough. I'd have to make a swinging landing, and I'm not that good a pilot."

"Well, how about letting me down on the ladder? We have a hundred feet of that, so you could be up above the next shelf while I went down. You'd have plenty of blade clearance. That next level goes back a couple of hundred feet."

"That might be all right." Lampert spoke hesitantly. "You certainly have the right to risk your own neck on the climb if you want to. We won't try it tonight, though. I'd like to check with String on the advisability of your being there alone. The place looks pretty hard to reach for anything that doesn't fly, and I don't know of any really dangerous flying things on this world; but we'd still better check."

"All right with me. I'd just as soon have a full day, anyway."

"If Ndomi will be spending a day alone up here, how about having String take me to the other place, and settle that point once and for all?" asked Mitsuitei as the helicopter eased downward toward the camp. "That would still leave Hans and you to form another team for whatever else you want to do."

"That should be all right. It'll depend, though, on whether String thinks it's safe for a man to work alone on that shelf."

The proposition was put to McLaughlin as soon as the machine was landed. To Lampert's surprise, the guide gave a qualified approval.

"Remember," he concluded, "I don't know what lives on the cliffs. It's country I've never covered. All I'm saying is that no Viridian animal I know of could get there, except flying ones; and they're nothing to

worry about, especially in the daytime. I'd like to go with you to look over the place when you take him up tomorrow, and strongly recommend that he carry a communicator as well as a weapon; but unless I see something you haven't mentioned when I do go, I would say it was all right. . ."

Once more the Felodon reached the river, but this time it did not cross. It was no longer heading straight for the helicopter. Hills had not altered its course, but the cliffs had. They formed a wall on its right which was too nearly vertical for its agility and strength. Even this barrier, however, had caused no visible hesitation or doubt. It had swerved, followed the base of the wall to the point where the river emerged and plunged in as promptly as it had done before. Few amphibians have ever lost the art of swimming when their larval gills vanished; the feeble current meant nothing to the Felodon.

It turned upstream and went on its way.

#### IV

Ndomi Sulewayo had pursued his occupation on terraces of Earth's Grand Canyon, on cliffsides of Fomalhaut Four's highest range and in badlands on the dimly lighted Antares Twelve. The physical hazards of his present position troubled him little. McLaughlin had agreed that the ledge where the paleontologist had been left was inaccessible to the larger carnivores, and had merely issued a final warning about

poisonous "lizards." The primary danger, as nearly as Sulewayo could see, was that something might happen to the helicopter. He certainly could not rejoin the others on foot. He was facing a sheer wall some sixty feet high. A score of yards behind him the terrace ended in another straight drop of several hundred feet. A quarter of a mile on either side, the flat surface ended; to the west, by narrowing until the two walls became one; at the other end, it was cut off as far as he was concerned by a joint penetrating apparently the full depth of the canyon.

There were several other cracks in the wall facing him. Like those in the tributary canyon explored by Krendall and Mitsuitei, these were packed with volcanic detritus. This was hard to reconcile with the suggestion that erosion had been long at work. In such a case, the higher portions should have washed away long before the material found at the canyon bottom.

Examination at close range suggested a possible explanation. The tuff at this point was fairly well cemented. It seemed reasonable to suppose that the joints had been present before the mountains had started to rise; that a volcanic mud flow had filled them with detritus; that the new material had then been cemented by dissolved material coming from above. This would make the top levels of the tuff more resistant than those lower down, where the cementing minerals had not reached, and account for what had been seen so far.



The hypothesis also implied a plentiful supply of fossils. Volcanic mud flowing into a crack in the ground should carry plenty with it. Sulewayo set to work with a hammer, and was presently soaking with perspiration.

He was tempted to remove some of his clothing; but this had been treated chemically to repel Viridian insects and caution prevailed. McLaughlin had not mentioned any dangerous biters or stingers, and in all probability his blood would not be to the taste of any such creatures on this world—but if the mosquito or tick did not learn that fact until after it had tried, Sulewayo would hardly profit by it. In any case the temptation to strip passed quickly. In only a few minutes, his attention was fully occupied by his

work; for the expected fossils proved to be present in very satisfactory numbers.

Most seemed rather fragmentary. Apparently the original creatures had been tumbled about rather badly before the medium hardened. However, the remains were definitely bones, as he had expected and hoped. For some time Sulewayo was occupied alternately digging out more fragments and trying to fit the more hopeful-looking specimens together, although he had no success at the latter job. Then evidence of a more complete set of remains appeared, and he instantly slowed down to the incredibly meticulous procedure which marks a paleontologist anywhere in the universe.

At this time he had cut perhaps



a foot into the tuff for the full three-foot width of the crack and from terrace level up to about his own height. In spite of its apparently firm texture, the rock was extremely soft; and the old question about erosion was reappearing. Big pockets of extremely crumbly material had been responsible for most of his speed. Now, however, with the usual perversity of the inanimate, a firmer substance was encountered, apparently encasing the bones he suspected of existing a little farther on. This combined with his increased care to bring almost to a halt the removal of rock from the cleft.

The bones were there. Perhaps they had been betrayed by a discoloration of the rock too faint for him to have noticed consciously; perhaps something more subtle is involved in the makeup of a successful field worker in paleontology, but as flake after flake of the matrix fell away under his attack a shape gradually took form.

At first a single bone which might have been an unusually short digit or an unusually long carpal — or, of course, something totally unrelated to either — was outlined. Then another, close enough to suggest that their lifetime relationship might have been maintained. And another — Sulewayo failed to hear the approach of the helicopter until its rotor wash from a hundred feet above lifted the dust about his ankles.

Knowing that Lampert would be having trouble holding that close to

the cliffside, the paleontologist reluctantly hooked his equipment to his belt and started up the ladder. Five minutes later they were back in the camp, with Krendall listening eagerly to Sulewayo's description of his find.

"It's certainly a vertebrate, Hans. That stuff can't possibly be shell or wood. It's almost certainly a land dweller —"

"Likely enough in that sort of rock, anyway."

"— because I got enough uncovered to be nearly certain that it's a foot. Certainly a limb that would not be needed by a swimmer."

"Like an ichthyosaur?" queried Lampert innocently. Sulewayo grinned.

"Quite possibly. More likely one of our ubiquitous amphibids, though. Certainly something worth getting out, since the general idea is to get an evolutionary sequence of some sort."

"I suppose that means you'll want me to date the eruption which filled all these cracks with detritus, then."

"Sure. But there's no hurry. Tomorrow will do." Lampert found he had no answer to this, and Mitsuitei managed to edge into the discussion. He had spent the day with McLaughlin, as he had hoped; and mere failure to find paving stones had not damped his ardor.

"I suppose you and Hans will both want to go up the cliff tomorrow," he remarked. "In that case, Rob might as well stay with String and me. It will speed up the digging back at my hill."

"Are you still scraping dirt off

that thing?" asked Sulewayo in mock surprise. "Didn't one day indicate that it was a joint pattern like the rest?"

"Not yet. We haven't gotten down to rock over any place where your cracks should be. The root tangle of the taller trees slows the digging. I admit the rock is limestone like the cliff, but there's still no evidence why those trees grow so regularly."

"That's just what we've been saying all along; but you keep looking for the remains of a city."

"I gathered, Ndomi, from your recent conversation that you were digging for a land animal on the basis of three bones. Either you are working on hunch, which destroys your right to criticize, or you are reasoning from knowledge not available to the rest of us. In the latter case, you should be at least open-minded enough to credit me with equivalent knowledge in my own field."

It was Sulewayo's turn to have nothing to say; he had honestly supposed that the archaeologist had been taking the "city" hypothesis no more seriously than the rest. He apologized at once, and peace was restored. Lampert sealed it by agreeing to Mitsuitei's suggestion.

The rest of the evening was spent in detail planning by the two groups. At sunset, all turned in to sleep behind the protection of the electrified fence. Even the guide regarded this as an adequate safeguard.

Apparently his opinion was shared by at least one other. The Felodon had spent most of the

day under water, part of the time in the canyon fairly close to Lampert and Krendall and later down the stream by the site where the guide and archaeologist had been working. At neither place had it emerged, or shown the slightest sign of wanting to attack. McLaughlin's reference to the strange instinct of the creatures seemed justified. It certainly could not see the men, but just as certainly was aware of their presence.

What it was about the alien visitors which exercised such an influence on the minute brain of the carnivore, no one could have said — then. Any watcher who had supposed, from its earlier actions, that it was moved by a desire for new and different taste sensations would have had to discard the notion now.

With the men safely settled down behind their fence, the beast suddenly turned back downstream. It had returned to the camp site at the end of the working day. In an hour it was in the jungle below the canyon; in another it had killed, and was feeding as it had the moment before the hum of the helicopter had first attracted its attention. This time it finished the meal in peace; and once finished, did not show immediate signs of its former obsession.

Instead it sought a lair and relaxed, blending so perfectly into the undergrowth and remaining so silent that within a few minutes small animals were passing only feet away from the concealed killer.

Robin Lampert was only a fair statistician, but if he had been ac-

quainted with the moves of that Felodon during the last few days, even he would have been willing to take oath that more than chance was involved. He would probably have wanted to dissect the animal in search of whatever mechanism was controlling it.

But Robin Lampert knew nothing of the creature. Neither did Takehiko Mitsuitei; and that was rather unfortunate, for the lair it had selected was on the same hill as the archaeologist's digging site, and a scant quarter mile away from the pit Mitsuitei had left.

The rising of the green sun was not visible the next morning. The ever-present mist had thickened into a solid layer of cloud, and hissing rain cut the visibility to a few hundred yards. The helicopter felt its way down to the hill with radar, landed on the river, taxied on its floats to the bank and was moored. Lampert, McLaughlin and Mitsuitei emerged, the scientists laden with apparatus, and started up the hill toward the site. The guide carried only his weapons.

The equipment was not of the sort Mitsuitei was accustomed to using. It actually belonged to Lampert. Normally it would not be used in an archaeological dig, any more than it would have been had they been fossil hunting; for neither activity takes kindly to any sort of automatic digging machinery. Lampert had suggested its use, however, in order to get a rapid idea of the nature of the soil cover, bed rock and joint structure of the hill.

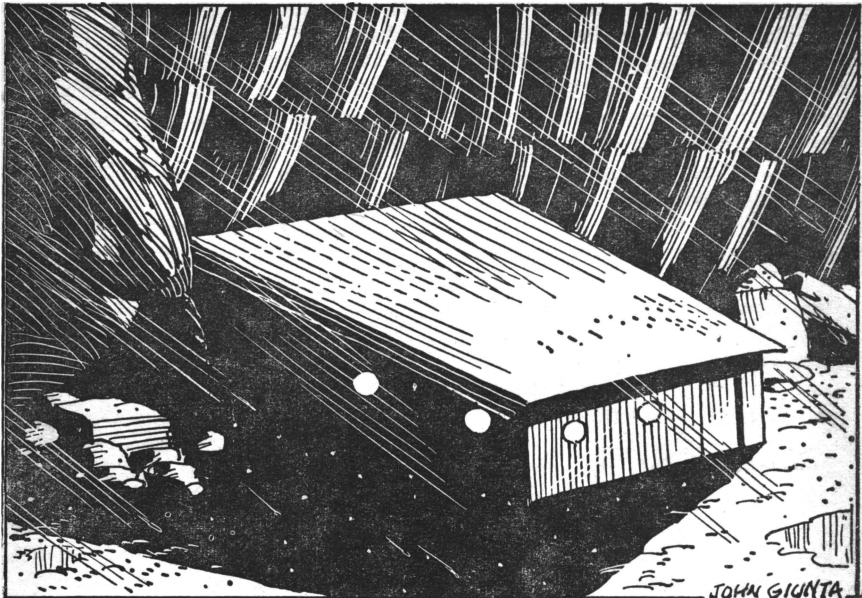
If evidence warranted, it would be abandoned for the slower methods of digging. If not, a few hours would permit them to learn as much about the area as many days of work with slower equipment.

The hole Mitsuitei had already dug was part way up the hill, in a space cleared of underbrush by a flamethrower. Several other such clearings were in the neighborhood. As the archaeologist had said, he had made more than one attempt at digging which had been frustrated by roots.

Somewhat to Lampert's surprise, it was possible to tell even from ground level the orientation of the taller trees which had been so prominent from the air. Even the smaller plants showed signs of some underground influence. Between the tallest trees, tracing out the straight lines the men had seen from above, the underbrush formed an almost impenetrable wall. Elsewhere foot travel was easy, though the surface was by no means barren. Lampert understood how there might indeed have been difficulty in digging on one of the fertile lines, and admitted as much.

"That's the trouble," responded Mitsuitei. "I'd like to get down right at such a point, to see what's underneath. It seems to me that paving might be responsible, if they'd used the right materials. Lots of civilizations have used organic substances which decay to good fertilizer. Then there might be the remains of a sewage system, which would account for richer soil —"

"After the time which must have



passed since the place was buried?"

"It has happened. In such a case, of course, trace elements rather than nitrates or phosphates are responsible. That's what I suspect here."

"But wouldn't it be better to dig where you actually have—in the middle of a block, if that's what it is? Then you'd be fairly certain to hit a building, which should be richer ground than a street."

"Only if you actually strike artifacts. The building itself might be much less well preserved than a paved street. However, you are the one who's handling that mechanical mole. Dig where you want, and see what you can learn about this hill-top. Just get me at least a couple of cores from my 'streets' before you're done, please."

Lampert nodded and proceeded to assemble his equipment. The "mole" was a cylinder about five centimeters in diameter and three times as long. A cutter-lined mouth occupied one end, while the other was attached to a snaky appendage which was wound on a fair sized drum. A set of controls knobs and indicators were mounted near the center of the drum.

The geophysicist set the cylinder on the ground mouth downward, pushing it into the soft earth far enough to assure its remaining upright. Then he turned to his controls and after a moment, with very little noise, the cylinder began to sink into the ground. In a few seconds it was out of sight, trailing its snaky neck after it.

The men watched it in silence.

Perhaps thirty seconds after it disappeared, there was a minor convulsion in the neck, a momentarily rising hum from the machinery, and a plug of dirt about two centimeters in diameter and five long was ejected from a port in the center of the drum. This was seized by Lampert and examined briefly, then tossed aside. "The soil is pretty deep," he remarked.

"How far down did that come from?" asked Mitsutei.

"One meter. That's the sampling interval I've set in it, for now. If it meets anything much harder or easier to penetrate, it will warn me and I'll grab them more frequently." Conversation lapsed while two more samples arrived and were inspected. Then a light flickered on the panel, and Lampert reset one of his knobs; and almost immediately a core of light gray limestone was produced.

"Apparently the same stuff as the cliffs," said Lampert after examining the specimen. "Do you want to go any deeper, or drill a few more holes to get an idea of the contour?"

"How fast will that thing go through limestone?"

"A couple of centimeters per minute. It's too small to pack a real power unit."

"Give it five minutes, just to make sure it isn't a building block."

"Ten centimeters wouldn't give you a whole building block."

"A sample from that far inside one would tell me what I want to know. You rock-chippers don't seem to think that archaeology is a science yet. Let me have that first core, too." Mitsutei looked confident to

the point of being cocky, and Lampert let the mole burrow on. The second core came in due time, and the little man set merrily to work with tiny chips from the two stone cylinders, a pinch of the lowest soil sample which had been acquired, a small comparison microscope and a kit full of tiny reagent bottles. Lampert used the time the tests consumed in reversing the mole and resetting the equipment on a new spot. By the time the little mechanism had gnawed its way once more to rock, Mitsutei was forced to admit that the formation appeared to be natural.

He did not seem as disheartened by the discovery as might have been expected. He simply waited for more cores, his narrow face reflecting nothing but the utter absorption Lampert knew he experienced whenever a problem arose in his line. In spite of his apparent tendency to jump to conclusions, Takehiko Mitsutei was an experienced and respected member of his profession. Lampert knew enough about his record to be perfectly willing to accept his instructions for the present.

A series of holes was drilled, from the original position toward one of the "streets" forty yards away from it. After each the archaeologist admitted with perfect cheerfulness that there was nothing inconsistent with the idea that the hill was a perfectly natural formation. He still insisted, however, that the regular lines of trees, reinforced as they were by the undergrowth pattern, required explanation.

Lampert admitted this, but felt that he knew what the explanation would be. After all, volcanic residue is more than likely to contain the trace elements vegetation requires, even on Viridis.

Finally the time came to get verification — or the opposite. The flamethrower had to be used this time, and for several minutes clouds of steam swirled about the men as its blue-white tongue fought the sappy, rain-soaked undergrowth. Then the mole and its controls were wheeled into place, and the little robot once more nosed its way out of sight.

"I don't suppose you want any samples above the regular rock level, do you?" asked Lampert as the machine disappeared.

"I think it would be best if we took them as usual," was the reply. "For one thing, we should try to learn the depth at which the soil composition changes — we are at least agreed that it changes in some manner, after all."

"True enough." The geophysicist set his controls, and the process continued — a process familiar now to McLaughlin as well as the scientists, for the guide had caught numerous glimpses of what was going on while he prowled about the work area on self-imposed guard duty.

Mitsuitei took the crumbly soil cores as they came, examined them quickly — they were arriving every few seconds — and filed them in numbered compartments in a specimen case he had opened. Detailed stratigraphy would come later. For some time there was no gross evi-

dence of change in the soil; not, in fact, until his first case had been filed.

"Can you stop that thing for a moment, Rob?" he asked at this point. "I don't want to lose track of these, and will have to hold up while I open a new case."

"All right. I thought you'd want to stop for thought soon anyway."

"Why?"

"Because the mole is nearly four meters down, well below the depth at which we hit bedrock before, and is still in soil."

"Eh? But — but it's still ordinary soil; none of your volcanic ash."

"Tuff had been eroded out of a lot of the joints in the cliffs. There's no reason to expect it to be at the same level as the surrounding rock."

"That's true." Mitsuitei paused in thought for a moment. "If we keep on going straight down, we may just be working into a natural crack, as you say. Might it not be better to drill several holes within a few square yards here, to determine whether it is a narrow joint such as you expect or an actual edge to the rock at this level?"

"Maybe the edge of a roof, eh?" Lampert chuckled, but spoke in a manner which could give no offense. "I can do better than that. Don't need to pull up and start over; simply drill horizontally from where we are now. Shouldn't take long to get dimensions, if that's all you want." He halted the robot momentarily, and from a compartment in the drum removed something like a small theodolite mounting. This he set up on a short tripod over the

point where the neck of the mole emerged from the ground, and set a pointer at right angles to the line of tall trees. Then he started the digging again.

## V

Four starts in as many different directions and twenty minutes of time showed fairly conclusively that the line of vegetation which had given rise to the "street" theory was growing along a straight crack, apparently a fairly ordinary joint, in the limestone. While several more holes would have to be drilled to prove it, even Mitsutei was willing to admit that in all probability the remaining lines would be found to be over similar cracks.

"You must admit, though, that the regularity of this joint pattern is pretty unusual," the archaeologist said at length.

"It's far from being unknown," Lampert replied. "I got my first large taste of it in my student days back on Earth. Fly over the mesa country in southwestern North America sometime. Most of the joints there are invisible from a distance, of course; but at the edge of a butte where weathering is most prominent the blocks have frequently started to separate, and the thing looks as though it had been put together from outsize bricks."

"Hmph. Seem to remember something of the sort myself, now that you mention it. I did some digging in that area, too. I shouldn't have connected that sort of country with what we have here, though."

"Different meat; same skeleton," replied Lampert.

"But how about this volcanic ash, or mud, or whatever it is, which at least fills the joints we saw in the cliff? That's not so usual, is it?"

"Not in my experience. But granting the joints and the volcanoes, there's nothing really surprising about it. Incidentally, we don't know that this crack we're standing on has the same filling. We'd better bore down again to make sure. At least we may get some idea of the date of the volcanic action compared to that of the orogeny that tilted the block where we're camped. If there's tuff down here too, it will substantiate the idea that the vulcanism is the older."

"Why? Couldn't ash have settled down here as well as up there at substantially the same time?"

"It could. But I'd bet a fairly respectable sum that the tuff we saw in the canyon was from a mud flow, not a fall of airborne ash. That could hardly have reached the top of the cliffs — actually, the opposite slope of the mountains, where Sulewayo is working — and this area simultaneously."

"Maybe from different eruptions? I get the impression that this world has a slight tendency to produce volcanic fields rather than individual cones or flows."

"Might be. Chemistry will probably settle that question." During the latter part of this discussion Lampert had directed the mole once more downwards, and every half meter of travel another core was added to the collection. At six and

a half meters below the soil the first solid specimen arrived; the others had been held together only by roots. This one, however, caused the two scientists to look at each other. Lampert nodded slowly, with a smile. Mitsuitei gave a shrug, and let an expression of resignation play over his usually impassive features.

The core was tuff, apparently identical with that in the cliffs to the east. It even contained fossils.

“I guess this whole dig might as well be taken over by the paleontology department,” Lampert commented finally. “I suppose they’ll at least want to compare fossils in the tilted and level strata.”

“I suppose so.” Mitsuitei was turning the little cylinder over and over in his hand. “Tell me, Rob, what’s this little speck of green?”

“Copper salts of one sort or another, I suppose.” Lampert was not greatly interested. “A lot of secondary minerals form in and under volcanic detritus. On this world, carbonates like malachite should form quite readily.”

“Why should it form in a regular thread like this?”

“You mean a vein? Hard to tell precisely. Varying rates of water seepage, varying degrees of oxygen or carbon dioxide penetration, varying degrees of compactness in the rock where the stuff is formed—”

“I don’t mean a vein. This is in a cylindrical body going right through the core from one side to the other, as though there had been a copper wire there originally which had been attacked by soil acids.”

“Let’s see. You’re right. It’s hardly an ordinary vein, though your suggestion seems a trifle far fetched. The paleontologists can probably furnish an idea. Maybe a vine or even a worm buried in the mud flow acted as the precipitating agent for copper salts in the subsequent seepage—I’ve seen beautiful fossils of pyrite which had been formed that way.”

“But this shows no trace of structure, except for its exterior shape.”

“Isn’t a really well preserved structure the exception rather than the rule in fossils?”

“I suppose so. Still, I’d like to know just how far, and which way, this green thread goes. I’d also like to know whether there are dilute copper deposits spread through this rock, which could be concentrated in the way you suggest.”

“The first could be learned by taking enough cores. The other would call for some very careful analysis of samples which had been selected with a very sedulous eye kept on the stratigraphy. You know that; you must have done that sort of thing looking for carbon-fourteen samples, at times.”

“Yes, I see that. Could you make such analyses here?”

“No, except for the mere presence of copper. The cores would have to go back to a well equipped lab. Still, if you want to get them, it’s all right with me. Problems were made to be solved. I’ll admit this one doesn’t seem very exciting to me, but I can use your data after you finish for work of my own. You should wind up with material for a



pretty complete geochemical picture of this neighborhood. Shall I get the cores for you?"

"Yes, please."

"Silly question. All right." The mole was drawn up a short distance, and sent questing downward once more at an angle to the original shaft, branching off a short distance above the level from which the copper deposit had come. Again and again the process was repeated, each time at a slightly different bearing from the central hole; and Mitsuitei examined each core for traces of green. At last he found it, piercing the little cylinder of rock as the other had done; and then, at his suggestion, Lampert reset the mole to get a sample in the opposite direction from the one which had furnished the new specimen.

This also checked positive; and four more samples, taken along the same line at various distances, all did the same.

Apparently the line of green extended for some distance, about parallel both to the surface of the ground and the trend of the joint in which it was buried. Mitsuitei was radiant.

"I'm going down to that level if I have to come back with an expedition of my own! If that's a fossil worm, it's worth getting the whole length anyway — but I don't believe it is. I —"

"That will take a lot of time, you know," Lampert pointed out mildly.

"Certainly I know! Even if I use your fast excavator down to the tuff level, I'll have to do detail work

from then on. What of it?"

"Well, the others may have jobs they want to do —"

"Then they can do them! What are we here for, anyway? I thought it was to investigate the past of this planet! Ndomi and Hans are doing that their own way right now. Why can't I? I'm an archaeologist, and I came along to do any archaeological work that presented itself to do; this is the only thing of the sort anyone's seen so far. I know what you're thinking. Maybe you're partly right. I certainly won't bet any money that this thread of green is a fossil telephone wire; but it's as likely to be that as anything else you've suggested, and I'm going down to that level and sift the whole volume. Hans and Ndomi can have any fossils I find if that will make you happier — and if one of them says he has no use for fossils he didn't dig himself, I'll make him eat his words. I can identify, locate and report on anything that turns up in a rock as well as any of those jigsaw-puzzle people; and I can do it in mud, too, which is more than any of them could manage."

"Don't get hot under the collar. If you can help it on this planet. You sound as though one of the boys had been giving you a lecture on the importance of knowing what strata a given series of specimens represent."

"Not one of our boys — they have a little more sense. But there was a young paleontologist when I was covering the Antares worlds whose memory still makes my blood pressure go up. Never mind me;

that's not important. But I want to make this dig."

"It will tie up machines, however freely we can spare time," Lampert said slowly. "I'll tell you: how about this? We spend the rest of the day getting cores from other points along these cracks. For one thing, we ought to know more about the structure of the hill, and for another, we might find more of your 'wires.' After all, the chance of our hitting the only one around is pretty remote. I can't quite see a single dropped piece of copper wire showing up in the first two days of a project like this."

"I neither said nor implied that this should be the only piece. I don't doubt for a moment that there are others, whether they are wires or worms."

"Sorry. Well, we take these cores back to camp this evening, together with any others we find of the same sort, and let Hans and Ndomi look them over. If they don't turn out to be something that the boys recognize and can classify right off the bat, we come back tomorrow with all the digging machinery you want, and dig until you either find all you want, satisfy yourself that there's nothing here or find something which obviously requires more specialized attention than we can give it. All right?"

"Nothing could be fairer. Let's go!"

The discussion in camp that evening was animated beyond anything the guide had heard. His original estimate of these men as

relatively quiet specimens underwent a sharp revision. Mitsutei's report of the day's activity at his site had, it is true, been delivered quite calmly; but from then on matters grew progressively livelier. This was not caused by opposition to the archaeologist's plans. The others were all in favor of remaining, for their own reasons. However, the question of just what was likely to be found gave rise to much rather barbed comment on Sulewayo's part.

"I don't see how you can expect to find any trace of civilized work here," he said flatly at one point. "The animal and plant life of this planet is at a stage of evolution corresponding to something like Earth's Pennsylvanian age, when the amphibians were the highest known forms of life. I'm not saying that there couldn't be such a thing as an intelligent amphibian. But I do say that the normal set of evolutionary forces which, on both Earth and Viridis, produced creatures of the amphibian pattern could have done that *or* produced an intelligent fish; not both. If the latter ever evolved, it failed; for the amphibians — pardon me, amphibids — are here. To get an intelligent amphibid on this world will — or would, if the sun were to last long enough — require another orogenic period with the accompanying climatic changes. Then you'd stand a considerably higher chance of getting reptiles instead, if the comparative work done on over four hundred planets carries any meaning."

"I don't doubt the value of the work at all. You are very probably

correct. It did not occur to me to expect remains of intelligent amphibians. I saw no reason to presuppose that anything in the way of artifacts which I might find would necessarily be native to this planet."

"You think there were other visitors from outside the Beta Librae system?"

"The possibility certainly exists. Here we are."

"But for Pete's sake! Do you really expect that they stayed long enough to build a city, or do you think you have the remains of a camp like ours, or what?"

"I don't think anything. It has been suggested that such people did come, and stayed long enough to—"

"And you think you've found them."

"I think nothing, except that I have found, with Rob's help, something which neither his professional knowledge, nor mine, nor even yours, is able to explain; and I think an explanation is desirable. I hope you won't consider me discourteous for pointing out that each time you have tried to accuse me of jumping to conclusions, you have been able to do so only by jumping to some yourself. I might further add that the suggestion that this planet had been stocked with its present supply of life types by visitors from space was advanced by a paleontologist, not by one of my colleagues. I gather he could not understand how life could evolve to the state it shows in the thirty-odd million years that the planet seems to have been solid. I neither support nor deride the idea; I simply want to gather data,

in an attempt to explain a much simpler question — why are narrow threads of copper compounds to be found every few feet in the volcanic tuff filling the joints in a certain limestone hill, and why are those threads always nearly horizontal? You and Hans say they are not organic fossils, and I accept your conclusion. Rob says that there is no copper in that rock, detectable with his equipment, except within a few millimeters of the green threads. I say nothing except that I have never seen such a thing before. Under the circumstances, I fail to understand where you get the idea that I think there is a city built by the people who stocked this world thirty million years ago buried under that hill. I know I said 'city' when I first saw it, and I still think I was justified in the opinion; I have now seen evidence which causes me to admit that the vegetation pattern was not caused by artificial structures, and I dismiss the original hypothesis. I still want to dig there, and in accordance with Rob's agreement I am going to dig there, with the assistance of anyone who chooses to help. I know you want to go back to your set of leg bones in the cliff, and have no objection to your doing so. Even I can now see, on the basis of your description, that you are uncovering the fossil of a land animal; and I agree that it is of great importance to get it out intact, if possible. But if I can see the importance and even the nature of your work, why can't you do the same for mine?" The little man was leaning forward and staring intense-

ly into Sulewayo's face by the time he finished this harangue, and Ndomi once more felt a trifle ashamed of himself. Lampert, however, saved him the need of formulating an apology.

“I'm sure Ndomi didn't mean to ridicule your work in any way, Take,” he said. “We all realize perfectly that an underground phenomenon which cannot be explained at sight either by geology, paleontology or archaeology is something which requires investigation. I imagine that the best plan will be for String and me to go with you tomorrow, while the others continue their stone-cutting. Hans, just how far along are you, anyway?”

The older paleontologist thought for a moment.

“We don't really know,” he said at last. “Of course, we aren't trying to get the individual bones completely free of the matrix; that will take somebody months or years. We're uncovering just enough to determine the extent of the specimen, so we can take it all out in one block — or more, of course, if it's too big. So far we can only guess at how big it is. We've uncovered with certainty two feet, and gone about half a meter along one of the attached legs. They seem to be extending straight back into the cliff, so in effect we're cutting a tunnel beside the thing. Assuming it had two main leg sections, as most of the present animals on both Earth and Viridis appear to have, we're about halfway between knee and hip joint. Of course, it might turn

out to be the Viridian equivalent of a horse or chicken. In that case, we're about half way between ankle and knee. We certainly have several feet yet to penetrate before we can outline the whole block, assuming that the specimen is essentially complete. Several days, I would guess.”

“Can you use any sort of power apparatus for any of your cuts?”

“I don't like to, on general principles, but — yes, we could, with actually very little risk. If you have some sort of rock saw whose cutting part can get fine control, I'd be willing to use it for parts of the tunnel away from the actual specimen.”

“I have. We'll take you up there first thing in the morning, and I'll go down with you and show you how to use it before going on with Take and String.”

“Who holds the 'copter in place while you climb down the ladder, give your lesson and come back?” asked the guide.

“Hmph. I forgot about that. All right, I'll break out the machinery and give the lesson right now.” He got up and strode to the helicopter. McLaughlin covered him from the fence to the aircraft, but nothing dangerous appeared. The geophysicist disappeared inside, and returned a moment later with a compact metal case under his arm. The guide holstered his weapon as the gate in the fence closed once more. . .

Actually, the Felodon was miles downstream. It had spent the day in its chosen lair, apparently indifferent to the doings of the men a

few hundred yards away. With the coming of darkness — real darkness this time, for the rain clouds cut off both the moonlight and the night glow from the upper atmosphere — it had emerged, hunted, killed and fed as before, apparently unhampered by the lack of light. By midnight it was back in the same lair, paunch distended, as close to sleep as its coldblooded kind ever came.

## VI

The rain was still falling when the clouds lightened once more to the rising sun. Lampert was getting used to navigating the canyon by radar, and was an excellent pilot anyway; so he did not have too much trouble in locating the shelf where Sulewayo and Krendall had been working. Getting the men down to it was not particularly difficult, though rather nerve-racking. Krendall went first, unburdened except for his personal equipment. Then he steadied the ladder for Sulewayo who had the cutter strapped across his shoulders. The steadying hand was needed. Climbing down a rope ladder when loaded "top-heavy" can be an extremely awkward bit of activity. Had the pilot above been any less capable, it would probably have been impossible.

The ledge was wet, but fortunately not particularly slippery. The men set their equipment on the ground at the point where their cut entered the crack in the cliff, and without delay set to work. The tunnel was deep enough now to shelter the one

actually cutting from the rain, so at first they took turns at this operation.

The cutting machine Lampert had provided was a sort of diamond-toothed chain saw capable of a two-meter extension. Ordinarily it was not the sort of thing a paleontologist would consider using so close to a specimen; but the men were fairly sure by now of the general extent of the thing they were uncovering. Even so, they used the saw only on the side of their tunnel away from the visible remains. They speedily widened the passage enough to permit them both to get inside and work on the face of the exposed material; but they still used hand tools whenever there was any suspicion that a bone might be about to appear. Work proceeded several times as fast as it had the day before.

They tried cutting another tunnel on the opposite side of the fossil, but this proved rather awkward. The creature was close to this side of the crack, and they had to cut limestone as well as the softer tuff. The saw proved capable of handling this — it would have handled granite without trouble — but went a little more slowly. Eventually, however, the two men were working on opposite sides of the fossil, each in a tunnel extending some two meters into the cliff face.

Half a day's work uncovered the leg bones sufficiently to show that Krendall's first idea had been right. There were only the two major joints, each a trifle shorter than the corresponding parts of the human

skeleton. The lower leg was single rather than double, however; knee and ankle both consisted of ball-and-socket joints; and with this fact determined the men paused for thought.

"Now why," mused Krendall aloud, "should any sort of creature need that articulation?"

"Could that foot be a hand instead?" asked Sulewayo.

Of course, questions like that should have awaited the results of detailed examination in a laboratory. Equally of course, the two men proceeded to clear one of the "feet" a little more thoroughly in order to find out for themselves. The answer was not helpful, though.

"He might have picked up a twig with it, but he couldn't have held it any more tightly than I can in my toes," was Krendall's verdict. "It's a bigger and flatter foot than ours. But it's a foot — nothing more."

"Maybe a swimming organ on the side?" suggested Sulewayo cautiously.

"Seems doubtful. If that joint evolved for such a purpose, I should think there'd be a corresponding modification in the foot bones, too — say a flattening such as you see in the paddles of some of the Mesozoic sea reptiles of Earth."

"Reasonable."

"But not necessarily right. That I admit. Anything else strike you?"

"Yes, though it makes the joints still more unbelievable."

"What?"

"The foot itself. Unless some rather remarkable distortion has oc-

curred, it had both longitudinal and transverse arches, like yours and mine — which suggests strongly that this thing's ancestors had been walking erect on two legs for some hundreds of thousands of generations." Krendall raised his eyebrows at this, and silently examined the bony structure before them for several minutes.

"I — hadn't — spotted — that," he said slowly. He looked in silence for several more seconds. Then the two men, moved by a single thought, went to the other end of the exposed leg and began to clear the hip joint and pelvic region. They worked almost in silence, understanding each other perfectly, like an experienced surgical team; and gradually the equivalent of a pelvic girdle and lower end of a spinal column were cleared sufficiently to show their general nature.

It was at this point that the helicopter returned; but neither man noticed the fact until McLaughlin had called several times from the open ladder hatch. They climbed silently and thoughtfully up to the flyer; but Mitsuitei's first question started the talk flowing.

It did not end for a long, long time.

Krendall, with difficulty, held interruptions of his more volatile companion.

"There can be only the slightest doubt that this thing we're uncovering walked erect on two legs," he reported. "The feet; the way the pelvis is modified to *support* internal organs; the fusing of the lowest



vertebrae with the pelvic girdle to form a weight carrying foundation — they all point the same way. The only thing hard to understand is the knee and ankle joints. If we had them, it would be virtually impossible for us to hold our legs rigid. Perhaps some really remarkable musculature —”

“Or a cartilage structure which has not been preserved,” cut in Sulewayo.

“Or some such thing as that, would explain it. I don’t know. The creature is good for several Ph.D. theses just as it lies—and probably an equal number of nervous collapses when we get it out.”

“I find myself strongly desirous of seeing its skull,” remarked Lampert. Sulewayo glanced at him sharply.

“You, too?” asked the young paleontologist. “I was hoping I was the only one crazy enough to have thought of that.” Mitsuitei smiled openly, an almost unheard-of act for him. He said nothing for a moment, but everyone saw him; and even McLaughlin understood the thought. After a sufficiently long pause, he asked a question.

“Have you uncovered enough of this creature’s structure to guess at any evolutionary connection—or lack of it—with the amphibids we already know on this world?”

“I’d hate to take any oaths,” replied Krendall. “The legs, which we’ve seen most of, are different in detail; but they at least correspond in general with what we find here. The only really significant point there would be the single shin-

bone. In that it resembles Viridian land life in general—these animals don’t have the separate tibia and fibula characteristic of the usual run of Earthly land vertebrates. It really proves nothing about what we’re all thinking, of course.”

“I am tempted to work with you gentlemen tomorrow,” muttered the archaeologist.

“Why? Didn’t your investigation pan out?”

“It is harder for me to say than for you, so far. To dig a pit, big enough not only to work in but to cover a useful amount of ground, in a driving rain, is quite a job even with Rob’s machines—which I would never use were I not sure that there is nothing of importance above the limestone level. I have gotten down to the rock over an area three meters square, which is very good going; but I shall undoubtedly find the pit full of water tomorrow, as we have not yet improvised a really satisfactory drainage system. I cannot—or at least will not—use machines inside the crack in the limestone; so it will be some time before I get down to our mysterious green threads.”

“Then it would seem that the best we can do is go on as we have,” said Lampert. “The only change might be if one more man were to help at Take’s dig. But I don’t suppose either Hans or Ndomi would care to leave his own job at the moment, and actually there’s not much more to do at the hill which can be done by anyone but Take himself. I’ll continue to help him as long as it’s a question of moving mud, but



after that he'll have to do his own sifting. String is automatically on guard duty at the hill, so there's not much change we can make. Though I must say I haven't seen anything dangerous yet, in that jungle."

"Those animals are like crows," remarked the guide. "We used to have 'em on the farm, back on Earth. They'd be all over a freshly planted field, while no one was around. Come out yelling—they don't move; come out with a gun, and they're gone—unless you'd happened to forget to load it; then they sat and laughed at you. If you're suggesting, Doctor, that I should relax the guard duty and lend a hand with digging, I veto the idea—and not because I'm afraid of getting my hands dirty."

"I won't say I didn't have some such thought, but I accept your ruling," smiled Lampert. There was silence for a moment; then Krendall reverted to the earlier subject.

"You know," he said, "if this thing we've found does turn out to have been intelligent, it will hardly solve any of the existing problems about Viridis."

"Why not?" asked Sulewayo in some surprise.

"We still won't know whether it's native to the planet or not, unless we can establish a relatively complete evolutionary sequence leading to this form. If we do that, the question of speed of evolution here gets worse than ever: if we don't no one will be sure whether or not we ought to look for buried spaceports or send

out expeditions to find the planet they might have come from."

"The latter would be something of a waste of time," remarked McLaughlin. "Hunting one planet in the galaxy is like hunting one log of wood on Viridis." No one contradicted this. All had seen the galactic star clouds from outside planetary atmosphere.

"It seems to me, speaking as an amateur in your fields, gentlemen," said Mitsuitei, "that the mere discovery of an intelligent creature in the Viridian fossil deposits would, on the basis of our present knowledge of the mechanisms of evolution, strongly support the idea that this world was stocked from others. I realize that our knowledge *may* not be sufficient to justify us in that conclusion. But it is *certainly* not great enough to justify any other."

"You seem to have something there, Take," admitted Krendall. "If this thing does turn out to have room for a brain in its skull, I suppose the next ten conventions of the Interstellar Archaeological Society, or whatever you call it, will be meeting at Emeraude."

"I shouldn't be at all surprised. So far, my profession and yours have not overlapped, due to a considerable factor of difference in the time spans covered. But it is just possible that we would be holding joint meetings, in the event you describe."

"This meeting is changing from discussion to speculation," Lampert said drily. "I would be the last to decry the value of imagination; but actually we are as likely to face the need for entirely new hypotheses as

the result of our work here, as to find support for any now in existence. I can speculate with the best of you, but for goodness sake let's not take any speculation too seriously. I don't *really* believe that some big-headed descendants of Ndomi's fossil are listening in on me right now!"

Even Sulewayo admitted that this was rather unlikely, and the conversation turned to other matters until darkness fell.

No one had trouble sleeping. The loud drumming of the rain on the metal roof meant nothing to field workers with their experience. If anything, the sound was soothing, giving a perpetual reminder that there was a roof. Such protection is not always available, in that line of work. . .

The Felodon seemed to have lost its traveling propensity. Once more it went out into the utter darkness solely to get a meal. It accomplished this as quickly as ever, though its eyes must have been useless and the hiss and rumble of falling water drowned and buried any sounds which would have been useful in tracking. Back in the same lair, full-fed, it drowsed once more.

## VII

Mitsuitei had been almost right in his prediction that the pit would be full of water. Only the fact that the land sloped a trifle — they were not right on top of the little hill — had saved it. As it was, several feet of water were in the bottom, and a good deal of mud had

washed in from the two sides facing the edges of the crack. The other two, much better braced by deep-reaching roots, had held firm.

After some thought, Lampert used the little robot again. He started it at the bottom of the pit on the downhill side and drove almost horizontally toward the river. The two hundred meters of "neck" permitted the mole to emerge from the slope farther down. When it was withdrawn, a small 'drain hole was obtained. Several more of these were drilled, and the pit lost its water fairly rapidly.

There was still the problem of getting into the crack itself, which of course would involve digging below the level of the drain holes. Lampert, using the same excavator which had made the pit itself, finally provided a fair solution by digging a set of ditches around the larger hole; and since the opening itself was quite well protected by overhanging trees, Mitsuitei had only drainage from the surrounding soil to contend with.

Two hours after arriving, therefore, he had a relatively clear working space. The bottom of the pit was limestone, exposed by the complete removal of the overlying soil, some three meters square. Across it ran the crack, a trifle less than a meter wide, still packed with dirt. Everything was muddy — limestone, projecting roots, and Mitsuitei himself. A slender log with branches cut to ten-centimeter stubs leaned against one corner, forming a rough ladder and giving entrance and egress to and from the site.

The machinery which had done the original digging was at one side. Mitsuitei did not expect to need it again. He was now equipped with a hand shovel, and seemed about to use it. Lampert, standing at the edge of the pit, felt the incongruity, but managed not to laugh.

"Are you sure there's nothing I can do down there with you?" he asked.

"I'm afraid not. From now on I want every bit of dirt to pass under my own eyes."

"Are you going to try to throw it all up here as you finish?"

"No. That's the purpose of the extra pit area down here. I can get a long way down the joint, simply heaping the material on the rock. It's damp enough to pile quite steeply, too."

"How far down do you think you can get? The crack's rather narrow to work in, and you have three and a half meters to go before you hit tuff. That's going to be rough shoveling. I still think you could use the machine safely for a little way further, at least."

"No doubt I could, but I'm not going to. There's one thing I might use, though. If you have another of those saws, such as the bonemen are using up on the cliff, I could widen this crack as I go — cut steps, in fact, to help get the mud up to this level when I'm further down."

"That's a good thought, but I don't have any other. If you really get far enough down to need it, though, I could fly up to get it. They were going to shift over to hand labor anyway."

"All right. Of course, it will be some time before I get that deep anyway; maybe I won't need it today." He bent to his work.

"But what do I do?" asked Lampert. "I can't go off to attend to my own projects, because String has to stay here to guard you. I can't get to the site where the others are working because I can't land there. I can't sit in the helicopter and twiddle my thumbs because I'll go crazy before the day is over." Mitsuitei straightened once more, and thought briefly.

"Is there nothing in the geophysical line you could do within sight of this pit?" he asked finally. "The saw and digging machine are not the only apparatus you brought."

"That's true. I brought some seismic gear, though I didn't plan to use it quite like this. I might map the formations under this hill. The information will be usable, I should think, and the joints will give quite a calibrating job. It will keep me busy, anyway."

"Just a minute!" Mitsuitei looked a trifle perturbed. "Does that mean you're going to set off explosives around here? I want the sides of this pit held up by something better than roots, if you do."

Lampert chuckled. "No explosives," he said. "This is a nice little gadget with a robot like the core sampler. It puts out waves of any type desired from any depth down to two hundred fifty meters — a sort of subterranean sonar. You'll never know it's working. The wave amplitude isn't enough to

feel." He turned toward the helicopter on the river bank below, and was starting to walk toward it when McLaughlin interrupted. The guide had heard the conversation, and his question was purely rhetorical.

"You weren't planning to walk down to the flyer alone, were you, Doctor?"

"Well, yes, as a matter of fact. After all, I won't be working; I can keep my eyes open as I go. You can see me for the greater part of the journey from here, too."

Rather to his surprise the guide approved this argument, after a moment's thought.

"All right. But please keep your gun in your hand as well as your head on a swivel. I'd prefer to have Dr. Mitsuitei come down with us so we could stay together, but I know how he'd react to the interruption, and I realize you're not a kid. Just be careful."

Lampert promised; and the guide's manner had impressed him to the point where he was almost afraid to make the return journey, after reaching the flyer and packing his new equipment. He was rather surprised to get back to the site without being attacked, and McLaughlin's very evident relief at seeing him did nothing to ease his feelings.

He began to set up the machinery. This consisted of an assembly very similar to the drilling mole — a small delving robot drawing a slender tail behind it, the tail wound on a drum which surrounded the control unit. A dozen smaller cylinders reposed in attached clips.

"The attached borer," Lampert explained to the guide, "goes down to any depth I set, up to two hundred fifty meters. It can produce any of the three normal types of earthquake wave, singly or in any combination, with sufficient intensity to be detected at a range of over two kilometers in reasonably well-conducting rock. The small cylinders are detectors, equipped not only to receive and analyze the wave coming through the ground but to measure electronically their location with respect to each other and the main station. I can use as many of them as I please, up to the full dozen; but they can be planted only a little way below the surface. There exists equipment for getting readings at depths comparable to that of the transmitter, but I don't have it. As it stands, by spotting the receivers carefully I can get a pretty good picture of the formations for a radius of a kilometer and a depth even greater with ten minutes measuring — and ten hours computing."

"How far out do you plan to place these receivers?" the guide asked pointedly.

"Well — I hadn't made a detailed plan of that. I'd rather like to have them in radiating lines of three, the lines spreading about fifteen degrees, and the individual cylinders about two hundred meters apart."

"And just how were you going to place them? I gather that someone has to walk the best part of four kilometers — or do these things fly, in addition to their other abilities?"

"Er — someone walks. I thought

perhaps, since you don't like the idea of my going alone through the jungle, that I might stand guard over Take in the pit while you set them out."

"Hmm." The guide did not explode, to Lampert's relief. It had not occurred to the scientist that the job of wandering around a hole in the ground waiting for animals which never came might get a little boring to a man of McLaughlin's background. "Let's go over first and see how Dr. Mitsuitei is getting along. I guess you could stand over him with a gun for half an hour. Of course, the cover runs dangerously close to the pit. Maybe we'd better burn it off to a safer distance — still, I guess that won't be necessary. You can stand out here where it's relatively clear, and see all the approaches to the pit. Something might jump in without your having time to hit it, and you'd at least see it and could get there fast enough to do any shooting necessary."

They approached the hole and looked in. Mitsuitei was working busily. A fair quantity of earth lay spread on the rock, and some two thirds of the length of the crack had been excavated to a depth of perhaps a quarter of a meter. The geophysicist attracted the little man's attention and told him of the plan; Mitsuitei nodded and bent once more to his work.

The Felodon was becoming restless. It could hardly be hungry as yet; but it was on its feet, snarling silently as it had when the helicopter first entered its ken. For perhaps

a minute it stood; then, with the same air of determination it had shown days before and scores of kilometers away, it began to thread its way through the underbrush toward the river — and the digging site.

"I'll stand where you suggested, and never take my eyes off the pit," Lampert promised.

"Then I'll come back to find you missing," replied the guide. "You're guarding yourself too, remember. Don't keep your eyes on anything. Keep them moving."

He finished distributing the little cylinders in the various pockets of his outer clothing, and moved off in the direction Lampert had indicated. He looked back frequently, but each time saw the scientist alert. When the underbrush finally cut off the view, he refused to worry too much.

Actually, McLaughlin had gone to considerable pains to make the jungles of Viridis sound more dangerous than they really are. His conscious motive was to make the inexperienced members of the party alert enough for their own safety. It was quite true that a man could be killed in quite a variety of ways in those rain forests. There was a distinct possibility, however, that he also wanted to impress them with the importance of his services.

He did not, therefore, suffer much from anxiety during his walk, though on the other hand he wasted no time. He had, of course, only a rough idea of the distance he had traveled, though he was able to keep

his direction with a small impulse-compass tuned to the seismic apparatus and forming part of its regular equipment.

He dropped three of the cylinders at the required intervals, as nearly as he could guess, forcing each a little way into the ground as Lampert had shown him; then he turned at right angles, walked what he hoped was the right distance and started back toward the site, planting equipment as he went. Out again, in again; and the last of the dozen tubes was in the ground.

Mitsuitei's shovel scraped deeper.

Lampert, glancing up and around every few seconds, made minute adjustments to the controls of his seismic apparatus. Its little mole robot had started on its downward trip.

The Felodon lurked thirty yards from the point where Lampert was standing, protected from his sight by the undergrowth and by one of the piles of dirt thrown up by the machine which had dug the pit. It seemed to be looking through the soil at the spot where the man was. The snarl was still on its face, but no muscle moved in its long body. It had been there for minutes without moving; it had frozen similarly when McLaughlin had passed it on his way out. Now it simply stood and waited.

On a cliffside kilometers away, Ndomi Sulewayo gave utterance to the first profanity Krendall had ever heard him use. They were on opposite sides of the block containing the fossil, so neither could see the other. Krendall, naturally, asked what was wrong.

"Don't tell me a bug got through one of these suits!"

"Worse, if possible. I told you this foreleg —" both had been carefully avoiding the use of such words as "arms" — "was sticking out sideways, so that I was afraid we might have cut off part of it in digging the tunnel."

Krendall nodded. "I remember. Did we?"

"I don't know."

"Eh? How come? I should think there'd be no doubt, one way or the other, if you have that much of the limb clear."

"Well, I haven't. I got as far as the bone goes — and right there I run out of tuff and into the limestone. If there's anything more, it's in an entirely different kind of rock, which is a trifle unlikely; but I'm going to have to check the blocks we cut from this part of the tunnel in order to make sure, and I don't look forward to the job at all." Krendall, properly sympathetic, came around to Sulewayo's side to look, and agreed that the search was necessary. The bone the younger man had been clearing ended in a joint of the type they had come to regard as typical of the creature's limbs; and this had occurred almost exactly at the surface they had left when first outlining the block with the saw.

Sulewayo, with a grunt of disgust, dropped his tools and went out into the rain, where the blocks cut from the cliff had been piled; Krendall, nobly sacrificing his personal inclinations, went along with him.

The search lasted for a long time; for a long time, in fact, after it became evident that it was going to be useless, for the chance of a perfect specimen is not easily thrown away. Finally, however, Krendall straightened up with a sigh.

"I guess we'll have to be satisfied with a restoration on one side," he said wearily. "I hope someone fifty years from now doesn't find another and discover that it's a sort of vertebrate fiddler crab, with one forelimb ending in a paw or claw something like five times the size of the one on the other."

Sulewayo gave a gloomy assent, and the two went back to work in their respective tunnels.

Lampert saw McLaughlin the instant the underbrush made it possible, a fact which the guide later admitted was to the scientist's credit. He had, of course, been eagerly awaiting that return, for the transmitter was down to its first set depth and awaiting only the word that all receivers were in place. He called eagerly the moment the guide came within earshot.

"Everything down?" McLaughlin nodded.

"Everything down, as nearly as I could tell the way you said. How long will the readings take?"

"Only a few minutes. I'll take a couple of calibration shots from ten, fifteen and twenty meters' depth; then ones at fifty, a hundred and so on down as far as the mole will go. The shooting takes practically no time. It's the drilling that will hold us up."

"What then?"

"Well," Lampert smiled, "after that the usual procedure is to pick up the receivers and place them in a similar pattern in a new direction. If the field crew doesn't go on strike, we take the whole circle about the transmitter."

"I was afraid of that," grunted McLaughlin, as he stopped by the machine. "Well, let's go." The two men bent over the controls in a silence broken only by the scraping of Mitsuitei's shovel a dozen meters away. Lampert pressed his shot button, and a light on the panel flashed white momentarily. Below their feet, unfelt, the pulse of sound energy raced outward, echoing from the walls of deepstriking joints, from the boundaries between rocks of differing densities or elastic constants, from the walls of caverns deep in the limestone; some tiny portion of the energy from time to time encountering and affecting one of the tiny receivers McLaughlin had buried.

As each receiver gathered its bit of data, it retransmitted the information to the master unit; and everything was recorded on a single sheet as the milliseconds sped by. Long before a full second had passed, the first of the pulses had damped out as heat energy, and enough had been transmitted for the machine to obtain an adequate averaging record. The light blinked out again. Lampert nodded in satisfaction, and sent the mole downward once more.

"Look, good. Now the next set," he remarked.

As that pulse of seismic energy went forth, the Felodon rose to its full height, almost showing itself over the pile of dirt which was now its sole protection from the view of the men. The snarl on its face seemed to grow fiercer, if that were possible. For just an instant it seemed torn by conflicting desires. But that was for just an instant; any tendency to flee was smothered before it could take full form. There were two men now to worry about, and correspondingly less chance for the opportunity it had been awaiting. But the opportunity came. For just a moment the guide looked down at the panel which was absorbing Lampert's full attention. In that moment a green-and-lavender streak flowed over the heap of soil in a single leap and vanished into the pit. It must have been timed and guided by the mysterious sense McLaughlin had mentioned. It could see none of the men when it leaped, yet it timed the act for the moment none were looking, and landed directly on Mitsuitei.

The little archaeologist never knew what hit him. He died without a sound, and the killer, as though nothing lived anywhere in the neighborhood, settled down to its meal.

In this it must have been disappointed. The chemicals in the clothing designed to repel Viridian insect were equally obnoxious to the carnivore, and it made no serious attempt to get through them. However, not all of the body was protected in this way...

A second pulse went from the

buried transmitter, and then a third, each from a point a few meters deeper than the last. Lampert's attention, of course, was centered on his controls. McLaughlin's eyes were once more sweeping restlessly over the surrounding landscape. Both heard the sounds coming from the pit, but neither interpreted them as anything more than the scraping of Mitsuitei's shovel. Neither, of course, considered them consciously. Their attention was finally attracted by something decidedly more noticeable.

The Felodon did not — or could not? — remain at its meal for more than a few moments. Its apparent indifference to the other men changed once more to what seemed like an internal struggle. An observer would have been sure, up to now, that it was using its peculiar sense to avoid the sight of men with guns; but that hypothesis failed now.

As Lampert started the mole robot downward once more, the Felodon leaped out of the pit toward the two men — regardless of the fact that McLaughlin was facing toward it.

## VIII

McLaughlin saw the fanged head emerge, and his reflexes took over instantly. A streak of flame passed beside the leaping carnivore, exploding into a white-hot blossom of blazing gas as it contacted the pile of dirt on the far side of the pit. The guide ducked and rolled frantically sideward as



another spring carried the creature toward him. Claws raked the air past his shoulder, and he fired again before the roll was complete and without any sort of aim.

Men and beast alike were spattered with white-hot droplets of metal from the seismic recorder as the second shot caught it squarely; and this seemed to be enough for the carnivore. Its next leap was away from the men instead of toward them. A geyser of steam and mud erupted beside it as Lampert finally got his weapon into action, and before the vapor had been beaten down once more by the rain the animal was out of sight behind the undergrowth. Both men sent several shots in the direction of the crackling bushes, but accomplished nothing except the felling of a tree or two and the starting of a bonfire which failed to make any headway against the rain.

Convinced that the Felodon had gone, the men ran to the pit. Lampert did not even take time out to glance at the wreckage of his equipment. There was just enough distance to cover to let each one realize that he had no idea how long the carnivore had been inside, and what the "scraping" sound might have been. Both slowed down as they approached the edge, not relishing what they expected to see. But this did not prove to be what they had expected. McLaughlin's face, already grim, turned gray as he saw that his first shot had not merely missed the animal at which it was aimed.

The bolt had struck the pile of

dirt which had been left by the digging machinery at the far lip of the pit, and scattered most of it to the four winds. Perhaps half a ton had slid back into the hole from which it had originally been removed. There was no telling, from above, what the Felodon had done to Mitsuitei. The upper half of the archaeologist's body was buried completely, and the rest so liberally sprinkled with dirt that it was not at once identifiable.

The guide, using language strange even to the widely-traveled Lampert, leaped the three meters downward without bothering to use the ladder, seized a projecting leg and tried to draw the little man clear of the soil. Lampert, equally aware of the possible value of time but feeling that he would do little good with a broken leg, made the descent in the normal manner.

By the time he reached the bottom, McLaughlin had succeeded in dragging Mitsuitei almost completely clear. Lampert started forward to clear the mud from the still hidden face; then he stopped, and his stomach abruptly heaved, as he realized that the face was not hidden.

It was gone.

Mitsuitei had removed the headgear and gloves from his protective suit for the normal reason — to see and manipulate better. The exposed head and hands had formed the Felodon's hasty meal.

The paleontologists saw the helicopter approaching this time, for they were working outside the tunnel. Between them on the

ledge lay a block of stone some five feet long, two high and four wide — over two tons of material, all told, which had been worked out of the hole rather ingeniously by the men. Partial undercuts had been made, rollers worked out of stone by the cutter placed underneath, and the undercutting completed along a plane which sloped slightly upward into the tunnel. Of course the block had run off the rollers once it was out in the open, and the men could no more shift it another centimeter than they could return to Emeraude without the helicopter; but at least it was more or less accessible by air. They were chipping waste rock from the corners when the flyer appeared.

Sulewayo was first up the ladder, unburdened this time. They expected to have further use for the cutter. He noted that Lampert was alone in the machine, and promptly asked the question the geophysicist had been dreading.

"Where's Take? We've found something for him!"

"I'm afraid he won't appreciate it. He was killed a couple of hours ago by a Felodon." The news silenced even Sulewayo, and the expression on his junior's face actually startled Krendall when he climbed through the hatch.

"Ndomí! What in —" Lampert cut in with the same news he had given a moment before. Krendall reacted similarly; then slowly lowered himself into a seat.

He did not ask for details. Both men could see that this was not the time to put such a question to the

pilot, though neither realized then the personal responsibility that Lampert felt over the incident. Krendall pulled a small fragment of tuff from his pocket, and looked at it thoughtfully.

Nothing further was said until the helicopter landed once more on the river near the "city." McLaughlin and the bundle which held what was left of Takehiko Mitsuitei were waiting on the bank, and were loaded aboard without a sound.

"It's early. We'll take him back to Emeraude tonight, and come back for your work tomorrow," Lampert said, and lifted into the air without waiting for agreement.

"All right," replied Krendall, "as long as we come back. I don't think he'd have wanted us to stop. I'm going to find out about those green threads of his, too." Lampert nodded in approval. He had already formed a similar determination. For half an hour they flew on in silence.

The Felodon, half submerged in swamp water a kilometer downstream from the hill, heard the helicopter hum overhead. It seemed totally disinterested. For just a moment its fanged head pointed upward, then settled back again. There was a burn under its jaw, which had been inflicted by metal spraying from the ruined seismic apparatus. It was more comfortable to keep it under water. . .

"What was it you found, Ndomi, that you thought Take would want to see?" Lampert broke the long silence.

"It was when we were undercutting to get the block out of the

tunnel," Sulewayo answered. "It's just some more of his green threads, in the tuff below the fossil. I brought a chunk of the rock showing them — here." Lampert nodded without taking his main attention from flying.

"Maybe that fossil of yours was intelligent after all, then," he said. "It seems to have died under very similar circumstances to Take — just above a set of those green threads. Maybe it was a member of a party like ours."

"Maybe. It certainly walked erect. The whole body structure shows that. If its brain were large enough and it had some sort of manipulating appendage I'd say it was virtually human — in capacity, that is. It was more of an amphibian anatomically."

"You have the block out in the open. Haven't you been able to study the head and limbs?"

"No, damn it." Krendall took over from his junior. "That was the big disappointment of the whole find. The specimen seems to be perfect except for missing skull and hands. Not a trace of either."

The helicopter wavered slightly in its path, then steadied as Lampert forced his attention back to his job. No one said anything for a long time, but everyone was thinking.

Someone else was thinking too, but wasn't keeping his thoughts to himself. They were being spoken, and virtually dripped with the thinker's fury.

"You sloppy, lazy parasites! I don't mind being stuck with a job

and a deadline, even if it's a report that's due in only fifty years and needs about two hundred for a real conclusion. I'd sooner do it all myself than have some of you loose thinkers butting in! But if I'm to give my whole attention to it so I can produce something that won't be laughed at from here to the Magellanic Clouds, how about some of you watching what goes on on this planet? I didn't know those creatures were poking around until they began cutting sensor lines! Thirty, the protective life we've bred on the surface was your idea; why didn't you put it to work?"

The answering words tried to be soothing.

"Thirty was working—"

"Dreaming, you mean!"

"But I put one of the guardians on the job for him; it stopped the digging, didn't it?"

"Sure, after a lot of damage had been done. Do you want to come out in the open and repair my wiring — with those space travelers poking around? If they find you at it, the Council won't just laugh at us; they'll excommunicate us and let this new species of intelligence clean us out. Why did it take so long for the guardian to do anything?"

"Well, I—"

"Well, you were dreaming too, weren't you. Blast it, you're here to do constructive thinking, not just to entertain yourself. Haven't you any self-respect? They actually dug out Sixteen!"

"What difference will that make? He's been dead too long to mind it himself, and anyway his brain and

sensor connections were decently burned."

"But they wouldn't have had to dig much deeper to get someone who's *not* dead, would they, Ninety-Five, my young friend? I suppose when they cut one or two of *your* sensors you decided it was time to do something. Don't interrupt! I'm talking! This planet is supposed to be a quiet place where people can expect to spend a decent number of centuries at a time thinking, *without* being disturbed. If you're too young or too lazy or just too stupid to do any real thinking yourself, at least you can devote a little time from your casual amusements to making sure that other people *can*. Shut up! You'll do some thinking now or find yourself in real trouble! Here's a problem for you to solve, and see that you solve it!

"You will get my sensors repaired, making sure not only that you're not caught at the job by these space travelers but also that they don't realize it's been done. In other words, don't just neatly fill in the hole they made after you've finished. so they can't help knowing

they're not the only intelligences on this world. I don't know when they'll be back any better than you do, so you'll have to guess at your own time limit. You can booby-trap your canyon with landslides or anything else to keep yourself from being dug out, but if you fail in either problem and either of us looks likely to be found I personally guarantee you'll be found in the same shape as Sixteen. Now get to work, and let me think. If you think you can get help or sympathy from anyone else on the planet, good luck to you."

A wave of agreement spread along the countless miles of sensor wiring that extended through Viridis' crust, but Twenty-Five didn't feel or hear it. He had already taken the myriad of tendrils that terminated his arms away from the mosaic console that formed the end of the vast bundles of greenish threads coming through the walls of his cave, and had settled back in his lounging chair. That report—only fifty years to have it thought out—his full attention went back to it.

END

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# DIE, SHADOW!

BY ALGIS BUDRYS

ILLUSTRATED BY FINLAY

**He began as a hero. Eons later and a universe away, he became instead a god!**

I

*I've come a long, long way to die alone*, David Greaves thought as *Defiance* tumbled through the misty shroud of Venus, hopelessly torn apart by the explosion in her engines. On the console in front of him, the altimeter was one of the last few meaningful instruments, and it told him there were only a few tortured miles remaining before the ship he had brought this far — had spent his fortune in building when no government would yet consider risking a

DIE, SHADOW!

manned rocket on his flight — would smash down to its doom on a planet no man had ever walked.

Battered and tossed in his seat by the ship's crazy tumbling, Greaves tensed the oak-hard muscles of his arms and thrust himself up to his feet. He wasn't dead yet. He wasn't dead and, if the slim chance paid off, he'd still be present to laugh in the government's face when the first, safe, cautious official venture finally made its way across the emptiness between Earth and the Sun's second planet.

Dragging himself from handhold

to handhold, his tendons cracking with the strain, he levered himself toward the Crash Capsule, forced open its hatch and pulled himself through, while the winds of Venus tore at the shattered hull and the scream of *Defiance's* passage through the murky sky rose to a savage howl.

Outside the cloud-lashed hull there were no stars. Below, no one knew what sort of jungle, or sea, or desert of whipping poison sand might lie in wait. Greaves had not cared when he set out, and did not care now. If men had always waited to be sure, if all the adventurers of mankind had waited until the signposts had gone up, the cave bears would still be the dominant form of life on Earth, and races undreamed of might never know such a thing as man to contest their sway over the Universe.

*I'll live to see my share of that,* Greaves thought as he pulled the capsule's hatch shut and dropped into the special padding that, in theory, would cushion much of the impact. *Or else I'll know I tried.* He tripped the lever that would flood the capsule with Doctor Eckstrom's special anesthetic — the experimental compound that might — just barely, might — offer a chance.

As the hiss of the yellow-tinted, acrid gas became louder and louder in his ears. David Greaves thought again of the almost obsessive lengths to which he had gone in making sure that there would be such a thing as the capsule. The entire project — the decision

to build the ship, to sacrifice for it the personal fortune he had built up in his meteoric rise from obscurity to being one of the world's most dynamic and certainly youngest industrialists — had been marked by his fanatical persistence and dedication. But that dream had come first, and the fortune second — the sole purpose of his career, from its very beginnings when he was only another engineer test pilot, had simply been to accumulate the means so *Defiance* could be built. But the ship had been three-quarters complete when he conceived the idea for the capsule. He could not even now remember exactly when or how he had decided that he must have some device aboard that would protect him from a crash and — here was the vital thing he insisted upon — keep him alive, no matter how injured, no matter how long might be necessary, until rescuers could reach him.

For him to even think in terms of rescuers — of depending on others — was totally uncharacteristic. For him to divert a major portion of his dwindling resources from work on the ship itself, and push toward the elaborate design of the capsule, was, in some lights, again uncharacteristically foolish. But he had done it, and now...

... Now the anesthetic created by the man some said was a medical genius and some said was a quack had flooded over him.

He could feel the first effect — the calm, the drowsy peace. By the time the *Defiance* smashed into the ground — very soon now — his



Virgil  
Finlay

metabolism would have slowed to a carefully metered rate. It would take hours for his heart to beat once. To him it would seem as if each day was only a few minutes. The jagged nerve-flashes of pain would be only a faraway slow tingle; the blink of an eye would encompass hours of actual time, and he would lie here, safe, asleep, until the hatch was opened and he was taken out into the air, where slowly the effects would wear off.

Meanwhile, there was more than enough gas compressed into the capsule's tanks to keep him perfectly relaxed for a hundred years. The valve — a simple device he had sketched out in five minutes, as if the design had been part of his mind for years — would continue to meter out the supply at the optimum rate and pressure.

It was only now — perhaps a hundred feet from impact, perhaps only a hundred hairs-breadths — that he suddenly saw the flaw in the design.

He struggled to reach the valve, in a useless reflex, for there would have been nothing he could have done, no matter how much time remained. Then he fell back, a twisted grin on his face. *I've come a long, long way to trap myself*, he laughed in his drowsing mind, as the ship crashed, and the capsule, torn from *Defiance's* side, rebounded like a cannon shell from Heaven upon the outraged soil of Venus, and the overhead clouds sprang into flamed reflection from the blast of *Defiance's* end.

In the capsule, the valve control-

ling the flow from the illogically copious supply of anesthetic snapped off cleanly. David Greaves' lungs jolted to the impact as a century's dosage of the high-pressure gas delivered its one giant hammerblow of sleep. . . Of sleep like death. . .

Of sleep so slow, so majestic, that only the eternally ageless body might testify to life. Of sleep without end, without motion, until. . .

## II

The woman — the sensuous ivory-skinned woman with eyes like dark jewels and hair like midnight framing her red-lipped face — kissed him again and then drew back to touch his cheek.

"Wake," she whispered softly. "Wake, sleeper."

David Greaves looked up at her through slowly dawning eyes. The scent of spices was in his nostrils. As the woman's hair brushed his face again, the fragrance increased.

"My name is David Greaves," he said, and looked up at the sky and then around him.

There was now no envelope of cloud to hide the face of this planet from the Sun; no such shroud as had concealed the Venus of his day in dazzling white without and muffled it in somber black within. This sky was ruddy, ruddy with the light of the day's last moments, and the clouds through which the sunset burned were only crayon-strokes of ochre across the orange sky.

He lay in state, facing that sunset, on some sort of black metal couch which supported him on a



multitude of sweeping, back-bent arms. Beneath him, a dozen low broad steps of olive-green polished stone led down to a long forum, flagged with the same gold-veined, masterfully fitted paving. Around the court ran a low wall, again of stone; friezed, and burnished to a dull glow. From the wall, tall slim pillars thrust into the air.

And atop each pillar, cast and carved in black metal washed by the lingering light, crouched a monster.

No single artist could have created such a bestiary of gargoyles. Some he could trace in their evolution — the vulpine, the crustacean, the insectile. Fangs and pincers slit the cool, invigorating breeze that flowed over the court. Antennae quivered and hummed in the air, and a myriad legs were poised in tension, forever prepared to leap. Others were beyond any creation he knew of — limbs and wings contorted into shapes that had, undoubtedly, been taken by living things . . . in lives unimaginable to any man. And all of them, imaginable or not, faced toward him forever.

At the foot of each pillar, mounted in a cresset on the wall at its base, burned a torch. And so, when night fell, then the shadows of all these monsters would be cast upward onto the stars, and he would lie sleeping in the pooled light of the torches, while all around him these creatures stood watch.

How many nights had he lain here? How many centuries to wash the fog of sleep out of every nook and cranny of his lungs, when each

breath might take a thousand years — ten thousand?

But he was not done with studying his surroundings. He had heard sound when he turned his head. Now the sound was a rising murmur as he lifted his shoulders to look down the length of the court of monsters toward the far end. There were people there. They had been seated on stone tiers that rose up toward a colonnaded temple. There he could see an altar through the open sides and, on that altar, a flame that burned bright and unwinking against the outline of the lowering Sun.

The people were rising to their feet. From them came an open-throated murmur that became a cry of savage joy — of unbearable tension finding release.

"Who are they?" he asked the woman as he sat up and felt his body stretch with power cramped too long, as he squared back his shoulders and peered through the twilight in the court of monsters.

"Your worshippers, David Greaves," she said, standing beside him among the many arms of his couch. "The people whose last hope you are." She added softly: "My name, though you did not ask, is Adelie." She paused. "I, too, am one of your worshippers. Wherever there are human beings, throughout the Universe, you are worshipped."

He looked at her more closely. There was a lift to one black-winged eyebrow that was less reverent than a god might like, though a man could have no quarrel with it. She

stood gracefully on sandaled feet, dressed in a single white garment girdled around her waist by a belt made of the same metal in which the monsters were cast. He saw that the clasp was shaped into a profile of his own face. And he saw from the wear that it showed that it was old — older than she could be, older perhaps than this court. This . . . shrine? He wondered how many priestesses had worn that belt.

How many of *his* priestesses.

He frowned and got down, feeling the touch of the day-warmed stone on his bare feet. He was dressed, he saw, in a black kilt and nothing else. He returned his glance to the worshippers and saw that the men were dressed similarly, and that the women wore flowing, calf-length, translucently light robes like Adelle's.

There was motion at one corner of his eye, and he turned his head sharply to see the arms of the couch sweeping down, folding and bending against its sides. Now he saw that he had been cradled in the arms of a great black metal beast. It crouched atop the dais. Its head was bent supplicatingly, bright oily metal barely visible at the joinings of its mechanical body.

He glanced quickly up at the monsters atop their columns. "Are they all like that?" he asked Adelle.

An old man's gruff voice answered him from the other side of the beast-couch. "They won't spring down to devour you — you needn't be afraid of *that*." Two men came into view, one old, one young and very slim. The old one rapped the

couch with his knuckles. "This tended you in your sleep. It is made in the shape of the most ferocious race that ever rivaled Man. It is now extinct — as are all those others up there, for the same reason."

The thin young man — very pale, very long of limb — stretched his broad, tight mouth into a smile that covered half his face without mirth. "Not the most ferocious, Vigil."

"Your kind will learn about that," the old man snapped.

"Not from you and yours," the slim man said lightly.

Greaves turned to Adelle, who waited, poised, while old Vigil and the young man quarreled. "Tell me the situation," Greaves said.

Adelle's lips parted. But the old man interrupted.

"The situation is that you have been awakened needlessly and would best go back to sleep at once. My daughter and these fanatical sheep —" he waved an angry arm at the standing worshippers — "have forced me to permit this. But in fact Humanity neither needs you nor wants you awake."

"Oh, on the contrary," the young man said. "Humanity needs its gods very badly at this hour. But you are only a man, not so?"

Greaves looked from one to the other — the leather-skinned old man with his mop of ringleted white hair, the young one who was human in appearance but somehow claimed some other status. "Who are you two?"

"I am Vigil, your guardian, and this is —"

"I am Mayron of The Shadows," the young man said, and he held himself as carelessly as before, but his face looked directly into Greaves's. "See my eyes."

There was nothing there. Only darkness speckled by pinpoints of light; thick, sooty darkness like oil smoke, and sharp lights that burned through it without illuminating it.

"Mayron that was First of Men," Vigil said bitterly.

"Mayron that is First of Shadows," the empty-skinned thing replied proudly, and began to weep great, black tears that soon emptied it, so that the skin drooped down into a huddle on the pave and a black cloud in the shape of a man stood sparkling in the dusk before Greaves. "Mayron that will again be First of Men, when all men are shadows. Mayron that is already First of many men. And which of us is a god, David Greaves?"

Adelie's face glowed with excitement. Her red lips were parted breathlessly. The crowd on the tiers had loosed a great, wailing moan, which hung over the court of conquered monsters as the first stars became visible on the far horizon.

Greaves took a deep breath. He could feel his body tensing itself, the muscles rippling, as though his hide needed comfort.

"Which of us is a god, man?" Mayron repeated softly, his voice coming from the entire cloud. "What is it you can do against me, you whose entire virtue rests on doing nothing?"

DIE, SHADOW!

"That would depend on what was expected of me at this moment," Greaves said.

"This moment?" Mayron chuckled. "At *this* moment, nothing."

"In that case, get out of my court and come back when there's something to do."

Mayron laughed, throwing his head back, the laughter high and insolent. "How like a god! How very like the real thing."

Greaves frowned. "If you were a man, once, you might remember how that feels." But the laugh had bothered him.

"Oh, I remember, I remember. And tomorrow we fight, man." Laughing, Mayron bent and picked up the skin he had discarded. He crumpled it by the waist in one fist, and brandished it negligently at the worshippers. They shrank back with a moan of horror as he strode toward the far wall. At the wall, he flipped the white, fluttering thing over, and as a cloud passed through the stone. Perhaps on the other side he put on his human form again. Greaves could not tell. The sun was down, and only a little light glowed on the far horizon. The torches guttered in the court of monsters, and the worshippers were hurrying up the steps, out through the temple and away.

### III

Greaves, Adelie and Vigil stood beside the beast-couch. "All right," Greaves said. "Now there are things I want to know, and I want no quarrels, Vigil."

"And by what right do you order me around?" the old man growled. "You may be a god to some, but you are not *my* god."

"You owe it to me, atheist. If I was awakened today, at this pat moment, I could have been awakened before. I wasn't. You kept me asleep, guardian, when I could have been free as any other man. So you owe me."

The old man grunted. "You're brave with Mayron and brave with me. But all men are brave, each in his own way. We need no gods."

"But you have one."

Adelie touched his arm. "You have lived from the beginning of human history. And you were a great hero. That much the legends tell us. You were braver than any man, and for your bravery, you could not die. While other heros conquered the stars and, in their time, died, you lived on. While enemy after enemy was beaten by Man, and the victorious men died, you lived on. The stars and all worlds became ours. Men loved and begat, and men died, but you lived on. It seemed to us that as long as you lived, all men would have something to remember — how great Man is; what the reward of courage can be. It seemed only fitting that we should bring to you the trophies of our achievements. It seemed only right to believe that you had survived to some purpose — that a day would come when Man would need his greatest hero."

"Precisely," Vigil snorted. "Man worships nothing but himself. You were a convenient symbol. It did

no harm. It may have done some good. Of course, the chuckleheads took it all literally. And so — thanks to Man's stupid persistence in breeding idiots as well as men with some brains, you, whoever you are, whatever kind of filibustering bravo you actually were, have become the focus of a cult populated by the credulous, the neurotic and those who profit by them. I hope you are grateful for your legacy!"

Greaves looked up at the stars. There were some constellations that might have been the ones he knew, distorted by his transit to another viewpoint . . . or by time. He was no astronomer.

*I've come a long way*, he thought, *and I wonder what the end of it will be*. "Those who profit from the credulous, hmm?" he said to Vigil.

"I am your guardian and I guarded you. As many others have done before me, from various motives. This is not your first court, nor your tenth. The ritual around you is compounded from thousands of years of hogwash, as witness my worshipful daughter who inherits a post from some time when every venturing hero had to have a leman patiently awaiting his return. My duties no doubt were originally medical. But the couch has been attending to that — with some exceptions — for centuries. And you may be assured, Man's history has not been one unbroken triumph, nor his civilization any steady upward climb. But we built while you slumbered. I had thought to prevent your besmirching Man's greatness with your cheap legend."

"Or perhaps he was afraid of the god he denies," Adelle murmured, her eyes glowing warmly.

Greaves looked from her to her father. "So she believes in me and you do not," he said to Vigil. "But it may be you're not entirely sure — and from the looks she gives me, it may be she isn't, either." He grinned crookedly. "Man may have climbed, but I assure you he hasn't changed."

He smiled at the looks on both their faces. Divinity was new to him, but humanity was not. If these two had thought perhaps they had some dull-witted barbarian here — the one for his faith in his faithlessness, the other for her pleasures — it had been time their error was corrected.

"Old man, god or not I have been called out . . . whether it pleases you or not. And I won't willingly lay me down to sleep again until I think it's time. So you had better tell me what all this is about, or I will blunder around and perhaps break something you're fond of."

Adelle laughed.

Vigil swung his arm sharply toward her. "This — this would-be courtesan was once Mayron's great love, when he was First of us all. Because he could find nothing to conquer for her in all the Universe, he began dabbling beyond it for a worthy prize. And he found it. Oh, he found it, didn't he, my child?"

"Be careful, Father," Adelle spat. "The worshippers follow *me* now that I've wakened him as promised, and you —"

DIE, SHADOW!

"Quiet," Greaves said mildly. "He was telling me something."

"That I was," Vigil said angrily, while his daughter's look at Greaves was the least sure it had ever been, "and for all the need you have of it, I might as well not. But if I may say it once and get it said, I can then go to my meal and the two of you will be free to amuse yourselves. Mayron discovered the Shadows, when his machines touched some continuum beyond this one, and the Shadows ate him. But like the fox that lost his tail in the trap and then cozened other foxes with the lie that it was better so and fashionable besides, Mayron made a virtue of his slavery. Those who give themselves up to the Shadows never rest and never hunger. They know no barrier. And no love. No true joy. No noble sorrow. An untailed fox is safe from catching by the tail. A Shadow has no spirit, no humanity, no — soul. But there are always dunderheads. Mayron has them, and down in that city of his down there —" the old man waved a hand at the horizon, but all Greaves could see from where he stood were the glowing tops of what he took to be three fitfully active volcanoes — "he has a city full of dunderheaded shadows who go to some temple he has built and enter the Shadow chamber to be changed. The admission is easily gained; the price of freedom from human care is humanity."

"And up here," Greaves said, "other dunderheads come to gain what in exchange for what?"

"Gain at least some sort of af-

firmation at the cost of remaining men!" the old man growled. "If they are simple, at least they are human! And even an intelligent man can see the value in what is embodied here."

"As witness yourself. Yes."

"I didn't want to wake you! We know enough so you could have been awakened centuries ago. But to what purpose? To turn another hooligan loose to upset civilization, and lose the symbol of that precious thing? When Man himself can rescue himself? But, no, *this* one, this superstition-ridden tramp I wish I'd strangled in her cradle — *she* stirred the worshippers up, she arranged the combat between yourself and Mayron, she —"

"When and where?"

"What?"

"This fight Mayron and you have both spoken of."

"Tomorrow at noon. In the city. But there's no need for it. Tomorrow Mayron dies, and the other Shadows die. You can watch or not — as long as you stay out of the way."

Greaves looked at Adalie. "Your daughter, Vigil, does not look much impressed."

"Impressed! Impressed!" The old man was very nearly dancing with rage. "I'll *show* you! Come with me." Vigil turned without looking back and pattered rapidly down the steps of the dais, his calloused feet slapping indignantly on the time-buffed stones.

Greaves frowned after him. Then he jerked his head to Adalie. "Come on," he said, and they, too, walked

quickly down the length of the court of the conquered monsters. And for the first time since their creation the pillared gargoyles did not have to bear the sight of Man.

The scent of Adalie's fragrance was in Greaves nostrils again as they followed the old man through the temple, past the altar where the eternal flame burned bright enough to sting. He said nothing to her. She volunteered no words of her own. But she walked close enough to brush his thigh with hers. Greaves smiled appreciatively.

Vigil led them to a small chamber in one wing of the temple. He flung open the door with a clatter of bolts in a concealed lock, and pointed inside. "Look — the two of you. It's not just Mayron who can dabble with machines. For every clever man, there is another just as clever."

A gun of green metal was mounted on a pedestal in the center of the chamber. Slim and graceful as a wading bird with one extended leg, it poised atop its mount and sang quietly of power and intent to kill. The friezed walls of the chamber hummed in harmonic response to the idle melody of the gun. Greaves felt his hackles rising unreasonably, and he very nearly growled with outrage at the sight of it.

"Tomorrow at noon," Vigil said in a high, triumphant voice, "the weapon will be swung to point through that window and down upon Mayron's city. And when it is done, there will not be a single Shadow alive down there."

Greaves walked to the window in the chamber's far wall and looked down. But it was dark below; nothing to mark the outlines of a city as cities had been in the time he remembered. The temple apparently stood atop a high hill, with the city in a great valley at its foot, but again all Greaves could see were three glowing mountaintops across the way, and, beyond them, the night sky.

Then suddenly one of the volcanos flared for an instant, and the few overhead clouds reflected redly down into the valley.

Greaves caught his breath. The city had emerged black and immense, extending for miles, its lightless towers like the spine-bones of a beast half-eaten and rotting in a tidal pool. Then the light was gone, and once again there was nothing visible down there — if the undead beast had chosen to bestir itself and stealthily move on some errand of the night, no one standing here could have known until it was too late.

"So that's the city of the Shadows," Greaves said.

"The city that was once the First City of Man," Vigil said bitterly. "That Mayron has made into an outpost of Hell. Where no man dares live; where they say that those with Shadows, once they were in sufficient number, dragged women and children into the Chamber of Shadows so that their men, heart-broken, joined them when their Shadow-children returned to plead with them."

"And this gun of yours is going

to do what to them?" he asked.

"Kill them."

"I know that. How?" Greaves stared at the old man through narrowing eyes.

"A beam of power, made of the stuff that spins within all things — the pure force of this continuum."

"You mean this thing is some kind of particle emitter — an electron or photon gun?"

"Our science need not concern itself with crudities like names, barbarian. This gun was made as a song or a poem is made — in the mind of a man who dreams weapons where another man might dream bridges . . . and when the gun finds its fruition, tomorrow when Mayron expects no mightier enemy than you, then the beam will sweep that city, and when it stops Mayron's city will be a tomb for empty skins. And Man will build another First City, and those who fled shall have a place again, and —"

"Who built — who *dreamed* — this piece of ironmongery?" Greaves growled. "Who was the poet — you?"

"Yes! Why not? Do you think because I am an old man —"

"A heedlessly spiteful one who hasn't stopped to think."

"Stopped to think! *Look!*" Vigil seized the torch at the doorway and lifted it high. "Did you think I wasn't sure? That the weapon has not been tested?"

Now Greaves could see why the gun sang rather than rested in quiet patience. A Shadow hung against the far wall, supported by its out-

stretched arms, its hands sunken wrist-deep in the stone. And though it jerked its legs and struggled feebly to be free, the hands remained trapped. Under the sound of the idling gun, he could distinguish a quiet, thin, whimpering.

Adelie laughed softly to herself.

Vigil crowed: "He cannot move — what little strength remains to him is needed for bare existence ... if I were to touch that control—

"The weapon is at its lowest setting — it has incomparably more power than that; it has the power of all the Universe in it — and look what it can do when it is barely tapped in to its source of power!"

Greaves rumbled in his throat. Suddenly the gun's song was more than he could stand. He barely seemed to move, but Vigil had time to shout, the outraged cry beginning to echo in the chamber when suddenly there came the snap of rending metal, and a choked stammer from the gun. And then Greaves had the gun in his hands, completely torn from its pedestal. He threw it out into the night in a bright flash of fire that bathed them all in a thunderclap of light. Greaves stared after it, his teeth bared, the horrid sound of his hatred still rumbling within him. When that had dwindled, leaving him with his heavy chest heaving for air, the trapped Shadow had vanished, no doubt to tell Mayron that Humanity's godling had gone insane.

Adelie was very pale. Vigil was trying to speak.

And that from the old man was enough to bring back the first

scarlet edge of the fury he had turned on the gun.

"Close your mouth!" Greaves commanded him. "I have to go fight Mayron tomorrow, and I don't want another word out of you. Go find something useless to do. Adelie, I want a bath, some food and drink. Right now!"

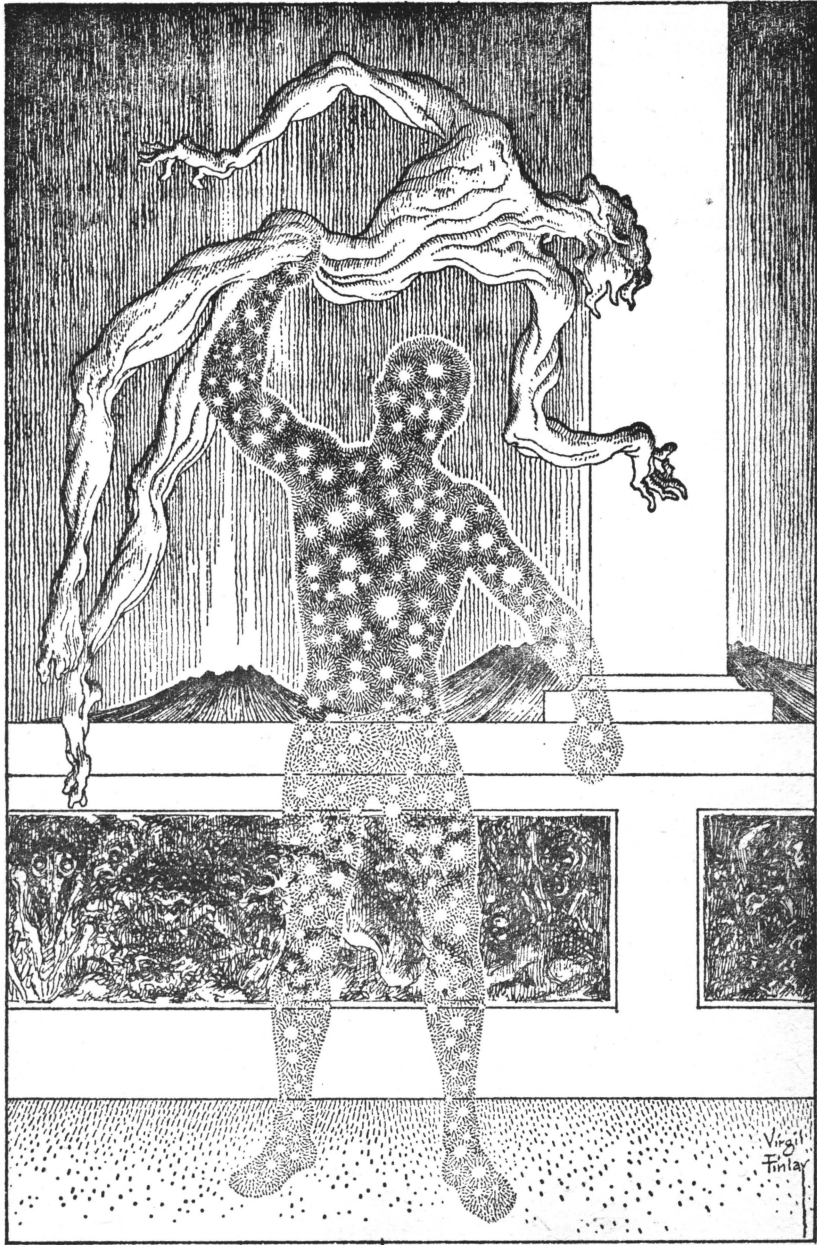
#### IV

During the night, he asked Adelie: "I'm supposed to fight him with my hands, is that it? Or with simple weapons of some kind? And this will prove to the worshippers all over the Universe or to the Shadows that either my or Mayron's way of life is right?"

"Yes," she said. "And you *are* very strong. I'm sure you will win. I was sure when I suggested it to Mayron. He's so completely confident — I knew I could trick him into it."

Later, he asked her: "Tell me — was there a famous weapon poet in First City?" And he took her hand, not letting go of it. When she asked him, once, hesitantly, why he had broken the gun, he answered honestly: "Because it seemed hateful." And other than that, they said very little to each other during that night, and whatever they did say had about as much truth in it as all the things they had said or he had been told from the first moment of his awakening. He did not sleep. For one thing, he felt no need of it. For another, he was frightened. He did not want to be a Shadow...





Virgil  
Finlay

In the morning he had forgotten fear. Steps led from the temple to a pathway that wound down toward the city. He stood for a moment at their head, with the altar burning behind him, and then stepped out into the morning, with Adelle and Vigil following.

There were people waiting out there. They lined the path, murmuring among themselves. As he strode along they fell in behind him, leaving behind the temporary shelters they had put up when they fled from the city and took refuge here.

"Sheep," Vigil snorted as he padded through the dust beside Greaves. "All right, let them see you brought down. I'll make another gun — if your stupidity hasn't robbed me of the time I need — and then they'll see..."

"I'm sure that if I lose today, Mayron will give you all the time you need. Maybe he'll even send that same Shadow poet back to you with whatever story you'll believe this time."

"What — ?" Vigil stammered.

"What did he tell you? That he would create the gun for you because he hated the Shadows, even though he was a Shadow? Did he tell you how he remembered how fine it was to be a man? Is that the story you believed? You simple, credulous murderer! And you repaid him by testing it on him. As he well suspected you might. It's not only humans who can be brave. Or sacrifice themselves for the ferocity of their race. Or were you too busy taking Humanity's name in vain to ever consider that? You

never dreamed that gun. Not you — you may be foolish, but you don't hate this Universe."

Vigil was blinking at him. "What — ?"

Adelle laughed. "Last night, father. He asked me about weapon posts. There's no use trying to lie out of it."

Greaves smiled at her. "That's right. I asked you, and from that moment on you knew I was cleverer than Mayron thinks. But you never got away to tell him that, did you? You know," he said thoughtfully, "you'd better hope I win today. Mayron won't be too fond of you if I give him any more shocks."

Adelle grinned. "I thought of that. But if you win, he dies. And if you die . . . ?"

"You will have had your glory anyway? You will have engineered the battle of the gods, and dabbled in other pleasures, too?" Greaves was still smiling, but Adelle's eyes grew wider. "Maybe it'll be that simple, Adelle. But who can tell the minds of gods, hmm?"

And so David Greaves strode into the city of Shadows, followed by a fearful multitude and two badly shaken people. He walked down a broad avenue at whose end something black bulked and glimmered, while things with black-filled eyes stood watching thin-lipped. And as he walked he showed none of his fear.

He stopped at the end of the avenue, with the tall towers looming over him, and stood facing the Temple of Shadows. There was

no sign of life in the square black opening that served as a door for the featureless stone block, dark but not as dark as a Shadow.

He threw back his head and called: "Mayron!"

The worshippers huddled around him. Vigil, like them, was throwing anxious looks over his shoulders as the city's Shadows crowded closer.

Adelie murmured: "There he is."

And he was, trotting lightly down the steps, smiling. He wore his human skin as naturally as if it were more than a cloak, and Greaves had to look hard to see that when he smiled his lips stretched but no teeth showed.

"Well, Man in all your pride. Are you ready?"

"Ready as any man. How do you propose to go about this?"

"Adelie didn't tell you?"

"She told me as much as I asked. I didn't ask much. Could you suggest any way I could have refused the conditions, no matter what they are? That loses the fight right there. Wasn't I supposed to understand that? Do you think politics is a recent invention?"

"Fierce, fierce," Mayron murmured. "Well spoken." He chuckled. "When I was a man, I would have liked you."

"Get to the business, Mayron."

The Shadow held up his hand. "Not so fast. Perhaps we can arrive at some —"

"Arrive at nothing. Put up or shut up. Vigil no longer has that monstrous gun and there's no point in this for you today. But there is for *me*, and you don't have much time

to realize that." He glowered at the Shadow, feeling the rage, feeling the onrush of the bright white exaltation when the body moves too fast for the brain to speak, when what directs the body is the reflex founded on the silent knowledge of the brain's deep layers, where the learning has no words.

Mayron frowned. His head was cocked to one side. If he had had eyes, he would have been peering at Greaves' face. But he said nothing; he had lost the moment, and now Greaves used it.

"You scum," Greaves said, his voice booming through the Temple square for all the Shadows to hear. "A weapon that drains the power of this continuum! You leech — you would have had that doddering old man put all my stars out!"

And now the moment was at its peak, and Greaves screamed with rage, so that the faces of the towers were turned into sounding boards and the shout crackled in the air like thunder. He jumped forward, one sweeping arm tossing Mayron out of his way and flailing for balance, while Greaves sprang into the Temple and charged the Chamber of Shadows.

And now the fear—the great devouring fear that came like fangs in his belly but did not stop him. Now the fear as he burst through the acolytes and into the black, light-shot sphere that quivered at the focus of Mayron's machine. And he stood there, feeling the suck not of one voracious universe but many — all the uni-

verses that had eaten the over-curious Mayron and sent back a Judas goat in his skin to conquer what belonged to Man. Feeling the icy cold, and the energy-hunger that could suck Man's Universe dry and still leave a hunger immeasurable.

But the rage — the rage that came to him, that came to the god uncounted generations of men had made while David Greaves lay sleeping but his deepest mind lay awake, feeling, feeling the faith, knowing the splendor of what Man had done — The rage that could make a god, that could give a creature like David Greaves the power to create, to dream a man — to make a David Greaves who would lie waiting, ready to become a god...

That rage went forth.

And in parallel continuums of life unimaginable, the dawn of Apocalypse burst upon suns unnameable and worlds unheard-of — upon all the universes which were the true Shadows. The god who was David Greaves again, when the rage had passed — that image

which Man himself had made stood blazing his fury in the Chamber of Shadows, and the Universe of Man was free and safe. But in the places of the Shadows there was no hope, no joy, no place of refuge. Mankind was come forth, and galaxies were dying.

One last snap of the fangs — one moment when the death-spurred Shadows almost had their greatest prize of all — and then it was over. Greaves turned and strode out of the blasted Chamber, and the acolytes cowered, covering their eyes, not yet realizing that once more they had eyes.

David Greaves appeared on the temple steps, and began walking slowly down, his legs shaking with exhaustion. Adelle watched him coming toward her. Around her, Shadows that had once been men were men again, but at her feet Mayron lay without his skin, and though her father had fled, she did not dare go without learning what the look on David Greaves' face meant for her. **END**

**In the next issue of IF:**

**Beginning**

## **THE REEFS OF SPACE**

**An exciting novel of tomorrow's frontiers  
by Jack Williamson & Frederik Pohl**

## **MIGHTIEST QORN**

**A Retlef story by Keith Laumer**

## **IN THE ARENA**

**by Brian W. Aldiss**

**And many more!**

# RUNDOWN

BY ROBERT LORY

**All panhandlers ask for dimes—but this one had a very special purpose!**

The subway train announced its arrival with a screech of grating steel. The man was shoved from the car onto the platform by the eight p.m. crowd. The noise and the abrupt handling of his body brought him to awareness.

Not that he had been asleep or unconscious. Although he might have been. He didn't know for sure.

He found it hard to concentrate, but soon a sign over the platform came into focus:

## WESTBORO

It meant nothing to him. The second thing he became aware of did.

Another train had replaced his, and directly in front of him was an army of people, dispassionate to-

wards everything but its one objective—to get on.

They came at him all at once, forming a pushing, elbowing, cursing, jarring mass of humanity. He glanced off one to collide with another. He escaped the punishment by a lunge to one side which ended with a crash to the cold cement floor.

He regained some semblance of steadiness on his feet and looked at the sign. It was still Westboro. It still meant nothing to him.

He was lost.

What was worse, he couldn't remember where he was lost from.

He turned to walk, he didn't know exactly where, when he smashed into a little boy eating an apple.

The boy reacted in a strange manner.

"Leave me alone. you dirty man, you," the boy said. He dropped his apple and ran off. Scared.

The man flushed with embarrassment, but the boy's remark made him look down at himself.

He saw a dirty man. Filthy. His white shirt—it had been white once—was torn at the elbow and was covered with grime, his shoes at the toes were white where the black polish had worn completely off his pants reflected no evidence of ever having been pressed and the right leg was ripped from the knee down.

Two girls in their teens passed and giggled.

He was aware that others had noticed him.

"Hey, lookit the bum," a fat jolly-rover called out to his three on-the-towning cronies.

"Bum," the man thought, and reached to his back pocket.

No wallet. But not long ago he had one, he was sure, because the feel of its absence was there. Somebody must have taken it, or he might have lost it. In that crowd or on the subway or before . . . He couldn't remember where he had been before.

The feeling of not remembering seemed familiar, and he tried hard to think. But there was nothing static in his mind that he could hold on to. His mind wasn't blank anymore, it was a jumble. He somehow recalled he had been looking for his money. He fumbled through his other pockets.

He found a dirty handkerchief and two cents.

The feel of the coins brought everything back.

Quickly he felt his pulse. It was slower than he had ever known it to be. Sure, there were times before when . . . but then the doctor always had been nearby. And this time, the most serious time of all—he looked up at the Westboro sign—he was lost. Perhaps, up on the streets, he would recognize something.

He began to take the stairs at a run, but his breath came too hard, and he walked the rest of the way to the turnstile. The arm caught tight as he started to go through and a sharp pain went through his groin.

"That's the way you go *in*, pal," somebody offered, and the man winced at the few laughs he had drawn. He saw the exit sign and walked quickly toward it.

The night lights were just ahead as he collided with a woman loaded with bundles. They spilled. "Sorry," he said, leaving her to her indignation, and at a faster pace he walked outside into the cool night air.

He had stopped walking and was leaning against the door of the Inn of Six Horses, which proudly displayed its name and namesakes in blue and white neon.

He had recognized nothing.

He had tried getting to the doctor's by cab, but no driver would listen to him without first seeing the fare, even though he assured them all that he could get it from the doctor.

A policeman had told him to move along or suffer the consequences of a thick nightstick.

A drugstore proprietor had answered his request to use the phone by threatening to call the policeman with the thick nightstick.

A dime. One dime!

He remembered his Shakespeare.

My kingdom for a . . . horse?  
Six horses. Maybe, just maybe, at the Inn of Six Horses . . .

A short man at the bar, composing one half of the clientele, was calling the bartender's attention to the fact that the six horses outside outnumbered the customers.

"Go to blazes," the bartender commented on the short man's observation.

"I should," said the short one. "Then George here would be Uncas, the last of the Mohicans, riding your six old white stallions."

"How do you know they're stallions?" George said. He was lean, mean and weary, looking as if he had just returned from a hard day of peddling vacuum cleaners.

The door banged shut and three pairs of eyes focused on a dirty man.

"Here comes a touch," said Pete.

"Please," said the man, his voice shaky and weak.

"Before you go into your act, pal," Pete said, "understand this: Nobody gets nothing free here, this ain't no mission or nothing. This is a business like any place else."

"A real thriving business," mocked Shorty.

"Please, a dime, I need a dime, that's all I—"

"A dime?" George laughed. "For what, a cup of coffee? This is a

high-class place. Beer costs fifteen cents here."

Shorty joined in with a snort. "Maybe he wants to call his girl."

"I need the dime," the man said, leaning on the bar for support.

"A matter of real life and death, huh?" George said.

"Yes. Look . . . here, I have two cents, you take them."

Pete looked suspiciously at the two coins. "We don't sell nothing that costs two cents."

"You take the two cents, but give me a dime. *Please.*"

"Sharp businessman," noted George.

"This is rich," said Pete. "Do you really expect to *buy* a dime for two cents?"

Shorty said, "He just noticed how well you're doing. He figures you can afford the loss."

"Boy, it burns me up," said Pete. "These professional bums make more in a week than I see in a month."

"You keep talking that way, and this clown will want to buy your business for the two cents," Shorty said. "Ain't worth it," George said and banged his glass down. "Fill it," he directed Pete.

As Pete turned, the man made a lunge for George's change on the bar.

"Watch him," warned Shorty.

George needed no warning. He had seen the man eying his money, and he had hoped for just such a move. With a right fist to the side of the man's head, George took revenge for a bad day's work.

The man lay very still on the floor.

“What a paste,” said Shorty, admiringly. “You could have killed him like that.”

“He sure ain’t doing much moving,” said Pete, coming around the end of the bar. “I’d better take a look.”

“Man, I didn’t hit him that hard.”

“Well, *man*, he sure asked for it,” said Shorty. “And me and Pete will

be right here to tell the cops that the guy was a crook and tried to rob your money. Right, Pete?”

“George, this guy’s got no pulse,” Pete said.

“Watcha gonna do, George?” Shorty said.

“Just shut up and wait a minute,” Pete said. “I think he’s trying to say something.”

The man’s eyes pleaded with each of the three. His lips quietly formed their message:

“Dime.”

“Wow, talk about persistence,” said Shorty.

George looked at his change on the bar.

He picked up a dime.

“Hey,” said Shorty, “what are you doing?”

“Shut up,” said Pete. “George’s money is George’s money. What he does with it is his business.”

“Look,” George said, “I didn’t mean to hit you so hard. I mean, I hit you so hard my whole hand hurts. So here, you can have the dime, I won’t miss it.”

He pressed the dime into the man’s hand.

\* \* \*

“Holy cow,” said Shorty. It was the first sound any of the three had made after the man had left, fifteen minutes before.

George stared into the mirror behind the bar, seeking some mighty truth in his own reflection. “He says . . . he says *Unbutton my shirt*, and then . . .”

George fondled some coins in his hand. “Then he takes that crazy dime, a plain old, regular, crazy dime . . .”

Pete poured himself a Scotch. “What kind of guy is it, anyway,” he said, “who walks around with a slot in the middle of his chest that he puts dimes into?”

“Yeah,” said George, “and who *ticks*, yet?” END

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# SINGLEMINDED

BY JOHN BRUNNER

ILLUSTRATED BY FRANCIS

**The Enemy had a secret. Every courageous man would find a way to steal it, no matter what it cost his conscience — or world!**

**I**  
The ship went down staggering on a lopsided stilt of fire, among the rugged foothills of the Lunar Urals.

Despite the terrifying brilliance of the bands crossing the exhaust — which showed that the cause of the trouble was a resonance instability, apt to shake the entire vessel to bits like blows from a vast hammer — the engines went on firing after a fashion till one of the landing legs touched on an outcropping rock and tipped the ship over.

It crunched like an eggshell and the engines died, leaving its pilot stranded but alive.

Not that that made much difference. He had about twelve hours' oxygen in his suit tanks and a liter of fortified liquid in his nutriment reserve. But he was lost, he was some hundreds of kilometers from the nearest American base, and he was not even sure that he had been watched down by the radar there.

For a while he occupied himself with petty things — salvaging what instruments had survived the crash,

hunting for any oxybottles not broken open in the crash, soaking inflammable material in the fast-drying liquid from the hydraulic shockabsorbers in the hope that he could fire a beacon when someone came to look for him. He considered climbing a nearby peak to set up a radio and try to beam a line-of-sight signal, but had to concede that even if he got up far enough for the extra height to be useful he would use more oxygen and might not have enough to get down again.

He could stay with the ship, and that was that.

Within an hour of the crash, he was learning that he was very much afraid to die.

*Not ours*

*But all are "now as we are"*

*Others to rescue*

*No one else knows exactly where  
in thousands of square kilometers*

*Suffering follows awareness if we  
leave him*

*Agreed impossible but do what*

*Avoid contamination*

*There is the cured one (cured?)*

*Compulsion misliking constrained  
to act consent*

He waited on the crest of a steep rock, able to see over the jagged local ground to the smoother-seeming plains beyond. He was not well used to exposed lunar conditions, and the stark blacks and brilliant sunlit grays of the landscape were maddening; so also was the fact that if he did not move rather often his suit's heat-transfer devices overloaded, and if his feet were in

his own shadow they began to prickle with cold, while his shoulders and scalp perspired.

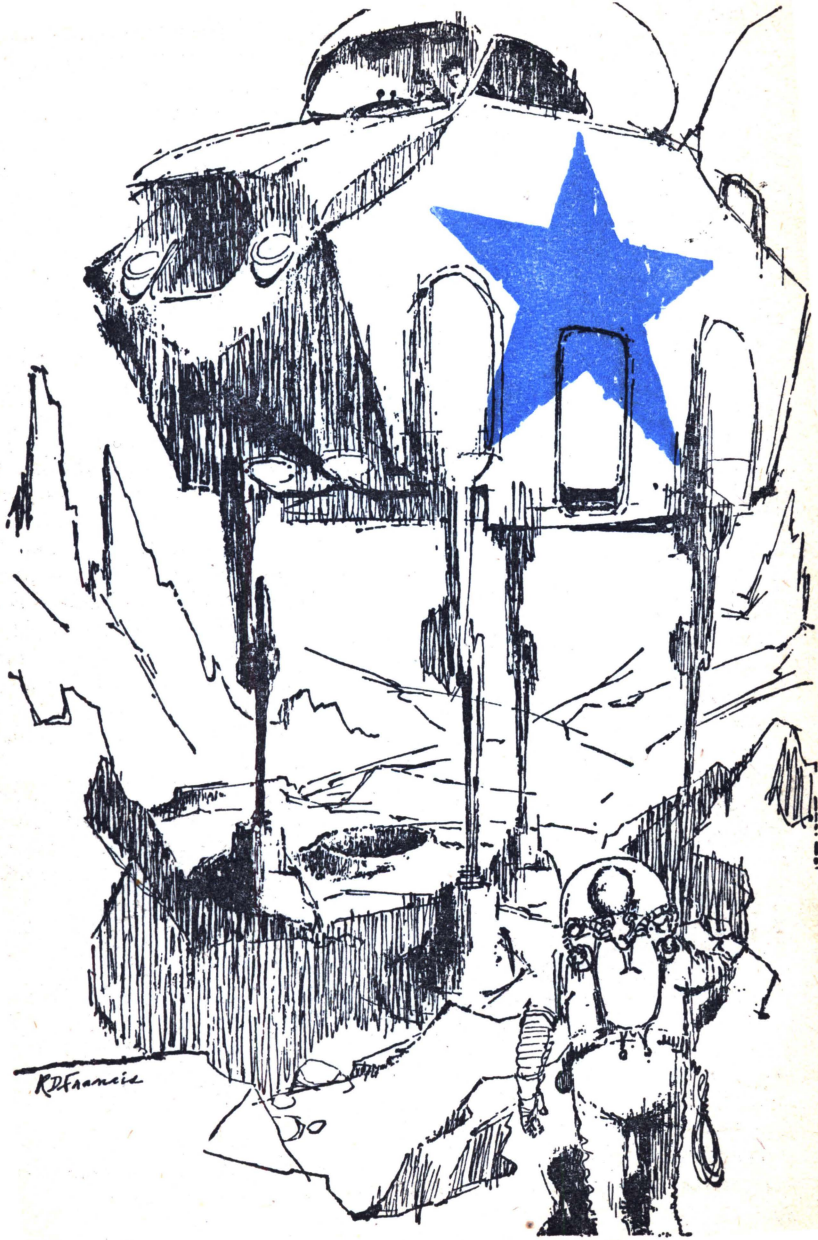
He did not mind loneliness very much. He would never have been entrusted with single-handed lunar ferry flights if he had shown any sign of breaking down from mere isolation. But once the extra factor of approaching death entered his mind, he found it gnawing at him, rat-wise.

To die so much alone, with not even a sight of Earth to comfort him — that was the intolerable part of it. He could die when he chose, or when he had to: crack the suit, or wait for the oxygen meters to hit zero. But he had to die.

Four hours of waiting, then five, then six, and he was beginning to break. He could feel himself going, like a piece of fatigued steel; he knew he must not, should rather endure to the eleventh hour and beyond, and yet his control slipped away until he began to whimper involuntarily.

Enough of that! He put his mind to singing, and telling himself stories; to reminding himself of friends; to reassuring lies about the excellent chance of being spotted. But it was very difficult. Whenever he let his attention wander, he felt the black despair encroach on him like tides eroding a cliff.

He had endured eight hours, and was uncertain whether he would meet his inevitable end as a sane man or as a mindless, broken *thing*, when he saw the stirring of dust across the plain which indicated the passage of a lunar tractor.



He imagined at first he was deluding himself. But when he clambered down from his rock and fetched the telescope which some Navy-minded bureaucrat had decreed be included in the emergency kit of the ship, he saw that the tractor was real. Moreover, it was headed directly for him. He could see few details owing to the reflection of the sun on its highly polished snout, but that in itself showed it was aimed for where he stood. If it had been travelling at an angle to him, it would have been splashing up enough dust to hide its sides.

Nonetheless, thinking pure chance might have brought it in this direction, he hurried to fire his beacon. Turning on the tap of an oxybottle, he ignited a few scraps of what had been his acceleration couch and made a bright blaze until the bottle ran dry.

The tractor-driver had seen him. Out of the blurring dust a brilliant light flashed — Morse letters forming the international reassurance sign, I-C-U.

He felt himself go limp with relief. He did not realize until some moments had passed that he was babbling happily, and that if his suit radio had survived the crash he would have made the oncoming driver think he was rescuing a lunatic.

How close would the tractor be able to come? Between him and the comparatively level plain lay some three kilometers of irregular ground, creviced and hummocked, over which no tracked vehicle could pass

at more than snail's pace. It would help greatly if he could make his way to the edge of the plain, he thought, and began to scramble forward, no longer needing to remain close to the conspicuous wreckage of the ship. At this range, the bright orange fabric of his suit would stand out against the darker rocks.

He was so occupied that he failed to notice when the tractor passed the edge of the plain and kept coming, over rocks and hummocks and crevasses, without slackening speed. Only when he paused before tackling a particularly difficult patch, and looked up to see how far he had got, did he realize that the tractor was not what he had assumed.

Out on the dusty plain, of course, it had splashed dust up just as a tracked vehicle would have done. Now it was on hard ground he could see what he would have deduced anyway from its ability to tackle broken terrain. This wasn't a tractor from a Western base. This was a Russian "moon-walker," tramping on four padded feet exactly like a mechanical camel with an oyster perched on top. Its slab sides bore the Soviet red star.

A million crazy fears filled his mind. Automatically, as he struggled to digest the knowledge of his fate, he found his fingers leaping towards the cracking valve on his suit. But for the long hours of waiting, in which he had found he was afraid of dying, he would have decompressed then and there, and made the rescue journey useless.

- Only he checked himself.

He could live.

He would live. And the hell with everything else. He was twenty-nine years old and that was too young to waste the chance.

The moon-walker stopped a hundred meters from him. Below the oyster-like pilot compartment a door in the slab side slid back, and the legs folded to bring the threshold to within a few inches of the ground. More than a little enviously, he stepped inside.

The door gave into a small compartment that served as an airlock. It cycled quickly, and before he knew what was happening the floor was pressing against his feet. He was lifted up into the pilot compartment through another sliding panel in the ceiling of the lock.

"Hullo," said the pilot. "I am very glad to have found you in good time."

He did not even remember to crack his suit in the first moment of shock, although his outside pressure gauge showed one atmosphere and the pilot was unsuited. For the pilot was a woman.

Everyone knew vaguely that the Reds made a fetish of sexual equality. But he had never imagined for a moment that they might send a woman out alone on a hazardous trip to rescue a foreign pilot.

She had short-cropped dark hair around a rather long, fine-boned face; her complexion was sallow but her eyes were big and liquid, and her teeth were superb. She wore a standard undersuit of olive-green

with rank and technician's badges he did not recognize.

Ideas flashed through his head. Possibly he was the first westerner ever to go aboard one of these moon-walkers. Down in the slab-sided compartment beneath his feet there was alleged to be a compact fusion engine which was a jealously guarded secret, and then there was the question of automatic preadjustment to changes of level in the ground, which was baffling many investigators; a woman could be overpowered and the moon-walker directed to the nearest Western base. . .

The pilot pushed a control home and locked it with a turn to the left. There was a slight lurch and a turning sensation, and the machine swung back on its original course in the reverse direction.

"Please—open your suit," the pilot said. Her voice was low and pleasant, and her accent good. Then she gave a sudden shrill, nervous laugh, and checked herself as if she were in a state of extreme tension. "My name is Olga Solykin, and I am more glad than I know how to say!"

"Uh—" Well, no harm in giving his name. "I'm Don Bywater. Thank you for—well, saving my life."

Something was askew. Suppose this situation were reversed. Could anyone imagine missing the chance to inspect the wreck of a rival spaceship, laid out and opened like a corpse at an autopsy? Yet already she had turned the machine around and by now—to judge from the view through the excellent ports—

it was making thirty-five k.p.h back towards the base. Not a thought, apparently, for the ship.

Cautious, he cracked the suit at last. The air was sweet and good after his own canned supply, which was partly recycled and never completely free of his own body odors.

"Come, sit down!" the pilot insisted, patting the vacant co-pilot's chair. "Are you well? Are you hungry, thirsty? Were you injured in the fall? Were you not very lucky?"

Why was she so *eager* — almost as though she had not seen another human being for months? Her eyes were bright. Her voice tended to shake on occasional words, with what Don could only presume to be excitement. He glanced round the large cabin, noting the usual semi-personal touches — the painting of Lenin, the photograph of Yuri Gagarin, the bust of Maisky-Artemov standing on a little ledge next to a package of moon maps.

The stabilizing equipment was fantastic! Listening hard, he could faintly discern the hum of a gyro somewhere, keeping the cabin dead level no matter what kind of ground the moon-walker was scrambling over.

Belatedly he began to peel off his suit. He said, "No, I wasn't hurt. thank you. I was very lucky. The whole of my acceleration unit came away in one piece and I was still in it when it hit the ground."

"I'm so glad!" the pilot cried. She turned and felt along a shelf under the exiguous bank of controls; the

machine was obviously completely automatic when bound for a known destination. She produced a large box of candy and some packs of cigarettes, and offered them to him as he sat down.

He was so taken aback he forgot that it was probably bad to show that he was impressed by anything. He said, "You can smoke on board?"

"Oh, yes, if not more than one person does at a time. I do not smoke, so please, you smoke if you like." She urged the cigarettes towards him, checked the movement and stripped away the cellophane wrap with frantic fingers as though panicking to be of service to him.

The tobacco drugged? The candy poisoned? All the scores of stories which had been poured into his mind since he was a child came back to him. Anyway, he did not usually smoke off Earth, and rarely even at home.

But his nerves were shot to pieces, and a smoke would certainly be soothing. If there was anything funny about the smoke, he told himself, he could throw the cigarette away after the first puff.

There was nothing wrong with it at all. It was very good, aromatic Balkan tobacco. Although it burned rather quickly in the oxygen-high air of the cabin it was soothing and welcome.

"And a drink, yes?" she invited. "To celebrate the saving of your life? I brought you food, vodka, all I could find, and the candy for you, and the cigarettes — you have not been in one of our moon-walkers before, yes? Or you would not have

asked about the smoking of a cigarette!" She laughed again, the sound coming hard and harsh from her full-lipped mouth.

"Has anybody from my country?" he countered bitterly. What was all this about, anyway? Some elaborate Mata Hari trick?

"Not even by now?" She seemed disappointed. "It is being so long, I hoped that — well, it is not really so long, I guess. Well, you will like to see all of it, then. Shall I show you how it is?" She leaned towards him, over the side of her chair, her face bright and her tongue going once from left to right across her lips.

A tentative conclusion jelled in Don's mind.

This woman — or girl, maybe, for she was no older than himself — must have been condemned to some isolated post for a long tour of duty. It was exactly the kind of thing that fitted with all the half-authorized rumors one was always hearing, even more here on the moon than back home, because here was where the competition was fiercest. And the stress of loneliness must have made her mentally unbalanced. How else to explain her weird behaviour? Claiming to have brought him candy and cigarettes and vodka — he was no psychologist, but as guesswork it certainly fitted.

He said, not without some nervousness, "Later. In a little while, if you like." Not to arouse any suspicion, that was important. To jump at the chance of inspecting the works of the moon-walker might

be fatal. The trick was to be friendly as long as possible, to find out where he was exactly, to get an idea of the controls of the machine, and then to overpower her and walk it to the nearest American base. . .

"Whereabouts are 'we'?" he inquired, as casually as possible. "I was too busy fighting the controls to take a fix as I came down."

Well, that was true enough.

She jumped at the opportunity. Flushing a little, she put a finger on a switch before her. A previously dark screen on the control panel lit up with a set of grid-lines and a pattern of radar blips.

The grid lines moved visibly, in time with the motion of the moon-walker. Don tried not to look impressed again.

"Here, you see!" the girl said. "It navigates partly by dead-reckoning, partly by sighting on the stars. All is automatic now. We are here, and here are the Ural Mountains in back of us, and this red star in the center, that is this moon-walker, you understand?"

"And you can — uh — steer it by hand if you have to?"

"Oh, yes!"

She showed him how. She showed him the inspection hatch of the fusion engine, and the neat stabilizer which kept the cabin level — it turned out to be a bowl of mercury with hundreds and hundreds of tiny electrical contacts around the sides, from which a computer drew information about the vehicle's attitude,

extrapolating to find the most probable correction the mechanism would next have to cope with. Don followed her explanations with mounting excitement; it seemed there was nothing she would not willingly tell him, apparently for the simple pleasure of talking.

In the back of his mind, he was calculating. It would be best to take over the machine after about a couple of hours on board, before they came too close to its home base, but not so soon that her suspicions would not be lulled. Then he could easily locate the nearest American base. There were rather few in this region, for it was mainly a Soviet preserve. And then he could. . .

"Ah!" she said suddenly, and cocked her head. They were looking down through the inspection hatch over the forward radar, watching the ground-scanner weave back and forth on the far side of a pane of tough glass.

Don felt a stir of alarm. "What is it?" he demanded.

"We are coming in at my base. Listen!"

"We're *what*?" Pictures of a dozen wasted chances flashed through his mind. "But — why so soon?"

"Oh, you mean why if we are so near where you crashed did I come so long after you fell down? Why, there was much argument for and against to rescue you." She gazed at him with almost ridiculously melting eyes. Suddenly she thrust out her hand and snatched his, squeezing it briefly. "I am so glad they decided it must be done!"

"They?" Don stared wildly towards the cabin ports. Yes, it must be true. The machine was marching in between two low cliffs, towards a dark, over-roofed aperture; then it was in the shadow with the suddenness of a light being switched off, and the engine's note changed down to an idling buzz. But if this woman hadn't gone crazy from isolation, then what — ?

He pulled his hand away. "How many people are there at your base?" he demanded.

"Oh, many, many! Ninety, a hundred. But I have been so alone for so long!"

There was a noise from below — first, air hissing into an oversized lock, then the hurry of footsteps. Dazed, he said, "Alone? Are you crazy?"

"With no one to talk to, yes, I have become nearly crazy!" she asserted, nodding her dark head frantically. "They do not talk, you understand! They do not give me a single word!"

So she was a lunatic. And he was trapped. Don made a dash for the front of the cabin. But just as he was forming his intention the helmet and shoulders of a spacesuit appeared on the platform under the cabin which had previously lifted him from the airlock below. He was too close to stop himself. All the newcomer — a stolid-faced man with big shoulders — had to do was trip him.

He measured his length on the deck. His forehead hit the base of the pilot's chair, and there was long darkness.



He awoke painfully, with his head aching and his eyes blurred, in a room that might well have been at any of the moon-bases he knew. Starkly furnished with bunks and one table, plus some lockers and shelves on which were microfilms, a reader and some recording spools, it was about as homelike as a fallout shelter.

He had a little delirium for a while before he regained full consciousness. He could not tell whether he actually saw, or only imagined he was seeing, Olga's face above his own, very pale and worried. He was confused, unable to decide whether the crash had been a dream and he was really in one of the American bases, or whether he was dead.

When things finally straightened out, he found that Olga was there, on a stool beside the bunk, watching him with terrible intensity.

When he opened his eyes, she seemed to break suddenly.

"You live!" she cried. "You are well! How wonderful!"

Memory came flooding back. He could not tell if it was wonderful to be alive; or not. He lifted hesitant hands to touch his forehead. There was a tenderness, but nothing more, to show where he had knocked himself out.

Gently Olga guided his hands away, and swabbed the patch of bruised skin with something cool and wet that diminished the pain. She had barely finished the brief task when there was a rapping sound from the far wall.

She got up and took the three steps necessary to reach a sort of window, beyond which a stout middle-aged woman with an expressionless face was making quick pantomime gestures. As he rolled his head on one side to follow Olga with his eyes, Don saw her draw out from below the window a sliding compartment like those used in drive-in banks to protect cash being paid over. From it she took a charged hypodermic.

Once more the mishmash of tales about hypnotic drugs, secret poisons and ruthless espionage techniques flooded into Don's muddled mind. But he was as weak as a kitten and could not resist as the needle was pushed expertly home.

"It is good," Olga said apologetically. "It is for your health, you understand."

Don closed his eyes.

Some hours went by between sleeping and waking. On two occasions someone came and went at the curious sealed window, and signalled for Olga to go to the drawer below it. The first time she took out some thin broth steaming in a tin bowl, and spooned it into Don's mouth. The second time she took out food for herself. By raising his head a little Don was able to see that a faint violet glow pervaded the box, which disappeared a moment after it was opened.

Sterile? Presumably. But — what for?

It was not until the embarrassing discovery that Olga was not going to leave this cramped cabin for any purpose whatever, even the most

private ones. that he began to think back over what she had said. The others would not speak to her. She was alone among nearly a hundred companions. Why? Surely she could *not* simply be insane, because then she would not have been trusted to drive out alone and fetch him from the wreck.

He said, "What goes on? Please tell me! Why will no one talk to you? Why am I shut up with you like this when there are so many other people?"

Olga clasped her hands before her in a kind of parody of delight, drew up her little stool near the bed and sat down close to him. She said, "Oh, it's marvelous to *talk* again! Even in a foreign language it is good! You know, I have come to where I have made recordings of my own voice and played to myself so as to remember what it is like to hear, and listen."

"Why?" Don persisted.

"The others are not talking now. I am the only one who is cured."

Don closed his eyes. This was too much. One sane person in a base full of lunatics?

"Poor friend Don," Olga said, laying her hand on his. "It is all hard to understand, isn't it? Here is the beginning. Several years ago, in Soviet Experimental Biology Station of Raznoyansk, is discovered strange symbiotic virus with some affinity for the nervous system, especially the brain. They give it to some monkeys, and they get very intelligent, amazing! Then they go mad. But so intelligent it is wonder-

ful. I saw some of them who learned to use tools, who could even talk a few hundred simple words about food and working. It is decided by the great scientist Bielov, director of the base, that he will experiment on himself, for it seems the virus increases mind activity. Changes readings on the encephalo—" She stumbled, stressing the syllables oddly, and got it right the second time. "Encephalo-graph, yes."

Don listened passively. All this was a long way from the moon.

"So in secret he infects himself with this virus that we call a *resonating* virus. It seems to respond to nervous activity as a sounding board to a tuning fork, do you know? As an amplifier.

"Now I was apprentice — student, yes — with Bielov. One evening I am working with a friend, Dvoriov, in the laboratory where we have monkeys, and Dvoriov suddenly cries out that Bielov will kill himself! Bielov is not there. He is at his house half a kilometer away, outside the station. But we go, because Dvoriov insists, like a crazy man, do you understand?"

She was getting violently demonstrative. The words poured from her, with wild gestures to emphasize them.

"And he is taking poison, laid on his bed with a note by him! From half a kilometer Dvoriov *knew*. And that was when we discovered it was true, what Bielov said in his last note. This virus can create telepathy."

Don almost sat up. Only a stab of pain from his head made him

fall back. Telepathy! With a tool like that the East would —

“So all of us who had in any way been infected, Dvoriov, myself, many many more as well, were brought here to the moon, to this secret base, to work upon the antidote. We think we have it. We think so because it was tested on myself, and for many months now I have been well, and have not suffered to be able to read a thought in another mind. And that was what was given to you. This was why Dvoriov wore a spacesuit when he came into the moon-walker to us. Although I am now cured, perhaps, I still carry the virus, can still infect others. But I am sealed up here in the one room because I am the control study. It must be learned if the virus will one day die out in my body, do you understand?”

Painfully, Don worked it out. Yes, it hung together. He could have been infected by Olga as an immune but a carrier, and had been given the antidote, so was now an immune carrier himself, and . . . he had to get out of here! If he could just walk out, that would be enough to take the secret of the miraculous virus with him.

Or was this all a big lie?

Olga was going on, but he was scarcely paying attention.

“Now all the others, you see, think together, and talk no more. I must talk again. Oh, I have been so alone since I was cured! Soon, when one year and a half is finished, and if I am still well, there will be more cures. But here it is a long

way from other people, and our supplies come by automatic rockets and by robot vehicles. And all of us are of high intelligence, so perhaps the others may not after all want to be cured. They work together on many problems.”

Don seized on that one. Telepathy would imply — perfect espionage, perfect teamwork in research, limitless things!

“When you fell down in your ship,” Olga hurried on, “it was much argued whether to rescue you. It was dangerous. But it would not have been possible to endure the knowing that you were dying, do you understand? Better to save you. Better also because without company I would go mad, and though I have no longer power to receive thoughts all the others can hear me distantly as they heard you.”

Once more she clasped his hand. It occurred to him that he would probably need a friend in the enemy camp. He returned the pressure. It wasn't difficult. In spite of her mannish haircut and her rather disturbing eagerness to talk, she was attractive and female. Vague plans for exploiting these facts crossed his mind. In alarm, he checked them. It had just struck him that if he could be “overheard” at the distance of the crash, he could be overheard similarly and more easily now.

What a *fantastic* situation to find himself in!

“So you will help me to keep my mind well,” Olga was saying, “and this will be good for the others, and also you will be a control for the

antidote, because if you do not begin to have telepathy it will prove it also immunizes, as well as cures. It is turning out so well!" she finished rapturously.

"What is it like to read people's minds?" Don demanded.

"So strange it cannot be explained. It must happen to you. Blurred. Confusing. Sometimes frightening. Worst and most difficult is when you are awake and near a person sleeping, for dreams are not logical. Almost they are insane. That is why now everyone here sleeps at the same time; we have our own artificial time, and all sleep from midnight to eight hundred hours. This is by hypnosis, that all go to sleep and wake up together. No other way is possible."

Click! Don tried to keep the thought un verbalized, at least, so as to reduce the chance of it being picked out of his mind. He said, "And — are they listening to me all the time?"

"No, no! Much work is done, and they concentrate hard. I — or now you as well — we are like a little noise in the corner of a room. It is there, but you can forget it. To hear the tick of a watch at night, when your wrist comes near your ear, is easy, but after you wear the watch two days, three days, it is ignored, you understand? So with the mind you are not interested in. With many minds, it is much more difficult, for it is what you would call louder. Stronger."

So he could allow himself to think that it would be possible to escape as soon as he was well

enough, when the ninety or a hundred telepathic people here were all fast asleep together. And hypnotically prevented from waking up for eight hours.

#### IV

It was logical that they should become lovers. The confined conditions plus Olga's desperate hunger for maximum companionship saw to that. Don had no particular objection, except first that it seemed obscurely like treachery to have so much pleasure from it, and second that he could never help wondering whether there were eavesdroppers.

There were regular deliveries of food, usually by the same middle-aged woman he had seen bring the hypodermic with the antidote just after he woke up. It seemed that that could have been automated. But it gave an opportunity for visual inspection of the control subjects, of course, and according to Olga that was why it was attended to personally. Twice a day he and she both had to offer a drop of blood from a finger to be taken to a lab somewhere else in the base. She did this skilfully for herself and for him, and he noted — not knowing whether it was important, but taking everything in that he could — that the sterilizing ultra-violet did not play inside the sliding box when something was passed out of the room as it did when something was passed inward.

Aside from that, Olga talked. Months of pent-up conversation

flooded from her. Childhood memories, descriptions of what it was like to be infested with the resonating virus, funny stories, accounts of books she had read and shows she had seen, word-portraits of people here at the station before they became as they were. . . Don closed his mind to it firmly, as he had been taught. One could never tell when insidious propaganda might come through the harmless-seeming words.

The other people in the base might as well not have existed except as shadows beyond the sealed window, appearing like the figures on some ancient mechanical clock at stated hours, going through their routine and vanishing again. But there was a world outside, and there was a secret of tremendous importance which he alone of all Americans possessed and which, if humanly possible, he was going to take away.

His watch had survived the crash, and still worked. The base was apparently run on an arbitrary time — perhaps that of some Russian meridian — but it was easy to establish when the official “midnight” fell; two-forty a.m. on his Greenwich-set watch.

Disciplining himself with every technique he had ever been taught, he acted quite well enough to convince Olga within a few days that his gratitude for being saved from death had evolved into a genuine affection for her. It was unkind, he knew. But there was a deadly rivalry between west and east, and unless the secret of telepathy was

shared it might be the long-feared decisive advantage which would give the enemy (the enemy since before Don was born, although there had never been a war in all that) the effective victory.

Then, measuredly, he began to make himself depressed and restless.

The natural effect of being cooped up gave him a basis to work on. Soon he was snapping and complaining with convincing vigor while she wrung her hands and demanded what she could do.

After a couple of days of that, he delicately broached the idea that they ought to be allowed outside, to save them from claustrophobia setting in. So what if it were not permitted? Was anyone to know if — just after midnight — one of the moon-walkers was taken out briefly, and returned before anyone woke up?

Horror at the idea fought in Olga's mind with her boundless desire to please her companion and not to be condemned to renewed loneliness.

She voiced objections. Don disposed of them smoothly. He was enough of a technician to get around the alarms if she knew where they were. There could not be many, because all the telepaths would be in hypnotic sleep. It would be impossible to wake just one of them because of this difficulty with insane-seeming dreams picked up from sleeping minds. . .

Three days' argument produced the admission that there were no alarms or indeed locks to prevent Olga leaving her one room. There

had just been no reason why she should, until now. She had wanted to keep the experiment perfectly controlled.

After over a year, Don countered, surely enough evidence had been gathered!

On the fourth night, he won his point.

He had never been so excited in his life as at the moment when she timorously activated the remote control for the big lock through which the moon-walker entered and left the base, and sent it hurrying and scurrying over the plain as if anxious to get quickly away from the base where everyone slumbered, and all the alarms had been temporarily restored to their normal "daytime" setting.

It was lunar night outside. To the radar senses of the moon-walker that made no difference at all. At a steady forty-k.p.h. clip it headed out across the black plain under the frozen stars.

At his request, she showed him how to operate all the controls. Directly she had done so, he closed his fingers gently on her carotid arteries.

As she fainted, he chuckled to himself. He felt extraordinarily proud, as though he had given her a much-needed lesson in absolute devotion to duty. He had been a little ashamed of himself for not cracking his suit when he saw he was being rescued by the enemy, and again when he found himself tempted to treat Olga with real tenderness.

But he had well and truly made amends for his weakness now.

He bound and gagged her with strips torn from her clothing and placed her comfortably in the co-pilot's chair. Then he studied his location. He had done some heavy thinking on the problem of navigation, and he was fairly sure he could strike straight across the plain towards Mrs. Rafferty's Pass — that all-important gap between steep mountains which an irreverent spaceman had named. Beyond there, he would be in line-of-sight radio range of more than one American base, and could take his pick of the nearest.

It would be a long haul. But traffic in the lunar night was very sparse, and with a fusion engine under him the range was virtually unlimited.

He occupied his time on the long trip with dreams of the glory awaiting the man who captured not only one of the fabulous moon-walkers, but also the incredible secret of the telepathic virus. When the eggheads set to work on *that* one, things would really blow off. Imagine the lovely expression on Soviet faces as they learned of the loss of their secret weapon!

He noticed eventually that Olga had recovered. He had expected her to struggle against her bonds, splutter foolish nonsense behind her soaked gag. But she did not. She merely twisted her head and looked at him.

For some reason, he could not meet her gaze for long. He distracted himself by feigning cheer-

fulness which was not altogether sincere. He said, "Sorry, Olga, honey! I'm afraid I never was the type to be romanced away from the call of duty. They teach you a lot about loyalty in the Service. Some of it sticks."

She said nothing.

How could she, efficiently gagged as she was?

Yet somehow a sort of deflating message seemed to reach him from her. As it might be put in words, *Don't count chickens*. It didn't fit with his future plans, and he ignored it.

He said nothing else directly to her all the time it took the moon-walker to reach Mrs. Rafferty's Pass and come in range of an American base. As luck would have it, the first one he contacted was on a war footing. They made him stand by for six hours while they verified his identity by satellite relay half around Luna and made sure it wasn't a Soviet trap. But they relaxed their over-cautious manner once they had men swarming over the machine and inspecting its mechanism, and in another hour or two he was in the presence of the base commander and pouring out his message.

Again, the commander was suspicious. But at length Don convinced him, and the application of a syringe of disinhibitor to Olga produced evidence to back him up. Within two hours more he, Olga and a heavy guard were on their way to America Base One, the nearest equivalent to a city anywhere on the moon, for ferrying back to Earth.

He had a wonderful time impressing the guards with the resourcefulness whereby he had captured the moon-walker. The telepathic virus was of less interest to them. Machinery they could see working. Viruses were a cold in the head.

Still . . .

On this trip, Olga was not gagged, only handcuffed to a stanchion, but she said nothing at all. She merely went on looking at Don. Sometimes she smiled, and he didn't like the smile at all. So he tried not to look at her.

It took the better part of a day at America Base One to establish his claims to the satisfaction of the egghead staff. There were hasty conferences with the topmost brass; there were plans laid on for a vice-presidential welcome and other suitable rewards for Don Bywater. And suitable treatment for Olga was likewise arranged.

"Congratulations!" said the base commander briefly, as the ferry to Earth was being fueled and raised on the launching ramps. He shook Don's hand briefly. Photographs were taken for the record.

## V

Somehow along the line, some wires seemed to get crossed. When the ship had settled at Nevada Main Port there was quite a crowd.

It cheered as Don emerged, waving, straining a little against full gravity, but not as loudly as might have been. The vice president waited at the edge of the field for the buggy to fetch Don across. Don

went down to the little open vehicle with his personal escort.

Then they brought Olga out of the ship. The cheering rose to a noise like Niagara.

Disgusted suddenly with the whole business, Don had to make room for her in the buggy's back seat. But to his amazement she was smiling, even at him, and with some sign of real pleasure at the welcome arranged for them. The driver turned the buggy around and drove at a suitably slow pace across the concrete toward the vice president, the cameras and the press.

"Tell me, Don," Olga said in a voice bright with false cheerfulness, "did you ever stop to wonder about some things?"

"What?" Don was lost in worrying about what might happen in this ghastly situation, and about his tarnished glory.

"Why Bielov killed himself, yes? And why it was necessary to take all of us to the moon and close us away from the whole world?"

Don felt a block of ice form around his heart.

"Think!" Olga invited brightly. "All on the moon at our base were clever, sensible people, high intelligence, trained scientists. All infected. Not deliberately, by accident. For them, life is difficult but not bad. More were infected than are there now, but it was clearly necessary to insure that the stupid ones, the untrained thinkers, were excluded. We know a lot, over our side of the world, about people in the mass. You also should know.

People have lynched and rioted here, do you understand?"

Don stared at her numbly.

She turned and inspected the waiting crowd with a bright, hating look in her eyes. "Yes!" she said, and gave a nod. "People in the mass react strangely. They make less than the — what is it in English?"

"The sum of their parts."

The gravelly voice was Don's own, but it took him a while to recognize that he had spoken.

"That is correct." Bitterness colored Olga's words. "I think perhaps I was sane till you exploited me — for loyalty, as you said. Now ... perhaps not. But I think there is a good number of people here, enough to form well a *mob*."

Don's mind seemed to have congealed now. To stop the buggy? To stand up and scream a warning?

"Possibly there are some people here who dislike your vice president. Political people are easily hated." Olga smiled a little crazy smile. "Do you think it would please the crowd if I persuaded the leader to kiss me, the pretty girl who has been brought to see error of her ways? Who would not know what loyalty means? You should know, Don."

Perhaps the antidote in the carriers' bodies had made the virus more efficient at the business of infecting others. The crowd took ten minutes to become the mob Olga had predicted; within days it was the hemisphere that was infected, and in two weeks, the world.

END



# NONPOLITICAL NEW FRONTIERS

**H**ave you ever seen a nematode? Probably not—and for the same reason people, especially in the season of the mortarboard, the graduation watch, and the platitudinous valedictory, can't see the profusion of new frontiers all around them. We don't mean the New Frontier of foreign policy. We mean the ones worth dedicating a life to, capable of filling it with adventure, excitement, discovery and accomplishment. Do you really think there aren't many of them around? If there were, you might be saying, why can't you see them?

Have you ever seen a nematode? Listen:

If all the matter in the universe except the nematodes were swept away, our world would still be dimly recognizable, and if, as disembodied spirits, we could then investigate it, we should find its mountains, hills, vales, rivers, lakes and oceans represented by a film of nematodes. The location of towns would be decipherable,

since for every massing of human beings there would be a corresponding massing of certain nematodes. Trees would still stand in ghostly rows representing our streets and highways.

That was written in 1914, in a report to the Department of Agriculture, by one N. A. Cobb, who apparently did discover a frontier, and who was followed by more nematologists—but never enough. It has been estimated that these amazing critters cost the farmer—and you—upwards of a billion a year. If you want to organize a safari to hunt nematodes, get yourself a shovel and step over to the nearest grassland. In the top inch of one square yard of topsoil you can bag twenty million or more of them.

A nematode is an eel-like animal seldom more than a twentieth of an inch long. It has a well developed nervous system and elaborate organs, and in one form or another it thrives in hot springs, Arctic ice and your own treasured personal plumb-

ing. Trichinosis is caused by nematodes; so is hookworm. Among the many astonishing things about this little marauder is his—well, let's call it chemical radio.

**T**here is one nematode which lives exclusively on tomato plants and its close relatives. It lays its eggs and encapsulates them, and neither rain nor snow nor heat nor gloom of night has the slightest effect on this capsule. Nor time—at least, not much. If no tomato rootlets appear in the nearby soil, the capsule will lie there dormant for years on end. But as soon as the right plant sprouts, pop goes the capsule, the eggs hatch and nematodes swarm to the attack. (They don't *all* hatch, by the way; having apparently bought an insurance policy, the nematode leaves a percentage of the eggs unhatched in case of crop failure. These can resist everything the capsule could, almost as well, plus temptation. No matter what, they'll await another season.) The especially interesting thing about this is the chemical "signal" sent out by the plant, and the nematode's reaction to it. It isn't anything as gross as, for example, an acid which dissolves the capsule. It's a trace chemical so dilute that it's undetectable by any but the most advanced lab techniques. The capsule isn't opened by it; it opens itself when it gets the "message". and it's so sensitive that it will only respond to a healthy, new fast-growing rootlet. If the root is growing at a rate of 6/100ths of an inch a day it will then be left alone. Such a plant is weak and may not live. But if its growth is 8/100th of

an inch a day, pop goes the capsule. The chemical that brings this about is called a root "diffusate." Hold on to that.

The nematode has its enemies; prime among these is a tiny thread-like fungus. When no nematodes are present, these (there are several species) grow their fine tangled threads quietly through the topsoil like many others. But in the presence of nematodes, the fungus—goes hunting! In a very brief time, the innocuous threads begin to manufacture traps. Some make flypaper, some fish-hooks; the most amazing of all makes a closed noose. Should a nematode put his head in the noose, it snaps closed—in less than one tenth of a second!

Now, what triggers these traps is contact. What causes them to be made, however, and be ready in time is—you probably guessed it—a diffusate. So sensitive are these fungi to some trace chemical exuded by the nematodes that, if grown in a nutrient dish to which one drop of water in which the nematodes have lived is added, they will immediately begin to build traps.

Here, then, is one of those frontiers. The composition and action of diffusates is poorly understood, and the man who can explain the process will have done more than make the acquaintance of a hookworm. For it is a diffusate which sends out the irresistible call from ovum to sperm—and sends the opposite message the very instant a single sperm cell penetrates it. And such understanding may make clearer the exact electro-

chemical process by which a nerve impulse, which triggers cell after cell in microseconds, carries a message. There is simply no way to calculate the ultimate effects of such understanding.

But if you feel a little cheated by our use of terms like "adventure" and "exploration" for such sit-down, eyestrain, trace-element researches, maybe the Para apricot, the vinca rose, *aniba'*, *pacova'*, and *pajuru'* will be more to your liking.

**H**ere is exploration and adventure in its truest sense, not only the exotic-land, pith-helmet, wild beast and deadly serpent variety, but also the pot-o'-gold kind; for here is exploration with more than a fair chance of a classic buck at the far end.

At last, and belatedly, teams of American and Brazilian doctors and biochemists are assaulting the Amazon Valley—an immense, largely uncharted tract carpeted with some 11,000 as-yet-unclassified plant species.

Everyone knows the story of *curare*, deadly arrow-poison which became a miracle drug. But did you know that along with quinine and ipecac, cortisone also comes from a jungle plant, and Brazilian Indians used to chew *Rauwolfia* to make them brave in battle, long before Mad Ave ever heard of Miltown? And they have 17 species of *Rauwolfia* in those jungles, each valuable in its own special way.

Doctors in the state of Para' found a high and tragic incidence of stomach hemorrhage a while back, and traced it to a local apricot, which was eaten plentifully by the people. From it they have derived a valuable anti-coagulant to control strokes and angina. (Let us add that our home-grown variety doesn't play these tricks.) The vinca rose, common as our daffodils, is used in Brazil for a bracing tea, a mouth wash, an antiseptic for open wounds and a cure for upset stomachs. This year researchers have found that it is a potent aid in the remission of many types of cancer, including leukemial *Pacova'* and *pajuru'* with which Indians have been brilliantly painting their faces since before Columbus, may make a breakthrough in the dye industry the like of which has not been seen since coaltar appeared on the scene. *Aniba'* is a heady perfume, and certainly the forerunner of a whole new series of exotic scents.

We've been talking here only about one small corner of one science—biochemistry—and have, we think, uncovered a goodly number of challenging "new frontiers". When you pause to think that without exception, every scientific discipline can produce more of the same, the widespread ambition to shoot for Fringe-Benefitsville in good old General Everything Inc. looks just a little effete, doesn't it?

END

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# ANOTHER EARTH

BY DAVID EVANS & AL LANDAU

ILLUSTRATED BY MODEL

**Whatever it was that had happened in the test, it badly needed a good explanation.**

## I

**L**ieutenant Colonel Philip Snow, Flight Surgeon, USAF, and Test Director of the Aero-Medical Laboratory, was pacing the study floor in his quarters, asking himself for the dozenth time in the past half-hour: What had happened to Richardson during the test that afternoon?

He was no stranger to problems. He had been living with them for the past few years, and they had been problems the like of which had

never before challenged the ingenuity of man. For he was the head of a small community of men, scientists like himself — medical specialists of all kinds, psychologists, electronic technicians, physicists, pressure engineers, mathematicians and so on, each one of them an acknowledged expert in his particular field — who had worked together with one end in view: to send a man into space and bring him back safely to Earth again. To put it more excitingly: to enable man to take his first step toward the conquest of the universe.



The result of their labors to date was the Capsule, a bottle-shaped contraption which occupied the center of the laboratory floor.

It wasn't very big; just big enough to contain a man enclosed in a spacesuit, lying on a couch surrounded by instruments. But there wasn't a square inch of the capsule itself, the spacesuit, and the instruments which hadn't presented innumerable problems, the solving of which had been the result of endless research and theorizing and testing.

And in the same way, and almost to the same extent, there wasn't a square inch of the man, too, which didn't present problems, all of which must be solved before he could be sent into space.

And so, in test after test, one of the chosen astronauts had lain on the couch in the capsule, wired through his spacesuit to the dozens of dials and graph recorders on the consoles at which sat the watching specialists. It seemed there was nothing that could happen inside his body that they could not know about. They could read every flexing of his muscles, every heartbeat, every tiny shifting of temperature, every reaction of his blood and of his complicated nervous system. On the encephalograph, they could even detect reactions in the mass of gray matter which was his brain, any sign of tension there, and above all, any symptom of that strange phenomenon of which so little was yet known, and which was called the "breakoff" — the eerie sensation of complete isolation from Earth, the trancelike apathy and indifference

to survival that can attack not only high-flying pilots, but deep-sea divers, "the rapture of the depths," and sometimes it was accompanied by hallucinations in which strange forms and sounds were seen and heard.

**I**n the case of Lieutenant Hamilton Richardson, USN, there had been no mysterious troubles of this kind — in fact, no troubles of any kind at all. Aged thirty-six, he had been one of the first of the astronauts to volunteer. He had passed with flying colors every one of the grueling preliminary tests, mental and physical, and as far as could be judged by science, he had seemed to be the perfect specimen, mentally and physically, for the job. In the many tests made with him inside the capsule, nothing had gone wrong with him. There had been no signs of fatigue or failure of any kind. Had Snow been asked who, in his opinion, would be the first man — or, at any rate, the first American — to go into deep space, he would unhesitatingly have nominated Richardson. That is to say, until that afternoon when the thing had happened.

It had been a long test, one made for the first time. The object of it was to find out how the spacesuit, which was sealed off from the rest of the capsule, would stand up if something happened to the capsule itself. If, for instance, in its headlong flight through space, something struck it, something, maybe, no bigger than a small pebble. The odds were that in collision with even so

small a meteor, the shell of the capsule would be punctured, and within a minute or less, the atmospheric pressure inside it, fixed at about five thousand feet above sea level, would be reduced to zero. In other words, the capsule would become a vacuum in which nothing on Earth could live. The astronaut would then have to depend upon his spacesuit which, being pressurized, and being really a capsule within a capsule, with its own supply of oxygen, would be the one hope of survival.

That day, the test had consisted of the "puncturing" of the capsule. At a given signal, the pressure inside it had been reduced to that of fifty miles above the Earth's surface — in other words, to zero — by pumping out the air inside it. Richardson, the ace of the astronauts, had been chosen for this important test.

It had gone well. With the other scientists at their dials, Snow, seated at the big console of literally dozens of dials, the only one to be connected with Richardson by sound and speech, had given the signal. In a minute, the capsule had become a vacuum fifty miles above the surface of the Earth, outside its envelope of atmosphere.

Richardson's voice, reading his instruments, acknowledging Snow's instructions, answering his questions, had come through as normal and as calm as ever. Snow had felt a rising excitement as the test proceeded.

And then, without warning, the thing had happened. Richardson's

voice had stopped in the middle of an instrument reading, as if it had suddenly been cut off. A few seconds later, it had resumed. But when it did so, the voice was uttering a stream of unintelligible sounds in a low, lilting chant. Snow had listened incredulously for perhaps thirty seconds, at the end of which the sounds had suddenly ceased. Immediately, Snow had given instructions for the normal pressure inside the capsule to be restored. Almost as he had done so, Richardson's voice, once again normal, had resumed the reading of the instruments, taking up from where it had left off a minute before.

Acting on a sudden impulse, Snow had decided to say nothing over the wire to Richardson at the time. He had continued his conversation with the astronaut, telling him they were "bringing him down" and asking the usual questions until the test ended.

When, with the others, he had stood around watching while Richardson was helped out of his spacesuit, he had carefully watched their faces, looking for some sign of doubt or puzzlement. But he saw none. On the contrary, they all seemed triumphantly satisfied. Even Richardson had shown no sign that anything unusual had occurred. He had been his usual cheerful self, seeming not even slightly fatigued by the long test.

Being the only one who had been in contact with Richardson, Snow had suddenly found himself wondering if he really had heard those

sounds, if, maybe, he had been the victim of a hallucination. This was why he had said nothing about it at the time. He had just asked, as casually as he could, if any of them had anything they wanted to bring up immediately. They had shaken their heads, beaming their satisfaction, and he had dismissed them all, saying that in view of the length of the test they might all call it a day, and postponing the usual interrogation until the morrow. Then he had hurried back to his quarters, bringing with him the recording machine on which, as was the practice, his conversation with Richardson during the test had been recorded. Controlling his impatience with difficulty, he had rewound the tape on the machine and played it back, the tension rising within him as he listened.

There had been no hallucination. He heard Richardson's voice reading the instrument, the sudden cut-off in the middle of it, the short silence, then the voice uttering the strange sounds in a low-pitched chant with a gentle rise and fall to it. Three times he had played it back, and now it seemed to him that these were not just disconnected sounds. They appeared to have a cadence, a phrasing which indicated that they belonged to a language of some sort.

Snow was no linguist. He had less than a fair conversational knowledge of French and German, and a scholar's acquaintance with Latin, but he had travelled very extensively in his time and had been accustomed to hear many languages

spoken. He was quite sure he had never heard anything even remotely resembling these sounds. Certainly Richardson was no linguist either. He was third-generation American from British stock, and all he knew about languages was what he had learned in school.

Then where had those sounds come from? Were they a language, and if so, what did they mean? How could this happen to a man like Richardson without his knowing about it? Did it mean that here was, after all, something strange about him which the man himself might not even know about, and which might mean that he was not fit for the project? This last question worried Snow more than the others.

He went to the telephone on his desk and dialed the Richardson bungalow. The voice of Richardson's pretty wife answered him.

"Yes? Sandra Richardson here."

"Hello, Sandra. Phil Snow calling. Is Ham there?"

"He's in the shower singing his head off. Shall I get him?"

"No, it isn't important. I just wanted to ask him again if he feels all right after the test. I was rather a long one, and I wondered if he might feel tired, or..."

"Tired? He seems even more full of pep than usual. Was the test so very long, then?"

"Yes, it was. That's why I called and — just to tell him it was a success. I haven't checked all the reports yet, but it looks good. And you say he's as usual?"



"Yes. Why? There wasn't anything...?"

"No, no, nothing at all. Just as I said. I'll be seeing you."

He rang off, hoping that nothing he had said was now making Sandra Richardson suspicious, and resumed his pacing up and down the floor. Now another question came into his mind. The same test would be run several times again before final conclusions could be made. Should he wait for them to see if this thing happened again before starting anything with Richardson and his colleagues? But even as he asked himself the question, he knew the answer. If this never again happened in any future test, the fact would remain that it had happened once and could not be forgotten or brushed aside. It must be cleared up. Something had happened to Richardson's mind.

He decided to take Abe Franstein, his head psychologist, into his confidence. As he dialed Franstein's bungalow, he recalled with a sense of comfort that the brilliant little man was not only a world authority in his particular subject, but that he was said to be able to read, write, and converse in a staggering number of languages, some of them obscure Oriental dialects.

When Franstein answered the call, Snow asked him to drop in for coffee after dinner.

## II

"Well, I must say," said Franstein as they sipped their coffee, "yours is the first glum face

I've seen around here since that test this afternoon. Here we are, within sight of our goal at last, and look at you! Weren't you satisfied?"

"Before I go into that," Snow replied, "there are a few things I want to ask you."

"About the test?"

"In a way, but principally about Richardson. Have you ever had any reason to suspect that there is anything unusual about him?"

"In what way?"

"In your line."

Franstein produced an enormous meerschaum pipe and proceeded to fill it from an untidy plastic pouch as he replied.

"Yes, there is. One very unusual thing."

"There is?"

"He's got a very rare type of mind. It's probably perfectly balanced." The little man lit his pipe and continued: "The vast majority of us have some sort of imbalance, mentally. He hasn't. When I say imbalance, I mean the sort of thing that makes for genius, a phenomenal memory, an outstanding, effortless talent, amnesia, any form of insanity, or even something like a violent temper. Anything, so to speak, overemphasized."

"Is it physical? I mean, does it have anything to do with the size or weight of the brain, or anything like that?"

"You can take the brain of a genius and that of an ordinary person of average intelligence, and find them exactly the same in measurements and tissue condition. The popular conception of the genius as

a man with a bulging forehead is so much nonsense. Plenty of lunatics and retarded individuals have bulging foreheads."

"Then what does it have to do with?"

"Ah! That's the big question. Nobody knows. You can take two men, equal physically in every respect, equal in upbringing, education, health, and with the same sized brain. One of them might turn out to be a genius, the other an average individual, and nobody knows what makes the difference. Nobody knows what makes an infant prodigy, or what it is which enables a child of two to read easily, or a kid of five or six to play some instrument as if he'd been at it for years or compose symphonies, or master advanced mathematics. Same answer. Nobody knows. It's got nothing to do with heredity. So few geniuses have had genius offspring that they form exceptions to the rule. Again, why does an infant prodigy sometimes lose his gift or talent entirely as he grows older? We don't know. All we know is that the gift or talent is there, but where it comes from, or why it is in one brain and not in another, we don't know. But surely you don't have to have me to tell you all this, Phil? What's on your mind?"

"Listen to this," Snow said, and went to the tape recorder.

He rewound the tape to its beginning, depressed the switch marked *Play*, and presently they heard the two voices, Snow's and Richardson's.

"Now!" said Snow as the point on the tape approached.

There came the sudden stopping of Richardson's voice in the middle of an instrument reading, the short silence, then Richardson's voice chanting the strange sounds. Franstein took his pipe from between his teeth and his mouth fell open as he listened. The sounds ceased and Richardson's voice resumed the instrument reading at the point at which it had left off.

"That's all," said Snow, and switched off the machine.

Franstein put his pipe back into his mouth. "Is this the recording of this afternoon's test?"

"Yes. What d'you make of it?"

"Let's hear it again."

Snow played back the recording a second and a third time, and then said: "Well?"

Franstein went to the table and helped himself to more coffee before replying. "It's a new one on me," he said presently. "I've got about a thousand recordings of languages and dialects from all over the world, and not one of them is anything like that."

"You think it is a language, not just sounds?"

"That we've got to find out, but I'd say, offhand, it's a primitive form of a language of some sort."

"Then how the devil does it come out of a man like Richardson who's never spoken anything but English — nor his forebears, for that matter?"

Franstein shrugged his shoulders. "How does great music come out of a child of six, and so on? Same

question, same answer. Nobody knows. Have you spoken to Richardson about it?"

"No. I rang his bungalow just before dinner and spoke to Sandra. Richardson was in the shower, and she said he was feeling fine. I didn't tell her about this, of course."

"Then it couldn't have been some sort of mediumistic trance. They usually feel the effects of that sooner or later."

"You're not suggesting spiritualism, are you?" and in Snow's voice was a note of amusement.

"Don't laugh at it. If it's never been proved, neither has it been disproved."

And that touched off a discussion which went on for two hours. It covered many theories, many beliefs and faiths, all of which Franstein spoke learnedly and with great respect. He talked of reincarnation, spiritualism, the mystery of time, and in this last connection, he paused in the middle of what he was saying and asked: "If this —" and he waved a hand toward the machine — "is a language, and I'm pretty sure it is, how can we be sure that it is a language of the past? Why shouldn't it be one belonging to the future? All languages change with time. We'd probably find it very difficult to understand the English spoken ten centuries ago. What if this is the English that is going to be spoken a thousand years hence?"

To all of which Snow listened with the skepticism of the exact scientist, and Franstein, quick

to notice this, went on: "You think yourselves clever, you exact scientists, and so you are. You can do a lot of things. You can split the atom, measure the stars, estimate the life expectancy of the sun; you have conquered distance, you have surrounded us with miracles like radio, television, invisible rays and all the rest of it. Presently, you will conquer space and colonize the planets, and so it will go until it will seem to you that you will know everything. And you will too, except for one thing — the one final mystery, the last secret of the universe — MAN. And that means you and me, and any human being from a bum of Skid Row to the President. Man is the eternal unknown quantity, and you've never had a more clear demonstration of this than what happened to Richardson this afternoon. Oh, I know what you've found out. You know all about man, his insides, his glands, muscles, nerves, brain, and so on. You can even display him on a table as a bucket of water and little piles of salts and minerals, and you can point to them and say: 'That is what man is made of.' Only the other day I was reading about some scientist who thinks he's on the verge of producing a cell of life in a test tube. You may even do that, and you may find out one day how to put the water and the salts and the minerals together again and make a man. I've always thought the Frankenstein story was a bit of inspired prophecy. But you still won't be able to explain why great music can come from a child of six, or

what happened to Richardson this afternoon." He lit his big pipe, which had gone out, and through the puffs asked: "And what do you propose to do about Richardson?"

"Run the test again tomorrow with him and see if this happens again, and then decide," replied Snow.

"But even if nothing happens tomorrow, you can't ignore this."

"That's true. We've got to get to the bottom of it, and that's where you come in. You're the expert on this sort of thing."

Franstein looked at his watch. "Let's sleep on it and see what happens tomorrow, eh?"

He was on his way to the door when the telephone bell rang. Snow picked up the receiver, and he heard him say: "Sandra? . . . *What?* . . . I'll be right over. I've got Abe Franstein with me. I'll bring him with me. Don't worry dear."

Snow hung up. "Something's happened to Richardson," he said. "He's gone into a deep sleep and won't wake, and he's talking to himself in some funny language. Let's go."

Snow rummaged in a drawer of his desk and found a stethoscope.

### III

Five minutes later, they were standing with pretty Sandra Richardson at the foot of the bed on which Richardson, clad in his pajamas, sprawled on his back. He was in a deep sleep and from his mouth came a low chanting. Franstein and Snow glanced at each other as they recognized the sounds.

Snow tried to wake the astronaut, gently at first, then less so, but it had no effect. He used his stethoscope on heart and lungs, drew back an eyelid and examined the eye beneath, felt the brow.

"When did this happen?" he asked the anxious Sandra.

"About fifteen, maybe twenty minutes ago," she replied. "We came in here and undressed and I used the bathroom first. When I came out, I found him like this."

"How's he been all the evening?"

"Fine, just as I told you when you rang. Tom and Betty Moreland came for dinner and we played canasta. Is he all right?"

"As far as I can see, yes. Heart, lungs, eyes all right, no fever. I guess we'll just have to wait till he wakes."

They went into the sitting room and Sandra left them to make coffee.

"He's living through something," Franstein said. "Pity you haven't got the recorder here."

"I thought the same. I'll get it."

Snow left and Franstein wandered back into the bedroom and leaned over Richardson. Now he was sure this was a language and that the sleeper was conversing with someone in his sleep. The expressions changed on Richardson's face rapidly as they do on the face of anyone during a conversation. At one moment he laughed as he said something, then became serious as he said something else.

Sandra came into the bedroom and joined Franstein at the bedside. "He's never been like this before," she said worriedly.

"Doesn't he ever talk in his sleep?"

"He never even snores. When we were first married, he slept so quietly that I thought he'd stopped breathing, but I'd only have to touch him or whisper to him and he'd wake in an instant. What does this mean?"

"We'll find out, never fear."

They went back into the sitting room as they heard Snow return. He was carrying the recording machine, and seeing the question in Sandra's eyes as she saw it, he said reassuringly: "We're going to make a recording of what Ham's saying. We'll soon find out what this is all about."

He busied himself changing the tapes on the machine, taking the new one from his pocket, and fumbled the job in his haste. He had plugged in the microphone and was unwinding the long chord when they heard Richardson's voice call out from the next room: "Sandra!" and a moment later, Richardson appeared in the open doorway, staring at them in astonishment.

"Abe! Phil! When did you come here?"

"About half an hour ago," Snow replied.

Richardson passed a hand over his eyes. "I must have fallen asleep," he said.

"You did, darling, and I couldn't wake you," Sandra said. "So I called Phil."

"You couldn't wake me?"

"No, and you were talking away in your sleep. You had me worried."

"Why?"

Sandra, at a loss, looked at Franstein and he answered for her. "You were dreaming, Ham," he said.

Richardson thought for a moment before replying. "Now that you mention it, I was. But what's so extraordinary about that? Why are you all looking at me as if I'd suddenly grown horns?"

"D'you remember what the dream was about?" Franstein asked.

"Vaguely. Yes, I do. It was just a dream. Why is it so important?" He sat down in a deep chair and looked around at them. "What is all this?" he said. "I fall asleep for half an hour, have a silly dream, and wake up to find you here looking as if something big has happened."

"Something has happened, Ham," said Franstein. "Something we don't understand." Richardson started up in his seat. "Take it easy, there's nothing to worry about. We'll get to the bottom of it." He turned to Snow. "I think I know the way out of this. Play the recording for Ham to hear."

Snow hesitated for a moment. "All right, if you think so," he said, and busied himself with the recorder, replacing the used tape on the spool.

Sandra perched herself on the arm of her husband's chair and put an arm about his shoulders. They waited while Snow linked up the end of the tape to the other spool. He pressed the *Play* switch, and presently there came the voices of Snow and Richardson.

"That's this afternoon's test," Richardson said.

Franstein nodded, and they continued to listen. Then came the chanting sounds, and when he heard them, Richardson's expression changed to one of amazement. Snow switched off the machine.

"What was that?" Richardson asked.

"We hoped you'd be able to tell us," Franstein replied.

"I? What should I know about it?"

"That was your voice, Ham. Nobody's touched the tape, and I heard it during the test."

"But this is crazy. How could I make a noise like that without knowing anything about it? Why, I remember every second of that test, and I know I didn't do anything like that." He jumped to his feet and began to walk up and down the room, his hands pressed to his head.

"I said take it easy, Ham," Franstein said.

Richardson pulled up short in his pacing and turned to the little man. "How can I take it easy? I spend six hours in the capsule in a difficult test, remember every bit of it, come out of it feeling not even tired, and now you tell me that in the middle of it I had some sort of a blackout and made funny noises. That can only mean that there's something wrong with me, and you don't have to tell me what that means. I don't qualify, after all. Is that what you came here to tell me?"

Franstein's voice was as quiet as before. "It doesn't mean anything of the sort. If there'd been a blackout or if something else had

happened to your brain, it would have shown up on the encephalograph, and nothing showed. I didn't know about this until I heard the recording, and we weren't going to say anything about it until we'd run the test a second time. Then Sandra called us to say she couldn't wake you and that you were talking in your sleep, and we came over to find you in a sleep as deep as a coma and obviously dreaming."

"And what's that got to do with the test?"

"You were making the same sort of sounds in your sleep as you did in the test, and I'm sure they add up to a language of some sort."

"What? You mean to say that was a language? For Pete's sake, I've never spoken anything but English all my life. I can't."

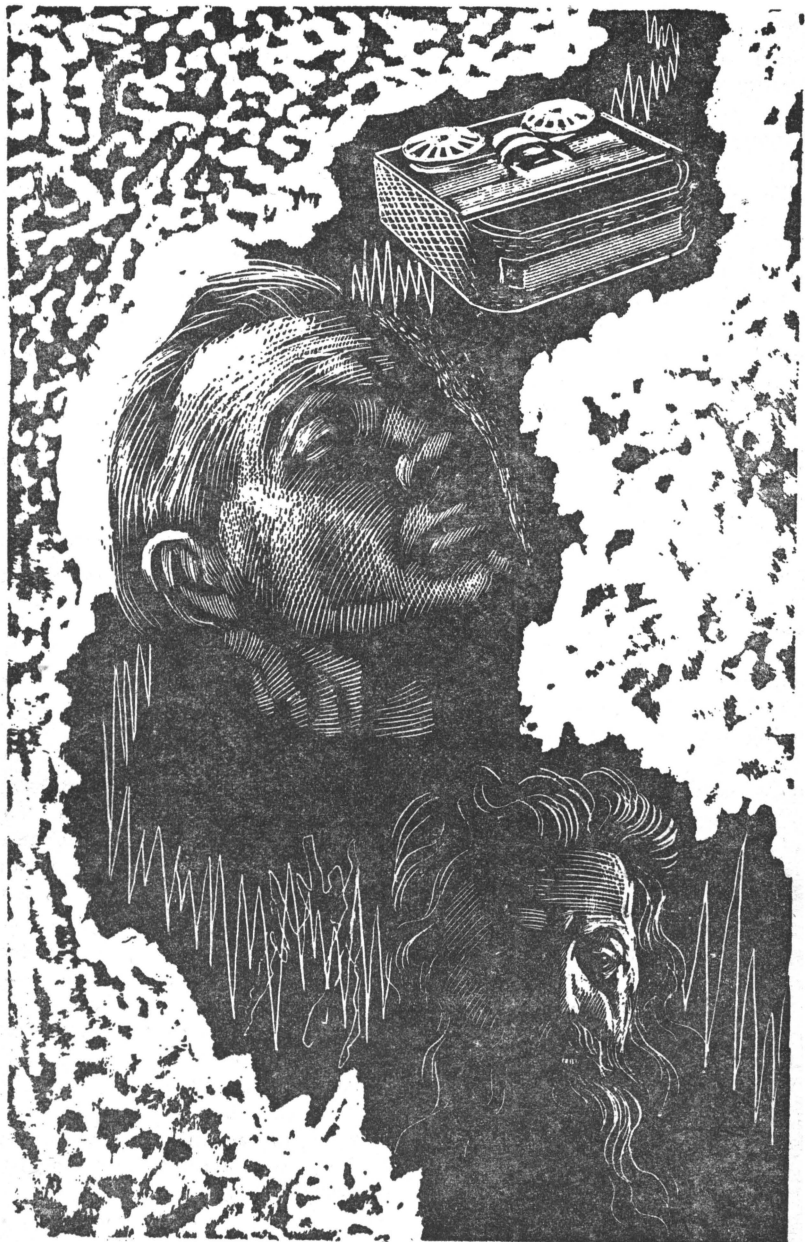
"We know that."

Richardson turned to his wife. "Is this true?" he asked her tensely. "Was I making noises like that in my sleep?"

She nodded miserably.

He threw up his hands. "Okay," he said, "you're three to one. The ace astronaut turns out to be some sort of nut who talks monkey language in his sleep, and when he's awake too, without knowing it." He went to the deep chair and slumped down into it. "What do we do now? Go into analysis again? Start all over?" He laughed shortly and bitterly, and added: "Or do I resign from the project?"

"Listen, Ham," Franstein said. "We're up against something new, something I don't understand, and whatever happens, we've got to try



and find out what it is, for your sake as well as for the project's. Let's relax and start with the dream. Tell us what you remember of it."

Richardson took time to calm down before he spoke. "It was just a dream," he began presently. "There was a big spaceship and a lot of people standing about."

"Where was this?"

"Where? I don't know. On Earth, I suppose. Open place, you know, only . . ." He paused before going on. "Only it wasn't standing up on end like a rocket. It was lying on its side, and we were loading it."

"Who were 'we'?"

"My father and my two brothers. And that shows how silly the dream was because I haven't got any brothers or father. My father in the dream wasn't anything like my own. He was just an old man, and he told us where to stow the crates."

"What was in the crates?"

"In the crates?" Richardson looked up. "Let me see now. Oh, yes, they were full of the seeds of plants and eggs and sperm of animals — sort of the beginnings of things."

"And where was the ship going to?"

Again, Richardson concentrated before replying. "To another Earth," he said. "That's right. The old guy, our father, said that this one was going to be destroyed by some disaster, and the people standing about were laughing and jeering and saying the old man was crazy."

"Do you know what sort of disaster was going to happen?" asked Franstein.

Richardson looked at him and suddenly a smile formed on his face. "Now I know where that dream came from," he said. "Remember that book *On The Beach*? The story about how everyone on Earth was wiped out by nuclear fallout? That's it! I remember wondering when I read it if some of us would be able to go to another planet before anything like that happened here, and I remember thinking, too, that we'd probably take things like seeds and so on with us, and even the ova of animals, and that by then we'd probably know how to preserve them — freeze them or something of the sort."

"We can do that now," Snow said.

"Well, there it is, then," said Richardson, smiling again. "There's the explanation."

"It explains the dream all right," agreed Snow, "but what about the sounds? Particularly those you made in the capsule?"

"Lord, yes!" said Richardson, and the smile left his face. "I'd forgotten about those. That puts us back to where we came in, doesn't it?"

"I'm not so sure," said Franstein. He got to his feet and, in his turn, prowled up and down the room, deep in thought. The others waited for him to go on, and presently he turned to them, a glint of excitement in his eyes. "I think we're onto something," he said. "Those sounds are obviously a part of your dream, Ham, including the ones you made in the capsule, and only you know what they mean."

"But I don't even remember making them!"



"No, but your mind does. If we can unlock your mind, we can find the secret, and there's a way in which it can be done. Hypnosis."

"Hypnosis?" The others spoke at once.

Franstein nodded. "I've got to put you into a hypnotic trance, Ham, and we'll play that recording back to you and I think — only think, remember — that you're going to be able to tell us what they mean. Any objection, Phil?"

"You're the expert."

"How about you, Ham?"

"I'll do anything to clear up this business." He jumped to his feet. "Let's get on with it now. What do I do? Shall I lie down on the sofa?"

"I didn't know you are a hypnotist too, Abe," said Snow. "I'm not surprised, though. I might have known."

Franstein took no notice of this. He stepped up to Richardson and looked up at him, holding out one hand which the other, wonderingly, took. "The big thing is confidence, Ham," he said, looking up earnestly. "Complete confidence. You have that in me?"

Richardson looked down on the little man and nodded his head. "Sure," he said. "I've always had that in you, Abe."

Franstein continued to hold the other's hand. "That's fine," he said. "All you have to do is to relax and trust in me. Just relax completely. Just let yourself go — eh?"

Richardson's head nodded again, and for a moment Franstein, still holding the hand continued to

look up into Richardson's face above him. Then he released the hand and said: "Now you can lie down on the couch if you like."

Richardson went to the couch and stretched himself out on it.

"I've heard a lot about this," Sandra said, "but I've never seen it done."

Franstein smiled at her. "You've just seen it done, my dear," he said, and as she stared back at him in astonishment, added: "He's a very good subject. Now, when that machine is ready. . ."

"If I'm right in what I think," Franstein said a few minutes later to Snow, who stood by the table on which now rested the recorder, and to Sandra who was at the head of the couch looking down on her husband who lay there, his eyes half-closed, "you're going to hear something very surprising. Please don't make a sound."

They nodded their heads, and Franstein seated himself on the edge of the couch, leaned over Richardson, and spoke softly: "You hear me, Ham?"

"Yes, I hear you."

"Then listen." Franstein turned and nodded to Snow. The machine was switched on and there came, clearly, the chanted sounds of the test. They finished and the machine was switched off. "You heard, Ham?"

"Yes, I heard."

"You made those sounds that we just heard."

"Yes."

"Can you repeat them?"

"Yes."

"Then do so."

And now the strange low chanting sounds streamed from Richardson's lips. Sandra put her hands to her mouth to stifle a gasp. Snow stepped to her side, his face tense.

The sounds ceased and Franstein, his eyes alight with excitement, said softly: "Tell us, to whom are you speaking?"

"To my sons."

"Tell us in English what you are saying to them."

There was a silence. Franstein repeated his command, and Richardson spoke again, this time in his normal voice.

*"And God saw the earth, and behold it was corrupt; for all flesh had corrupted their way upon the earth. And God said to Noah, I have determined to make an end of all flesh; for the earth is filled with violence through them; behold I will destroy them with the earth. Make yourself an ark. . . and you shall come into the ark, you, your sons, your wife, and your sons' wives with you. And of every living thing of all flesh you shall bring two of every sort into the ark to keep them alive with you, they shall be male and female. . . Also take with you every sort of food that is eaten and*

*store it up. . . And Noah did all that the Lord had commanded him. . ."*

The voice tapered off into silence, and Sandra, her eyes wide with fear and amazement whispered: "That's the story of the Flood and he told it as if he was there. What does it mean?"

Franstein silenced her with a gesture and bent over Richardson whose eyes were closed. "Ham," he said, a note of insistence in his voice, "you hear me? Answer!"

The eyes half opened. "Yes, I hear you."

"Tell me, where did you go in the ark?"

"To a place of many waters. . . many waters, and we rested on them until they went down." Now the voice was fading.

"Where was it? Tell me, where was it?"

The reply came in almost a whisper. "I don't know. It was another earth. . . another earth. . ."

The eyes closed again, the breathing became deeper, but the lips still moved, and through them, barely heard in the tense silence, came again the low, chanting sounds. Then they, too, died away to silence, the lips ceased to move, and Richardson slept. END

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# TURNING POINT

BY POUL ANDERSON

ILLUSTRATED BY PEDERSEN JR.

**Their color was odd, their  
heads queerly shaped, but  
they were human—at least!**

I

“Please, mister, could I have a cracker for my oontatherium?”

Not exactly the words you would expect at an instant when history changes course and the universe can never again be what it was. *The die is cast; In this sign conquer; It is not fit that you should sit here any longer; We hold these truths*

*to be selfevident; The Italian navigator has landed in the New World; Dear God, the thing works! — no man with any imagination can recall those, or others like them, and not have a coldness run along his spine. But as for what little Mierna first said to us, on that island half a thousand light-years from home. . .*

The star is catalogued AGC 4256836, a K2 dwarf in Cassiopeia. Our ship was making a standard

preliminary survey of that region, and had come upon mystery enough — how easily Earthsiders forget that every planet is a complete world! — but nothing extraordinary in this fantastic cosmos. The Traders had noted places that seemed worth further investigation. So had the Federals. The lists were not quite identical.

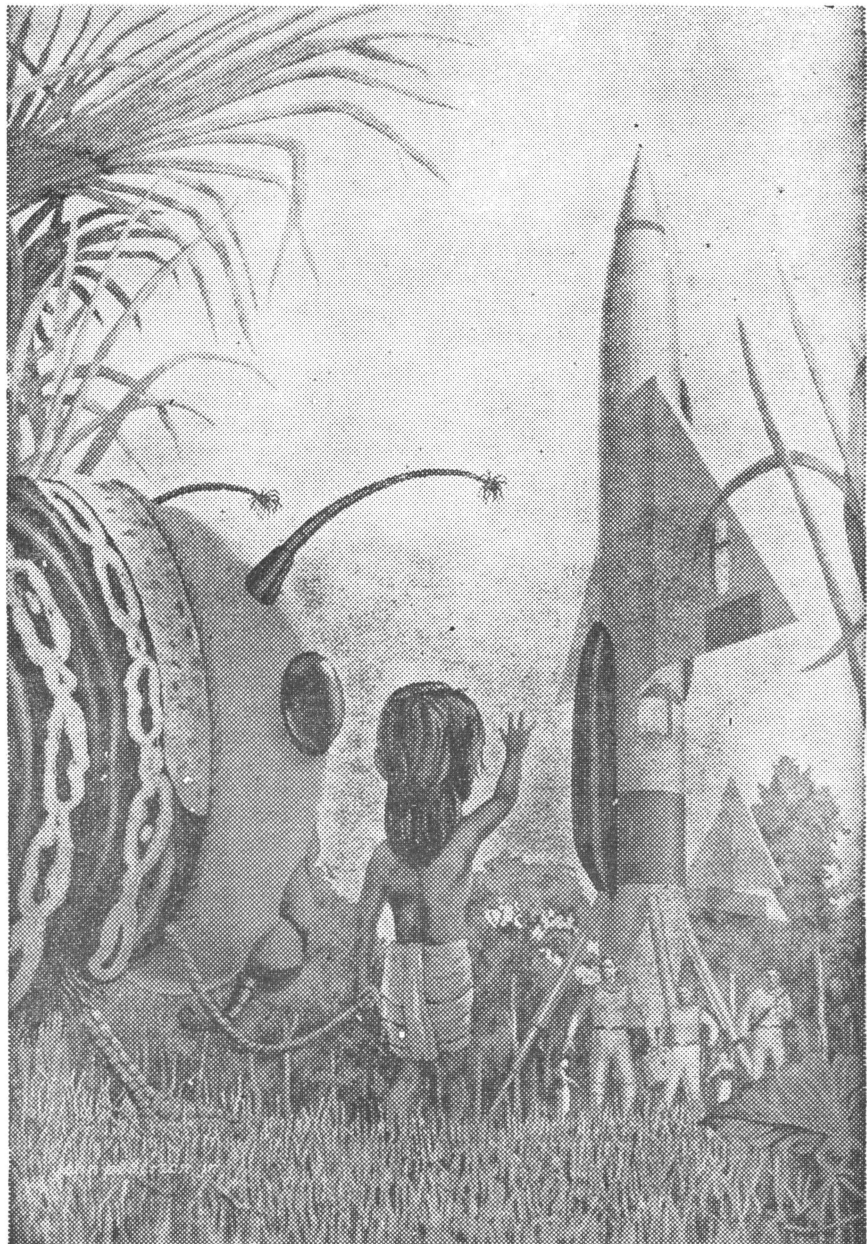
After a year, vessel and men were equally jaded. We needed a set-down, to spend a few weeks re-fitting and recuperating before the long swing homeward. There is an art to finding such a spot. You visit whatever nearby suns look suitable. If you come on a planet whose gross physical characteristics are terrestroid, you check the biological details — very, very carefully, but since the operation is largely automated it goes pretty fast — and make contact with the autochthones, if any. Primitives are preferred. That's not because of military danger, as some think. The Federals insist that the natives have no objection to strangers camping on their land, while the Traders don't see how anyone, civilized or not, that hasn't discovered atomic energy can be a menace. It's only that primitives are less apt to ask complicated questions and otherwise make a nuisance of themselves. Spacemen rejoice that worlds with machine civilizations are rare.

Well, Joril looked ideal. The second planet of that sun, with more water than Earth, it offered a mild climate everywhere. The biochemistry was so like our own that we could eat native foods, and there

didn't seem to be any germs that UX-2 couldn't handle. Seas, forests, meadows made us feel right at home, yet the countless differences from Earth lent a fairyland glamor. The indigenes were savages. That is, they depended on hunting, fishing and gathering for their whole food supply. So we assumed there were thousands of little cultures and picked the one that appeared most advanced: not that aerial observation indicated much difference.

Those people lived in neat, exquisitely decorated villages along the western seaboard of the largest continent, with woods and hill behind them. Contact went smoothly. Our semanticians had a good deal of trouble with the language, but the villagers started picking up English right away. Their hospitality was lavish whenever we called on them, but they stayed out of our camp except for the conducted tours we gave and other such invitations. With one vast, happy sigh, we settled down.

**B**ut from the first there were certain disturbing symptoms. Granted they had human-like throats and palates, we hadn't expected the autochthones to speak flawless English within a couple of weeks. Every one of them. Obviously they could have learned still faster if we'd taught them systematically. We followed the usual practice and christened the planet "Joril" after what we thought was the local word for "earth" — and then found that "Joril" meant "earth," capitalized, and the people had an excel-



lent heliocentric astronomy. Though they were too polite to press themselves on us, they weren't merely accepting us as something inexplicable; curiosity was afire in them, and given half a chance they *did* ask the most complicated questions.

Once the initial rush of establishing ourselves was over and we had time to think, it became plain that we'd stumbled on something worth much further study. First we needed to check on some other areas and make sure this Dannicar culture wasn't a freak. After all, the neolithic Mayas had been good astronomers; the ferro-agricultural Greeks had developed a high and sophisticated philosophy. Looking over the maps we'd made from orbit, Captain Barlow chose a large island about 700 kilometers due west. A gravboat was outfitted and five men went aboard.

Pilot: Jacques Lejeune. Engineer: me. Federal militechnic representative: Commander Ernest Baldinger, Space Force of the Solar Peace Authority. Federal civil government representative: Walter Vaughan. Trader agent: Don Haraszthy. He and Vaughan were the principals, but the rest of us were skilled in the multiple jobs of planetography. You have to be, on a foreign world months from home or help.

We made the aerial crossing soon after sunrise, so we'd have a full 18 hours of daylight. I remember how beautiful the ocean looked below us, like one great bowl of metal, silver where the sun struck, cobalt and green copper beyond. Then the island came over the world's

edge, darkly forested, crimson-splashed by stands of gigantic fire-blossoms. Lejeune picked out an open spot in the woods, about two kilometers from a village that stood on a wide bay, and landed us with a whoop and a holler. He's a fire-ball pilot.

"Well —" Haraszthy rose to his full two meters and stretched till his joints cracked. He was burly to match that height, and his hook-nosed face carried the marks of old battles. Most Traders are tough, pragmatic extroverts; they have to be, just as Federal civils have to be the opposite. It makes for conflict, though. "Let's hike."

"Not so fast," Vaughan said, a thin young man with an intense gaze. "That tribe has never seen or heard of our kind. If they noticed us land, they may be in a panic."

"So we go jolly them out of it," Haraszthy shrugged.

"Our whole party? Are you serious?" Commander Baldinger asked. He reflected a bit. "Yes, I suppose you are. But I'm responsible now. Lejeune and Cathcart, stand by here. We others will proceed to the village."

"Just like that?" Vaughan protested.

"You know a better way?" Haraszthy answered.

"As a matter of fact —" But nobody listened. The government operates on some elaborate theories, and Vaughan was still too new in Survey to understand how often theory has to give way. We were impatient to go outside, and I regretted not being sent along to

town. Of course, someone had to stay, ready to pull out our emissaries if serious trouble developed.

We emerged into long grass and a breeze that smelled of nothing so much as cinnamon. Trees rustled overhead, against a deep blue sky; the reddish sunlight spilled across purple wild-flowers and bronze-colored insect wings. I drew a savoring breath before going around with Lejeune to make sure our landing gear was properly set. We were all lightly clad. Baldinger carried a blast rifle and Haraszthy a radiocom big enough to contact Dannicar, but both seemed ludicrously inappropriate.

"I envy the Jorillians," I remarked.

"In a way," Lejeune said. "Though perhaps their environment is too good. What stimulus have they to advance further?"

"Why should they want to?"

"They don't, consciously, my old. But every intelligent race is descended from animals that once had a hard struggle to survive, so hard they were forced to evolve brains. There is an instinct for adventure, even in the gentlest herbivorous beings, and sooner or later it must find expression —"

*"Holy jumping Judas!"*

Haraszthy's yell brought Lejeune and me bounding back to that side of the ship. For a moment my reason wobbled. Then I decided the sight wasn't really so strange ... here.

A girl was emerging from the woods. She was about the equivalent

of a Terrestrial five-year-old, I estimated. Less than a meter tall (the Jorillians average more short and slender than we), she had the big head of her species to make her look still more elfin. Long blondish hair, round ears, delicate features that were quite humanoid except for the high forehead and huge violet eyes, added to the charm. Her blue-skinned body was clad only in a white loincloth. One four-fingered hand waved cheerily at us. The other carried a leash. And at the opposite end of that leash was a grasshopper the size of a hippopotamus.

No, not a grasshopper, I saw as she danced toward us. The head looked similar, but the four walking legs were short and stout, the several others mere boneless appendages. The gaudy hide was skin, not chitin. I saw that the creature breathed with lungs, too. Nonetheless it was a startling monster; and it drooled.

"Insular genus," Vaughan said. "Undoubtedly harmless, or she wouldn't — But a child, coming so casually!"

Baldinger grinned and lowered his rifle. "What the hell," he said, "to a kid everything's equally wonderful. This is a break for our side. She'll give us a good recommendation to her elders."

The little girl (damn it, I will call her that) walked to within a meter of Haraszthy, turned those big eyes up and up till they met his piratical face, and trilled with a smile:

"Please, mister, could I have a cracker for my oontatherium?"

I don't quite remember the next few minutes. They were confused. Eventually we found ourselves, the whole five, walking down a sun-speckled woodland path. The girl skipped beside us, chattering like a xylophone. The monster lumbered behind, chewing messily on what we had given it. When the light struck those compound eyes I thought of a jewel chest.

"My name is Mierna," the girl said, "and my father makes things out of wood, I don't know what that's called in English, please tell me, oh, carpentry, thank you, you're a nice man. My father thinks a lot. My mother makes songs. They are very pretty songs. She sent me out to get some sweet grass for a borning couch, because her assistant wife is going to born a baby soon, but when I saw you come down just the way Pengwil told, I knew I should say hello instead and take you to Taori. That's our village. We have *twenty-five houses*. And sheds and a Thinking Hall that's bigger than the one in Riru. Pengwil said crackers are awful tasty. Could I have one too?"

Haraszthy obliged in a numb fashion. Vaughan shook himself and fairly snapped, "How do you know our language?"

"Why, everybody does in Taori. Since Pengwil came and taught us. That was three days ago. We've been hoping and hoping you would come. They'll be so jealous in Riru! But we'll let them visit if they ask us nicely."

"Pengwil . . . a Dannicarian name, all right," Baldinger muttered. "But they never heard of this island till I showed them our map. And they couldn't cross the ocean in those dugouts of theirs! It's against the prevailing winds, and square sails—"

"Oh, Pengwil's boat can sail right into the wind," Mierna laughed. "I saw him myself. He took everybody for rides, and now my father's making a boat like that too, only better."

"Why did Pengwil come here?" Vaughan asked.

"To see what there was. He's from a place called Folat. They have such funny names in Dannicar, and they dress funny too, don't they mister?"

"Folat . . . yes, I remember, a community a ways north of our camp," Baldinger said.

"But savages don't strike off into an unknown ocean for, for curiosity," I stammered.

"These do," Haraszthy grunted. I could almost see the relays clicking in his blocky head. There were tremendous commercial possibilities here, foods and textiles and especially the dazzling artwork. In exchange —

"No!" Vaughan exclaimed. "I know what you're thinking, Trader Haraszthy, and you are not going to bring machines here."

The big man bridled. "Says who?"

"Says me, by virtue of the authority vested in me. And I'm sure the Council will confirm my decision." In that soft air Vaughan was sweating. "We don't dare!"

"What's a Council?" Mierna asked. A shade of trouble crossed her face.



She edged close to the bulk of her animal.

In spite of everything, I had to pat her head and murmur, "Nothing you need worry about, sweetheart." To get her mind, and my own, off vague fears: "Why do you call this fellow an oontatherium? That can't be his real name."

"Oh, no." She forgot her worries at once. "He's a *yao* and his real name is, well, it means Big-Foot-Buggy - Eyes - Top - Man - Underneath-And-Over. That's what I named him. He's mine and he's lovely." She tugged at an antenna. The monster actually purred. "But Pengwil told us about something called an *oont* you have at your home, that's hairy and scary and carries things and drools like a *yao*, so I thought that would be a nice English name. Isn't it?"

"Very," I said weakly.

"What is this *oont* business?" Vaughan demanded.

Haraszthy ran a hand through his hair. "Well," he said, "you know I like Kipling, and I read some of his poems to some natives one night at a party. The one about the *oont*, the camel, yeah, I guess that must have been among 'em. They sure enjoyed Kipling."

"And had the poem letter perfect after one hearing, and passed it unchanged up and down the coast, and now it's crossed the sea and taken hold," Vaughan choked.

"Who explained that *therium* is a root meaning 'mammal'?" I asked. Nobody knew, but doubtless one of our naturalists had casually men-

tioned it. So five-year-old Mierna had gotten the term from a wandering sailor and applied it with absolute correctness: never mind feelers and insectoidal eyes, the *yao* was a true mammal.

After a while we emerged in a cleared strip fronting on the bay. Against its glitter stood the village, peak-roofed houses of wood and thatch, a different style from Dancanicar's but every bit as pleasant and well-kept. Outrigger canoes were drawn up on the beach, where fishnets hung to dry. Anchored some ways beyond was another boat. The curved, gaily painted hull, twin steering oars, mat sails and leather tackle, were like nothing on our poor over-mechanized Earth; but she was sloop rigged, and evidently a deep keel made it impossible to run her ashore.

"I thought so," Baldinger said in an uneven voice. "Pengwil went ahead and invented tacking. That's an efficient design. He could cross the water in a week or less."

"He invented navigation too," Lejeune pointed out.

The villagers, who had not seen us descend, now dropped their occupations — cooking, cleaning, weaving, potting, the numberless jobs of the primitive — to come on the run. All were dressed as simply as Mierna. Despite large heads, which were not grotesquely big, odd hands and ears, blue skin, the women were good to look on: too good, after a year's celibacy. The beardless, long-haired men were likewise handsome, and both sexes were graceful as cats.

They didn't shout or crowd. Only one exuberant horn sounded, down on the beach. Mierna ran to a grizzled male, seized him by the hand, and tugged him forward. "This is my father," she crowed. "Isn't he wonderful? And he thinks a lot. The name he's using right now, that's Sarato. I liked his last name better."

"One wearies of the same word," Sarato laughed. "Welcome, Earth-folk. You do us great . . . *lula* . . . pardon, I lack the term. You raise us high by this visit." His handshake — Pengwil must have told him about that custom — was hard, and his eyes met ours respectfully but unawed.

The Dannicarian communities turned what little government they needed over to specialists, chosen on the basis of some tests we hadn't yet comprehended. But these people didn't seem to draw even that much class distinction. We were introduced to everybody by occupation, hunter, fisher, musician, prophet (I think that is what *nonalo* means), and so on. There was the same absence of taboo here as we had noticed in Dannicar, but an equally elaborate code of manners — which they realized we could not be expected to observe.

Pengwil, a strongly built youth in the tunic of his own culture greeted us. It was no coincidence that he'd arrived at the same spot as we. Taori lay almost exactly west of his home area, and had the best anchorage on these shores. He was bursting with desire to show

off his boat. I obliged him, swimming out and climbing aboard. "A fine job," I said with entire honesty. "I have a suggestion, though. For sailing along coasts, you don't need a fixed keel." I described a center-board. "Then you can ground her."

"Yes, Sarato thought of that after he had seen my work. He has started one of such pattern already. He wants to do away with the steering oars also, and have a flat piece of wood turn at the back end. Is that right?"

"Yes," I said after a strangled moment.

"It seemed so to me." Pengwil smiled. "The push of water can be split in two parts like the push of air. Your Mister Ishihara told me about splitting and rejoining forces. That was what gave me the idea for a boat like this."

We swam back and put our clothes on again. The village was abustle, preparing a feast for us. Pengwil joined them. I stayed behind, walking the beach, too restless to sit. Staring out across the waters and breathing an ocean smell that was almost like Earth's, I thought strange thoughts. They were broken off by Mierna. She skipped toward me, dragging a small wagon.

"Hello, Mister Cathcart!" she cried. "I have to gather seaweed for flavor. Do you want to help me?"

"Sure," I said.

She made a face. "I'm glad to be here. Father and Kuaya and a lot of the others, they're asking Mister Lejeune about *ma-the-matics*. I'm not old enough to like functions. I'd like to hear Mister Haraszthy

tell about Earth, but he's talking alone in a house with his friends. Will you tell me about Earth? Can I go there someday?"

I mumbled something. She began to bundle leafy strands that had washed ashore. "I didn't used to like this job," she said. "I had to go back and forth so many times. They wouldn't let me use my oontatherium because he gets buckety when his feet are wet. I told them I could make him shoes, but they said no. Now it's fun anyway, with this, this, what do you call it?"

"A wagon. You haven't had such a thing before?"

"No, never, just drags with runners. Pengwil told us about wheels. He saw the Earthfolk use them. Carpenter Huanna started putting wheels on the drags right away. We only have a few so far."

I looked at the device, carved in wood and bone, a frieze of processional figures around the sides. The wheels weren't simply attached to axles. With permission, I took the cover off one and saw a ring of hard-shelled spherical nuts. As far as I knew, nobody had explained ball bearings to Pengwil.

"I've been thinking and thinking," Mierna said. "If we made a great big wagon, then an oontatherium could pull it, couldn't he? Only we have to have a good way for tying the oontatherium on, so he doesn't get hurt and you can guide him. I've thought . . . thought of a real nice way." She stooped and drew lines in the sand.

The harness would work.

With a full load, we went back

among the houses. I lost myself in admiration of the carved pillars and panels. Sarato emerged from Lejeune's discussion of group theory (the natives had already developed that, so the talk was a mere comparison of approaches) to show me his obsidian-edged tools. He said the coast dwellers traded inland for the material, and spoke of getting steel from us. Or might we be so incredibly kind as to explain how metal was taken from the earth?

The banquet, music, dances, pantomimes, conversation, all was as gorgeous as expected, or more so. I trust the happy-pills we humans took kept us from making too grim an impression. But we disappointed our hosts by declining an offer to spend the night. They guided us back by torch-glow, singing the whole distance, on a twelve-tone scale with some of the damndest harmony I have ever come across. When we reached the boat they turned homeward again. Mierna was at the tail of the parade. She stood a long time in the coppery light of the single great moon, waving to us.

### III

Baldinger set out glasses and a bottle of Irish. "Okay," he said. "Those pills have worn off by now, but we need an equivalent."

"Hoo, yes!" Haraszthy grabbed the bottle.

"I wonder what their wine will be like, when they invent that?" Lejeune mused.

"Be still!" Vaughan said. "They aren't going to."

We stared at him. He sat shivering with tension, under the cold fluoroluminance in that bleak little cabin.

"What the devil do you mean?" Haraszthy demanded at last. "If they can make wine half as well as they do everything else, it'll go for ten credits a liter on Earth."

"Don't you understand?" Vaughan cried. "We can't deal with them. We have to get off this planet and — Oh, God, why did we have to find the damned thing?" He groped for a glass.

"Well," I sighed, "we always knew, those of us who bothered to think about the question, that someday we were bound to meet a race like this. Man ... what is man that Thou art mindful of him?"

"This is probably an older star than Sol," Baldinger nodded. "Less massive, so it stays longer on the main sequence."

"There needn't be much difference in planetary age," I said. "A million years, half a million, whatever the figure is, hell, that doesn't mean a thing in astronomy or geology. In the development of an intelligent race, though —"

"But they're *savages!*" Haraszthy protested.

"Most of the races we've found are," I reminded him. "Man was too, for most of his existence. Civilization is a freak. It doesn't come natural. Started on Earth because the Middle East dried out as the glaciers receded and something had to be done for a living when the game got scarce. And scientific, machine civilization, that's a still more unusual

accident. Why should the Jorillians have gone beyond an Upper Paleolithic technology? They never needed to."

"Why do they have the brains they do, if they're in the stone age?" Haraszthy argued.

"Why did we, in our own stone age?" I countered. "It wasn't necessary for survival. Java man, Peking man and the low-browed rest, they'd been doing all right. But evidently evolution, intraspecies competition, sexual selection ... whatever increases intelligence in the first place continues to force it upward, if some new factor like machinery doesn't interfere. A bright Jorillian has more prestige, rises higher in life, gets more mates and children, and so it goes. But this is an easy environment, at least in the present geological epoch. The natives don't even seem to have wars, which would stimulate technology. Thus far they've had little occasion to use those tremendous minds for anything but art, philosophy and social experimentation."

"What is their average IQ?" "Meaningless," Vaughn said dully. "Beyond 180 or so, the scale breaks down. How can you measure an intelligence so much greater than your own?"

There was a stillness. I heard the forest sough in the night around us.

"Yes," Baldinger ruminated, "I always realized that our betters must exist. Didn't expect we'd run into them in my own lifetime, however. Not in this microscopic sliver of the galaxy that we've explored.

And . . . well, I always imagined the Elders having machines, science, space travel."

"They will," I said.

"If we go away —" Lejeune began.

"Too late," I said. "We've already given them this shiny new toy, science. If we abandon them, they'll come looking for us in a couple of hundred years. At most."

Haraszthy's fist crashed on the table. "Why leave?" he roared. "What the hell are you scared of? I doubt the population of this whole planet is ten million. There are fifteen billion humans in the Solar System and the colonies! So a Jorillian can out-think me. So what? Plenty of guys can do that already, and it don't bother me as long as we can do business."

Baldinger shook his head. His face might have been cast in iron. "Matters aren't that simple. The question is what race is going to dominate this arm of the galaxy."

"Is it so horrible if the Jorillians do?" Lejeune asked softly.

"Perhaps not. They seem pretty decent. But —" Baldinger straightened in his chair. "I'm not going to be anybody's domestic animal. I want my planet to decide her own destiny."

That was the unalterable fact. We sat weighing it for a long and wordless time.

The hypothetical superbeings had always seemed comfortably far off. We hadn't encountered them, or they us. Therefore they couldn't live anywhere near. Therefore they probably never would interfere in

the affairs of this remote galactic fringe where we dwell. But a planet only months distant from Earth; a species whose average member was a genius and whose geniuses were not understandable by us: bursting from their world, swarming through space, vigorous, eager, jumping in a decade to accomplishments that would take us a century — if we ever succeeded — how could they help but destroy our painfully built civilization?

We'd scrap it ourselves. As the primitives of our old days had scrapped their own rich cultures in the overwhelming face of Western society. Our sons would laugh at our shoddy triumphs, go forth to join the high Jorillian adventure and come back spirit-broken by failure, to build some feeble imitation of an alien way of life and fester in their hopelessness. And so would every other thinking species, unless the Jorillians were merciful enough to leave them alone.

Which the Jorillians probably would be. But who wants mercy?

I looked upon horror. Only Vaughn had the courage to voice the thing:

"There are planets under technological blockade, you know. Cultures too dangerous to allow modern weapons, let alone spaceships. Joril can be interdicted."

"They'll invent the stuff for themselves, now they've gotten the idea," Baldinger said.

Vaughan's mouth twitched downward. "Not if the only two regions that have seen us are destroyed."

"Good God!" Haraszthy leaped to his feet.

"Sit down!" Baldinger rapped.

Haraszthy spoke an obscenity. His face was ablaze. The rest of us sat in a chill sweat.

"You've called *me* unscrupulous," the Trader snarled. "Take that suggestion back to the hell it came from Vaughan, or I'll kick out your brains."

I thought of nuclear fire vomiting skyward, and wisp of gas that had been Mierna, and said, "No."

"The alternative," Vaughan said, staring at the bulkhead across from him, "is to do nothing until the sterilization of the entire planet has become necessary."

Lejeune shook his head in anguish. "Wrong, wrong, wrong. There can be too great a price for survival."

"But for our children's survival? Their liberty? Their pride and —"

"What sort of pride can they take in themselves, once they know the truth?" Haraszthy interrupted. He reached down, grabbed Vaughan's shirt front, and hauled the man up by sheer strength. His broken features glared three centimeters from the Federal's. "I'll tell you what we're going to do," he said. "We're going to trade, and teach, and xenologize, and fraternize, the same as with any other people whose salt we've éaten. And take our chances like men!"

"Let him go," Baldinger commanded. Haraszthy knotted a fist. "If you strike him, I'll brig you and prefer charges at home. Let him go, I said!"

Haraszthy opened his grasp.

Vaughan tumbled to the deck. Haraszthy sat down, buried his head in his hands and struggled not to sob.

Baldinger refilled our glasses. "Well, gentlemen," he said, "it looks like an impasse. We're damned if we do and damned if we don't, and I lay odds no Jorillian talks in such tired cliches."

"They could give us so much," Lejeune pleaded.

"Give!" Vaughan climbed erect and stood trembling before us. "That's p-p-precisely the trouble. They'd give it! If they could, even. It wouldn't be ours. We probably couldn't understand their work, or . . . It wouldn't be ours, I say!"

Haraszthy stiffened. He sat like stone for an entire minute before he raised his face and whooped aloud. "*Why not?*"

#### IV

Blessed be whisky. I actually slept a few hours before dawn. But the light, stealing in through the ports, woke me then and I couldn't get back to sleep. At last I rose, took the dropshaft down and went outside.

The land lay still. Stars were paling, but the east held as yet only a rush of ruddiness. Through the cool air I heard the first bird-flutterings from the dark forest mass around me. I kicked off my shoes and went barefoot in wet grass.

Somehow it was not surprising that Mierna should come at that moment, leading her oontatherium. She let go the leash and ran to me. "Hi, Mister Cathcart! I hoped a lot

somebody would be up. I haven't had any breakfast."

"We'll have to see about that." I swung her in the air till she squealed. "And then maybe take a little fly-around in this boat. Would you like that?"

"Oooh!" Her eyes grew round. I set her down. She needed a while longer before she dared ask, "Clear to Earth?"

"No, not that far, I'm afraid. Earth is quite a ways off."

"Maybe someday? Please?"

"Someday, I'm quite sure, my dear. And not so terribly long until then, either."

"I'm going to Earth, I'm going to Earth, I'm going to Earth." She hugged the oontatherium. "Will you miss me awfully, Big-Foot-Buggy-Eyes - Top - Man - Underneath-And-Over? Don't drool so sad. May be you can come too. Can he, Mister Cathcart? He's a very nice oontatherium, honest he is, and he does so love crackers."

"Well, perhaps, perhaps not," I said. "But you'll go, if you wish. I promise you. Anybody on this whole planet who wants to will go to Earth."

*As most of them will. I'm certain our idea will be accepted by the Council. The only possible one. If you can't lick 'em ... get 'em to jine you.*

**I** rumped Mierna's hair. *In a way, sweetheart, what a dirty trick to play on you! Take you straight from the wilderness to a huge and complicated civilization. Dazzle you with all the tricks and*

*gadgets and ideas we have, not because we're better but simply because we've been at it a little longer than you. Scatter your ten million among our fifteen billion. Of course you'll fall for it. You can't help yourselves. When you realize what's happening, you won't be able to stop, you'll be hooked. I don't think you'll even be able to resent it.*

*You'll be assimilated, Mierna. You'll become an Earth girl. Naturally, you'll grow up to be one of our leaders. You'll contribute tremendous things to our civilization, and be rewarded accordingly. But the whole point is, it will be our civilization. Mine . . . and yours.*

*I wonder if you'll ever miss the forest, though, and the little houses by the bay, and the boats and songs and old, old stories, yes, and your darling oontatherium. I know the empty planet will miss you, Mierna. So will I.*

"Come on," I said. "Let's go build us that breakfast!" **END**

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## The Place Where Readers And Editor Meet...

Dear Editor:

You will be astonished to get a letter from Germany speaking about *If*. So I have to tell you that I am a German sf fan and reader of sf, too. Today we have no sf magazine in Germany, but we had. It was the German edition of *Galaxy*, and it was a very fine magazine, but only a very few people bought it and so publishing ended soon. I wanted to know what is on with sf in America and the only way to get to know the new American sf literature is to read an American sf magazine. So I came to *If*, and I think *If* is good enough to show me something about your sf.

First some critic of my second edition of *If*, the one of January, 1963. I don't like serials, and so I am not happy to have one in *If* in R. A. Heinlein's *Podkayne of Mars*, but I think that my meaning has not enough weight to abolish it. One of the best stories of that issue is, I think, Gary Wright's *Captain of the Kali*. It might be that G.

Wright will become a good author, but one can see that he just has begun to write. He doesn't know whether he shall write more about the persons or the fiction. I think that the persons are more important and an author who can only describe action, but has no ideas how to describe persons, is, as I myself think, no good author. But Gary Wright seems to become a good one.

There are other good stories in that issue, but I think there is no wealth to count them up.

I hope that I have shown you that there are friends of *If* also in other countries. Finally I have a question to you: Do you ever publish stories of foreign authors? as German or French or other?

With best greetings,

Jorn-Dieter Bandermann

2 Hamburg-Nienstedten

Wustenkamp 5, W. Germany

\* Seldom if ever—because we see very few, and almost none that we think our readers would enjoy. But we'd be glad to print any good story



we can find regardless of origin.—  
Editor

\* \* \*

Dear Editor:

Here's congratulating you on one of the finest issues that I have ever seen in your history. The Jan. issue was simply superb! I rate *The Five Hells of Orion* as the best by far, one of the best novelettes of interstellar adventure that I have ever read. If you ever start a "classic reprint" department this story will appear in *If* as a classic of classics. The next best story was *Captain of the Kali*, by an author who is very promising, Gary Wright. I found this story to be an excellent blend of science fiction and good old-fashioned adventure. Next comes *The Shipshape Miracle*, by Clifford D. Simak. All in all, a great issue.

Every time I turn to your letter column I see comments on your cover and interior art, usually bad. Lately these remarks are getting better, signifying that your art is looking up. However, I don't give a darn whether your art is superb or crummy. When I buy *If* or any other sf magazine I look for good stories, and nothing else.

I wish you came out monthly, though. Couldn't you do something about that?

Paul Gilster  
42 Goodwon Lane  
St. Louis 24, Mo.

\* \* \*

Dear Editor:

The improvement in the January issue of *If* is welcome. Not one smudged or totally unreadable page!

One trivial thing that irritates me no end is the utter lack of uni-

HUE AND CRY

form size in the magazine. The November issue measure 19x12.9 cm. The January issue measures 18.6x13.5 cm. Of course I don't expect *If* to establish itself as a topnotch sf magazine (such as *Analog* or *Galaxy*) overnight, but I don't believe in stagnation, either.

Who knows? If such improvements persist, I may even buy a subscription.

Tell me more about *Worlds of Tomorrow*. Clarke, Leinster, Silverberg and Laumer. Quite a lineup, if I may say so. One more question, then I'll stop bothering you. Are you to become editor?

William Lewis, Jr.  
Box 24  
Bunola, Pennsylvania

\*Yes. — Editor

\* \* \*

Dear Editor:

In the first part of *Podkayne of Mars*, Podkayne states, "my waist is forty-eight centimeters." Robert Heinlein is one of my favorite authors, but sixteen-year-old girls do not usually have waistlines of a little over twelve inches. What happened, has Podkayne been dieting?

Muriel Garfunkel  
49 East 96th Street  
New York 28, N.Y.

\* A centimeter being .3937 inches, 48 of 'em must come to—um—gosh—oh, say about nineteen inches, almost. Svelte but not scrawny. Better get that slipstick fixed.—  
Editor

\* \* \*

Dear Editor:

The March *If* was the first ish I'd seen in a while, but what an improvement! Neat cover by Finlay (ain't he always?), neat layout,

neat illos, tinted headings, terrific yarns (an extra laurel for that disturbing bit by Ted White and Terry Carr). Wot next? Pulp size? No? I thought not.

Know something? You're rounding up the best, so try to latch on to Hannes Bok, R. M. Williams, Ross Rocklynne, Leigh Brackett, and/or James MacCreigh (for that I get Pohl-axed). Also Bloch, Bloch, Bloch. Sure!

I'll be waiting with four dimes clutched in my sweaty little paw. Meantime I wish to heck someone would write to me.

Chuck Morris  
R. 6, Box 34  
Gaffney, S.C.

\* James MacWho?—*Editor*

\* \* \*

Dear Editor:

I've heard of an all one-author issue, but never before an all one-artist issue. Hats off to Virgil Finlay and Fred Pohl, boys.

It's good to see J. G. Ballard in your pages, but how about some more Britishers, say James White, Ken Bulmer, Phillip High and so on?

David Charles Paskow  
817 West 66th Avenue  
Philadelphia 26, Penna.

\* \* \*

Dear Editor:

I protest! How *could* Heinlein squeal to a stop so soon when obviously, Poddy has a lot more story

to her and so does Clark? Poddy ought to have made a pet of Ariel, flirted with a spaceship captain, proved her worth as a crewman in space and finally married Dexter. Please tell Mr. Heinlein to get busy on the sequel.

Gwen Cunningham  
3286 Wisconsin Street  
Oakland 2, California

\* Gosh, what do we need *him* for? You just wrote it!—*Editor*

\* \* \*

\* As friends of the family know, each issue we bring you at least one story by a writer never before published in a science fiction magazine. This issue there are two: *Another Earth*, by a couple of fellows who have done all their previous writing in drama form, and *Run-down*, by a young public-relations man from upstate New York. How about the rest of you out there? It isn't a contest; you don't have to tear off a boxtop; all you have to do is write a story and mail it to us along with a stamped, self-addressed return envelope in case we don't like it . . .

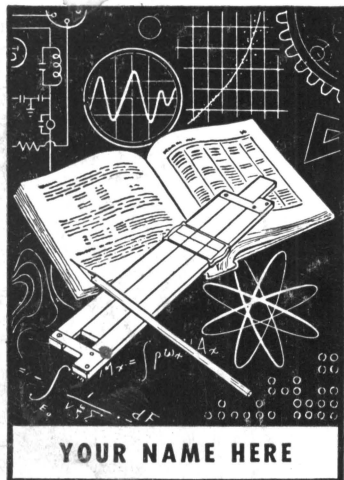
Next issue: Retief is back, with what we think about the best in the series. We begin a new serial called *The Zeefs of Space* by Jack Williamson and your editor. And there'll be more . . .

See you then!

Editor



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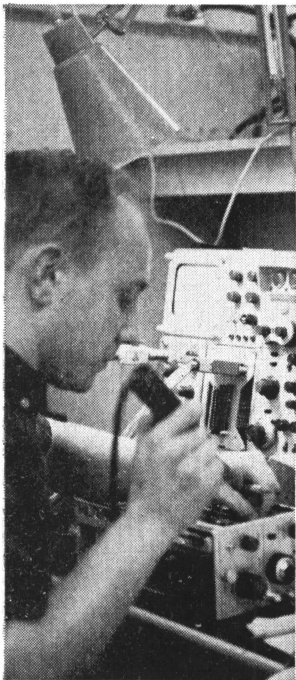
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