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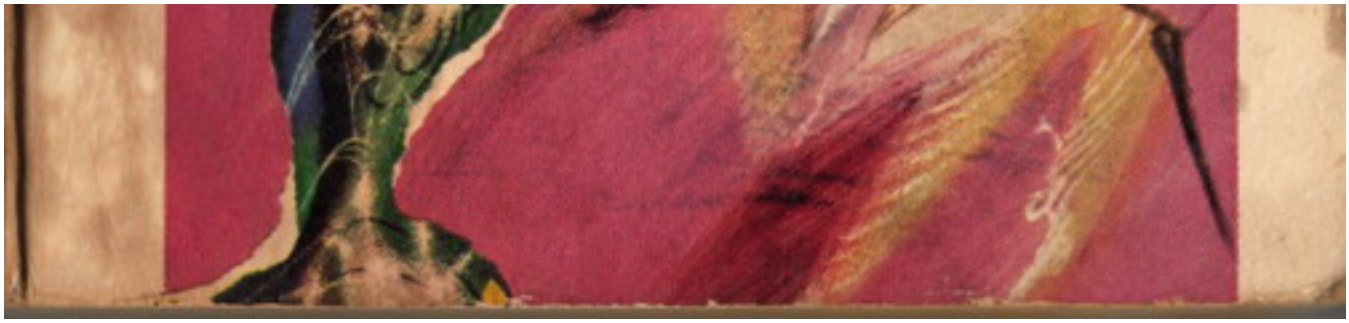
NATIVES OF SPACE

THREE NOVELETTES BY THE AUTHOR OF MISSION OF GRAVITY



Also by Hal Clement ... .

CYCLE OF FIRE
CLOSE TO CRITICAL

NATIVES OF SPACE

Hal Clement

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Assumption Unjustified

Thrykar saw the glow that limned the broad pine trunk with radiance and sent an indefinite shadow toward the spot where he lay, and knew that extreme caution must direct his actions from then on. He had, of course, encountered living creatures as he had felt his way through the darkness down the forested mountain side; but they had been small, harmless animals that had fled precipitately as the sounds denoting his size or the odors that warned of his alienness had reached their senses. Artificial light, however, which he and Tes had seen from the mountain top and which was now just below him, meant intelligence; and intelligence meant—anything.

He felt the ridiculousness of his position. The idea of having not only to conceal his intentions, but even his existence, from intelligent beings could seem only silly to a member of a culture that embraced literally thousands of physically differing races, and Thrykar did have a rising desire to stand on his feet and walk openly down the main thoroughfare of the little settlement in the valley. He resisted the temptation principally because it was not an unexpected one; the handbook had warned that such a reaction was probable—and warned in the strongest terms against yielding to it.

Instead of yielding, therefore, he resumed his crawling, working his way headforemost downhill until he had reached the tree. Hugging the rough trunk closely, he reached his eight feet of snaky body to full height behind it, tapped out the prearranged signal to Tes on the small communicator he carried, and began carefully examining the town and the ground between him and the outlying houses.

It was not a large town. About three thousand human beings lived in it, though Thrykar was not familiar enough with men to be able to judge that fact from the number of buildings. He did realize that some of the structures were probably not dwelling places; the pur-poses of the railway station became fairly clear as a lighted train chugged slowly into motion and snaked its way out of town to the north. Most of the lights were concentrated within a few blocks of the station, and it was only in that neighborhood that Thrykar could see the moving figures of human beings. A few lighted windows, and the rather thinly scattered street lamps, were all that betrayed the true size of the place.

There was another center of activity, however. As the sound of the train died out in the distance, a rhythmic thudding manifested itself to Thrykar's auditory organs. It seemed to come from his right, from that portion of the town nearest to the foot of the mountain. Leaning out from behind his tree, he could see nothing in that direction; but a fact which he had only subconsciously noted before was brought to prominence in his mind.

Only a few yards below him, the mountainside fell away abruptly in a sheer cliff which seemed, in the darkness, to extend for some distance to either side of Thrykar's position. The undergrowth which covered the slope continued to the very edge of this cliff; so the alien dropped once more to the prone position and wormed his way downhill until he could look over. He hadn't im-proved matters much, as the darkness was impenetrable to his eyes, but the sounds were a little clearer. They were quite definitely coming from the right and below and after a moment's hesitation, Thrykar began crawling along the cliff edge in that direction. The bushes, which grew thicker here, hampered him somewhat; for the flexibility of his body, which was no thicker than a man's,

was offset by the great, triangular, finlike appendages which extended more than two feet outward on each side. These, too, were fairly flexible, however, ribbed as they were with cartilage; and he managed to accommodate himself to the somewhat uncomfortable mode of travel.

He had gone less than a hundred yards when he found the cliff edge to be curving outward and down, as though it were the lip of a somewhat irregular vertical shaft cut into the mountain. This impression was strengthened when the curve led back to the left, away from the source of sound that Thrykar wished to investigate; but he continued to follow the edge, and eventually reached its lowest point, which must have been almost directly beneath the place at which he had first looked over. At this point things became interesting.

On Thrykar's left—that is, within the shaft—the drip-ping of water became audible; and at the same time the bushes and irregular rocks disappeared, and he found himself on what could be nothing but a badly kept road. He did not realize its condition at first; but within a few feet he found a rivulet flowing across it, in a fairly deep gully which it had cut in the hard earth.

Investigating this flow of water, he found that its source was the shaftlike excavation, which was apparently full of water almost to the level of the road. With growing enthusiasm, Thrykar found that the hole was fully a hundred and fifty yards in the dimension running parallel to the face of the moun-tain; and he had learned during his descent that it had fully half that measure in the other direction. If it were only deep enough—he was on the point of entering the water to investigate, when he remembered the communicator, which might suffer damage if wet, and from which he had promised Tes not to separate himself. Instead of investigating the pit, therefore, he turned back, following the road toward the sounds which had first roused his curiosity.

His progress, on the legs which were so ridiculously short for his height, was not rapid. In fifteen minutes he had passed two more of the water-filled pits and was approaching a third. This he was able to examine in more detail than the others, though he could not approach it closely; for the road at this point, and the water near it, were illuminated by the first of the town's outlying street lamps. A few yards farther, on the side of the road away from the pits, house lights began to be visible; and, seeing them, Thrykar paused to consider.

The sound was evidently coming from farther inside the town. If he went any further in his investigations, he not only sacrificed the shelter of darkness, but could also expect a heavier concentration of human beings. On the other hand, his skin was dark in color, the lights were by to means numerous, he was very curious about the sounds which had continued without interruption since he had first heard them, and it would be necessary to confront a human being eventually, in any case—though, if all went well, the human being would never know it. Thrykar finally elected to proceed, with increased cau-tion.

He chose the side of the road away from the pits, as it was somewhat darker at first, and offered some conceal-ment in the form of hedges and fences in front of the houses, which now began to be more numerous. He walked, with his mincing gait, close beside these, standing at his full height and letting the great, independent eyes set on either side of his neckless, rigidly set head

rove constantly around the full circle of his vision. One more pit was passed in this fashion; but a hundred yards further down the road, on the right side, a wall began which effectually cut off the sight of any more, if they existed. It was a fence of boards, solidly built, and its top was fully two feet above Thrykar's head. The sounds appeared to be coming from a point behind this barrier, but somewhat further down the road.

Having come so far, the alien was human enough to dislike the idea of having wasted his efforts. He crossed the road at a point midway between two street lamps. Between the pits, the brush-covered slope of the hill came down almost to the thoroughfare; so he dropped flat once more to take advantage of this cover as he approached the near end of the wall. He had hoped to find access to the hinder side of the barrier, but he found that, instead of beginning where it was first visible, the portion along the road was merely a continuation of a similar structure that came down the hillside; and Thrykar considered it a waste of time to circumambulate the enclosure on the chance of finding an opening.

Instead, he rose once more to his full height, and looked carefully about him. The neighborhood still seemed deserted. Pressing close against the boards, he reached up and let the tips of his four wiry tentacles curl over the top of the fence. The appendages, even at the roots, were not much thicker than a human thumb, for they were, anatomically, detached portions of the great side fins rather than legs and feet modified for prehensile use; unless they could be wound completely around an object, they could not approach the gripping or pulling strength of the human hand and arm. Thrykar, however, let his supple body sag in an S-curve, and straightened suddenly, leaping upward; and at the same instant exerted all the strength of which the slender limbs were capable. The effort proved sufficient to get the upper portion of his body across the top of the fence, and during the few seconds he was able to maintain the position he saw enough to satisfy him.

There were two more of the pits inside the fence, dimly lighted by electric bulbs. They contained practically no water, and were enormously deep—the nearer, whose bottom was visible to Thrykar, was over two hundred feet from the edge to the loose blocks of stone that lay about in the depths. The pits were quarries, quite evidently. The stone blocks and tools, as well as the innumerable nearly flat faces on the granite walls, showed that fact clearly. The noises that had aroused the alien's curiosity came from machines located at the bottom of the nearer pit; and the existence of certain large pipes running up from them, as well as the almost complete absence of water, assured him that they were pumps.

There was a further deduction to be drawn from the absence of water. These human beings were strictly air-breathers—the handbook had told Thrykar and Tes that much; and it followed that the pits farther along the mountain side, which had been allowed to fill with water, must no longer be in use. If they were as deep as these, there was an ideal hiding place for the ship.

At that thought, Thrykar let himself slip down once more outside the fence. He flexed his body once or twice to ease the ache where the edges of the boards had cut into his flesh, and started to stretch his tentacles for the same purpose; but suddenly he froze to rigidity. Behind him, on the road down which he had come, appeared a glow of yellow that brightened swiftly—so swiftly that before he could move, its source had swept into sight around the last shallow curve in the

route and he was pinned against the fence by the beams from the twin headlights of an automobile.

As the vehicle reached the straight portion of the street the direct beams left him; but he knew he must have been glaringly visible during the second or so in which they had dazzled his eyes. He held his breath as the car approached; and the instant it passed he plunged up the hillside for twenty or thirty yards, wriggled his way under some dense bushes, and lay as motionless as was physi-cally possible for him. He listened intently as the sound of the engine faded and died evenly away in the distance, and finally gave a deep exhalation of relief. Evidently, hard as it was to believe, the occupant or occupants of the vehicle had not seen him.

It did not occur to Thrykar that, even if the driver had noticed the weird form looming in his headlight beams, stopping to investigate might be the farthest thing in the universe from his resultant pattern of action. Thrykar himself, and every one of his acquaintances—which were by no means confined to members of his own race—would have looked into the matter without a second thought about the safety or general advisability of the procedure.

He was a little shaken by the narrow shave. He should have foreseen it, of course—it was little short of stupid to have climbed the wall so close to the road; but what would be self-evident to a professional soldier, detective, or housebreaker did not come within the sphere of everyday life to a research chemist on a honeymoon. If Thrykar had known anything about Earth before starting his journey, he wouldn't have come near the planet. He had simply noted that there was a refresher station near the direct route to the world which he and Tes had planned to visit on a vacation; and not until he had cut his drive near the beacon on Mercury had he bothered to read up on its details. They had been somewhat dismayed at what they found, but the most practicable detour would have consumed almost the entire vacation period in flight; and, as Tes had said, what others had evidently done he could do. Thrykar suspected that his wife might possibly have an exaggerated idea of his abilities, but he had no objection to that. They had stayed.

The car did have one good effect on Thrykar; he became much more cautious. Having satisfied his curios-ity about the sounds, he began to retrace his way to the ship and Tes; but this time he stayed well off the road, traveling parallel to it, until the abandoned quarries prevented further progress on that line. Even then he left the woods and went downhill only far enough to permit him to enter the water without splashing. He swam rapidly across, holding the communicator out of the water with one tentacle, and emerged to continue his trip on the other side. He had wasted as little time as possible, as the pit he had just crossed was the one so comparatively well illuminated by the street lamp.

At the next one, however, he spent more time. Instead of carrying the communicator with him, he cached it under a bush near the road and disappeared entirely under water. It was utterly black below the surface, and fit had to trust entirely to his sense of touch; and remembering what he had seen of the walls of the empty quarries, he dared not swim too rapidly for fear of braining himself against an outcrop of granite. In conse-quence, it took him over half an hour to get a good idea of the pit's qualifications as a hiding place. The verdict was not too good, but possible.

Thrykar finally emerged, collected his communicator, and proceeded to the next quarry.
He spent several hours in examining the great shafts. There were seven altogether; two were in use, and enclosed by the fence he had found, one was rendered unusable by the embarrassing presence of the street lamp; so the remaining four claimed all his attention. The one he had found first was the last, and farthest from the town; but it was the adjacent one which finally proved the most suitable. Not only was it the only one at all set back from the road—a drive about twenty yards in length led down , to the water—but it was deeply undercut about thirty-five feet below the surface, on the side toward the mountain. The hollow thus made was not large enough to hide the hull of the ship altogether, but it would be a great help. Thrykar felt quite satisfied as he emerged from the water after his second examination of this recess. Recovering the small case of the communi-cator from its last hiding place, he tapped out the signal he had agreed on with Tes to announce his return. Then he held it up toward the mountain, moving it slowly from side to side and up and down until a small hexagonal plate set in the case suddenly glowed a faint red. Satisfied that he could find his ship when close enough, the alien began his climb.
Just before entering the dense woods above the quarries, he looked back at the town. Practically all the house lights were extinguished now; but the station was still illuminated and the street lamps glowed. The quarry pumps were still throbbing, as well; and, satisfied that he had created no serious disturbance by his presence, Thrykar resumed his climb.
It took his short legs a surprisingly long time to propel him from the foot of the valley to the hollow near the mountain top where the ship still lay. He had hoped and expected to complete the job of concealing the craft before the night was over; but long before he reached it he had given up the plan. After all, it was invisible until the searcher actually reached the edge of the hollow; and he was practically certain that no human beings would visit the spot—though the handbook had mentioned that they still hunted wild animals both for food and sport. He and Tes could alternate watches in any case, and if a hunter or hiker did approach—steps could be taken.
Twice during the climb he made use of the communicator, each time wondering why it was taking so long to get back. The third time, however, the plate glowed much more brightly, and he began to follow the indicated direction more carefully instead of merely climbing. It took him another half hour to find the vessel; but at last he reached the edge of the small declivity and saw the dim radiance escaping from behind the partly closed outer door of the air lock. He slipped and stumbled down the slope, scrambled up the cleated metal ramp that had been let down from the lock, and pushed his way into the chamber.
Tes met him at the inner door, anxiety gradually disappearing from her expression.
"What have you been doing?" she asked. "I got your return signal, and began broadcasting for your finder; but that was hours ago, and I was getting worried. You had no weapon, and we don't know that all Earth animals would fear to attack us."
"Every creature I met, fled," replied her husband. "Of course, I don't know whether any of them would have attacked an Earth being of my size. They may all have been herbivorous, or something; but in any case, you know we could get into awful trouble by carrying arms on a low-culture planet.

"However, I've found an excellent place for the ship, very close to the town. If I weren't so tired, we could take it down there now; but I guess we can wait until tomorrow night. The whole business is going to take us several of this planet's days, anyway."
"Did you see any of the intelligent race?" asked Tes.
"Not exactly," replied Thrykar. He told her of the encounter with the automobile, while she prepared food for him; and between mouthfuls he described the underwater hollow where he planned to conceal the ship and from which they could easily make the necessary sorties.
Tes was enthusiastic, though she was still not entirely clear as to the method Thrykar planned to employ in obtaining what he wanted from a human being without the latter's becoming aware of the alien presence. Her husband smiled at her difficulty.
"As you said, it's been done before," he told her. "I'm going to sleep now; I haven't been so tired for years. I'll tell you all about it tomorrow." He rose, tossed the eating utensils into the washer, and went back to the sleeping room. The tanks were already full; he slid into his without a splash, and was asleep almost before the water closed over him. Tes followed his example.

He had not exaggerated his fatigue; he slept long after his wife had risen and eaten. She was in the library when he finally appeared, reading once again the few chapters the handbook devoted to Earth and its inhabitants. One of her eyes rolled upward toward him as Thrykar entered.
"It seems that these men are primitive enough to have a marked tendency toward superstition—ascribing things they don't understand to supernatural intervention. Are you going to try to pass off our present activities in that way?"
"I'm not making any effort in that specific direction," he replied, "though the reaction you mention may well occur. They will realize that something out of the ordi-nary is happening; I don't see how that can be avoided, unless we are extremely lucky and happen on an individ-ual whose way of life is such that he won't be missed by his fellows for a day or so. I'm sure, however, that a judicious use of anaesthetics will prevent their acquiring enough data to reach undesirable conclusions. If you will let me have that book for a while, I'll try to find out what is likely to affect their systems."
"But I didn't think we had much in the way of drugs, to say nothing of anaesthetics, aboard," exclaimed Tes.
"We haven't; but we have a fair supply of the com-moner chemicals and reagents. Remember your husband's occupation, my dear!" He took the book, smiling, and settled into a sling. He read silently for about ten minutes, leafing rapidly back and forth in a way that suggested he knew what he was looking for, but which made it very difficult for his wife to read over his shoulder. She kept on trying.
Eventually Thrykar spent several consecutive minutes on one page; then he looked up and said, "It looks as though this stuff would do it. I'll have to see whether we have the wherewithal to make it. Do you want to watch a chemist at work, my beloved musician?"
She followed him, of course, and watched with an absorption that almost equaled his own as he inventoried their small stock of chemicals, measured, mixed, heated and froze, distilled and

collected; she had only the most general knowledge of any of the physical sciences, but in watching she could appreciate that her husband, in his own occupation, was as much of an artist as she herself. It was this understanding, shared by very few, of this side of his character that had led her to marry an individual who was considered by most of his acquaintances to be a rather stodgy and narrow-minded, if brilliant, scientist.

Thrykar connected the exhaust tube of his last distilla-tion to a small rotary pump, confining the resultant gas in a cylinder light enough to carry easily. Even Tes could appreciate the meaning of that.

"If it's a gas, how do you plan to administer it?" she asked. "Judging from their pictures, these human beings are much more powerful than we. You can't very well hold a mask over their faces, and even I know it's not practical to shoot a jet of gas any distance. Why don't you use a liquid or soluble solid that can be carried by a small dart, for example?"

."The less solid equipment we carry and risk losing, the better for all concerned," replied Thrykar. "If the air is fairly still and there is no rain, I can make them absorb a lungful of this stuff quite easily. It has been done before, and on this planet—you should pay more attention to what you read." He rolled an eye back at his wife. "Did you ever blow a bubble?"

Tes stood motionless for a moment, thinking. Then she brightened. "Of course. I remember what you mean now. Passing to another phase of the problem, how and where do you find a human being alone?"

"We attack that matter after moving the ship. We'll have to watch them for a day or two, to learn something about their habits in this neighborhood—the book is not very helpful. If a lone hunter or traveler gets near enough, the problem will solve itself; but we can't count on that. I've done all I can here, my dear. We'll have to wait till dark, now, to move the ship."

"All right," replied Tes. "I'm going outside for a while; our only daylight view of this planet was from high altitude. Even if we can't get close to any small animals, there may be plants or rocks or just plain scenery that will be worth looking at. Won't you come along?"

Thrykar acquiesced, with the proviso that neither of them should wander far from the hollow in which the ship was located. He was perfectly aware of his limita-tions in an uncivilized environment, and knew that it wouldn't take a very skillful stalker to approach them without their knowing it. In the open, that could be dangerous; with the ship and its equipment at hand, countermeasures could always be taken.

They went out together, leaving the outer air lock door open—it could have been locked and reopened electrical-ly; but Thrykar had once read of an individual in a position similar to theirs who had returned to his ship to find the power cut off by a burned-out relay, leaving him in a very embarrassing position. The weather was overcast, as it had been ever since their arrival, but there were signs that the sun might soon break through. The woods were dripping wet, which made them if anything more unpleasant for the aliens. The temperature was, from their point of view, cool but not uncomfortable.

There was plenty of animal life. Although none of the small creatures permitted them to approach at all closely, the two were able to examine them in considerable detail; retinal cells rather

smaller than those in the human eye and eyeballs more than three times as large permitted them to distinguish clearly objects for which a human being would have needed a fair-sized opera glass. The bird life was of particular interest to Tes; no such creatures had ever evolved on their watery home planet, and she made quite a collection of cast-off feathers.

The largest animal they saw was a deer. It saw them at the same moment, standing at the edge of the hollow at a point where very few trees grew; it stared at them for fully half a minute trying to digest a new factor in its existence. Then, as Tes made a slight motion toward the creature, it turned and bounded off, disappearing at once below the edge of the cup. They hastened toward the spot where it had stood, hoping to catch a final glimpse, but they were far too slow, and nothing was visible among the trees when they got there. Tes turned to her partner.

"Why isn't it possible to use an animal like that? It's easily large enough to take no harm, and must be at least as similar to us as these human beings." Thrykar rippled a fin negatively.

"I'm a chemist, not a biologist, and I don't know the whole story. It has something to do with the degree of development of the donor's nervous system. It may seem odd that that should affect its blood, but it seems to—remember, every cell of a creature's body has the chromosomes and genes and whatever else the biologists know about in that line, which make it theoretically possible to grow a new animal of the same sort from any of the cells. I don't believe it's been done yet," he added with a touch of humor, "but who am I to say it can't be?"

Tes interrupted him with a gesture.

"Tell me, Thrykar, is that throbbing noise I hear now the one produced by those pumps? I'm surprised that it should be audible at this distance. Listen." He did so, wondering for a moment, then gave once more a sign of negation.

"It's a machine of some kind, but I can't say just what, It doesn't seem to be down there in the town—we'd be hearing it more definitely from that direction. It might be almost anywhere among these mountains—not too far away, of course—with echoes confusing us as to its point of origin. It can't be an aircraft, because it's too loud and —look out! Don't move, Tes!" He froze as he spoke, and his wife followed his example. As the last words left his mouth, the pulsing drone increased to a howling roar which, at last, had a definite direction. The eyes of the aliens rolled upward to follow the silvery, winged shape that fled across their field of vision scarcely five hundred feet above them.

The pilot of the A-26 saw neither the aliens nor their ship. He passed directly above the latter, so that it was out of his direct vision; and although Thrykar and Tes felt horribly conspicuous in the almost clear area where they were standing, the speed of the machine and the pilot's preoccupation with the task of navigating com-bined to prevent untimely revelations.

As the roar faded once more to a drone, Thrykar galvanized into action. He plunged into the hollow toward his ship; and Tes, after a moment's startled immobility, followed.

"What's the matter?" she called after him. "I don't think he saw us, and anyway it's too late to do anything about it."

"That's not the trouble," replied Thrykar as he flung himself up the ramp into the ship. "You should have spotted that yourself. You mentioned something this morning about the tendency of

man toward superstition. If he's in that stage of social development, be shouldn't have more than the rudiments of any of the physical sciences. The book said as much, as I recall; and I want to check up on that, right now!" He snatched up the volume, which fell open at the already well-thumbed section dealing with Earth, and began to read. Tes, with an effort, forbore to interrupt; but she vas not kept waiting long. Her husband looked up presently, and spoke.

"It's as I thought. According to this thing, mankind has as one of its most advanced mechanisms the steam-powered locomotive. I saw one last night, you may recall. I assumed without really giving the matter much thought that the quarry pumps were also steam-driven. It says here that animals are even used for hauling or carrying loads over short distances. That all ties in with a culture still influenced by superstition. The book does not mention aircraft—and that machine wasn't steam-powered. Those were internal-combustion engines. I think now that the pumps in the quarries had similar power plants; and if men can make them at once light and powerful enough to drive aircraft, they know more of molecular physics and chemistry than they should."

"But why should that be a manmade ship?" asked Tes. "After all, we are here; why shouldn't another spaceship have come in at the same time? After all, Earth is a refresher station."

"For a variety of reasons," replied Thrykar. "First, anyone coming here for refreshing would keep out of sight, as we are doing; and that ship flew in plain sight of the town below here, and made racket enough to be heard for miles. Second, that wasn't a spaceship—you must have seen that it was driven by rotating airfoils and supported by fixed ones. Why should anyone from off the planet go to the trouble of bringing and assembling such a craft here, when they must have infinitely better transpor-tation in the form of their spaceship? No, Tes, that thing was manmade, and there's something very wrong with the handbook. It's the latest revision on this sector, too—the Earth material is only sixty or seventy years old. I hope it isn't so badly off on the biology and physiology end; we certainly don't want to cause injury to any man."

"But what can you do, if the book can't be trusted?"

"Feel my way carefully, and go on the evidence already at hand. We can't very well leave now—you're safe, as you aren't of age yet, but I might be in rather bad shape by the time we reached another refresher station. We'll carry on as planned for the present, and move the ship down to the quarry tonight. I just hope the human race isn't so far advanced in electronics as they seem to be elsewhere; if they are, we are wide open to detection. I wonder how in blazes the individual who reported on this planet could have come to do such a slipshod job. Failure to measure their chemical or biological advancement is forgivable, those wouldn't be so obvious; but missing aircraft, and electric lights, and internal-combustion en-gines in general is a little too much. However," he left the vexing question, "that is insoluble for the present. The other point that arises, Tes, is the one you mentioned. I'm afraid they won't bear a superstitious attitude toward our activities, if they become aware of them; and we'll have to be correspondingly more careful. If you can think of anything that will help between now and nightfall, it will be appreciated."

Neither of them did.

Bringing the little craft down the mountain side in the dark was rather more difficult than Thrykar

had antici-pated. He was afraid to use micro-wave viewers because of the newborn fear of the scientific ability of the human race; it was necessary to drift downhill at treetop level, straining his eyes through the forward ports, until the slope flattened out. The lights of the town had been visible during the descent, and he had kept well to their left; now he backed fifty feet up the hill, turned on the reflection altimeter—whose tight, vertical beam he hoped would not scatter enough to cause a reaction in any nearby receivers—and crawled along the contour in the general direction of the lights.

He had allowed more leeway than was strictly neces-sary, and was some distance to the north of the quarries; but at last the dial of the altimeter gave a sudden jump, and the two aliens looked carefully out of the ports as Thrykar let the ship descend, a foot at a time. At last the hull touched something—and sank in; they were at the first quarry. The ship lifted again, a little higher this time for safety as its course slanted in once inure toward the mountain. Again a flicker of the needle; again the cautious descent; but this time it was permitted to sink on down after the hull made contact.

The ship stopped sinking when it was about three-fourths submerged, and Thrykar guided it carefully to the side of the great pit where he had located the undercut. While the nose continued to bump gently against the granite, he let water into compartment after compartment until the hull was completely under water—he could have used the drive, but preferred to have the ship stable in its hiding place. He did use power to ease into the hollow, which he located by use of an echo-sounder; its impulses would not be detectable out of the body of water in which they were used.

Leaving Tes to hold the ship in position temporarily, Thrykar plunged out through the air lock and made fast, using metal cables clipped to rings in the hull and extending to bars set into cracks already in the rock. He could have drilled holes specifically for the purpose, but not silently; and the existing facilities were adequate. The work completed, he tapped on the hull to signal Tes. She cut off all power, let the ship settle into stability, and joined Thrykar in the water. It was the first swim she had had since they had started the trip, and they spent the next hour enjoying it.

A little more time was spent exploring the ground around the quarry and out to the road; then, on the chance that the next day might be more hectic than those preceding, they sought the sleeping tanks. Thrykar, before sliding into the cold water, set an alarm to awaken him shortly before sunrise.

Before the sun was very high, therefore, he and Tes were at work. They explored once more, this time by daylight, the environs of the pit; and among the bushes, heaps of crushed rock, and broken blocks of granite they found a number of good hiding places.

None was ideal; they wanted two, more or less visible from each other, commanding views along at least a short stretch of the road passing the quarry. One was very satisfactory in this respect, but unfortunately it was situated on the side away from the town and covered that segment of road which they planned to watch more to insure safety than in expectation of results. On the other side, a space under several blocks was found from which it was possible to view the other hiding place and the quarry itself, but to see the road it was necessary to crawl some twenty yards. As the crawl could be made entirely under fair cover, Thrykar finally selected this space,

and stored the gas cylinders and auxiliary equipment therein.

From the point where he could see the road, Tes' hiding place was invisible; and after a moment's indeci-sion he called to her. He was sure no human beings were as yet in the neighborhood, but he made his words brief. Then he crawled back to the edge of the quarry. As his station was some distance up the hillside, he was fully sixty feet above the water; but he launched himself over the lip of granite without hesitation, and clove the surface with no more sound than a small stone would have made from the same height.

He entered the submerged ship, enclosed two of the small communicators such as he had used on the first night in water-tight cases, and brought them to the surface. Climbing painfully to where Tes was watching, he gave her one; then he returned to his own place, crossing above the quarry. He settled down to his vigil, reasonably sure that the tiny sets were not powerful enough to be picked up outside the immediate vicinity, and relieved of the worry that Tes might see something without being able to warn him.

They did not have long to wait. Tes was first to signal that something was visible; before Thrykar could move to ask for details, he himself heard the engine of the car. It sped on down the road and into town—an ancient, rickety jalopy, though the aliens had no standard with which to compare it. Two more passed, going in the same direction, during the next fifteen minutes. Each held a single human being—hired men from the farms up the valley, going to town on various errands for their employers, though the watchers had no means of knowing this. After they had passed, nothing happened for nearly an hour.

At about eight o'clock, however, Tes signaled again; and this time she tapped out the code they had agreed upon to indicate a solitary pedestrian. Thrykar acknowl-edged the message, but made no move. Again the traveler proved not to be alone; within the next five minutes more than a dozen others passed, both singly and in small groups. They were the first human beings either of the aliens had seen at all clearly, and they were at a considerable distance, though the eyesight of the watchers did much to overcome this handicap. Practically all of them were carrying small parcels and books. They varied in height from about half that of Thrykar to nearly three quarters as tall, though, as individuals of a given size tended to form groups to the exclusion of others, this was not at once obvious to the watching pair.

And that was all. After those few chattering human beings had passed out of sight and hearing into the town, the road remained deserted. Once only, shortly before noon, one of the automobiles clattered back along it; Thrykar suspected it to be one of those he had seen earlier, but had no proof, as he was not familiar enough with either vehicles or drivers to discern individual differ-ences. As before, there was only one occupant, who was not clearly visible from outside and up. For some seven hours he was the only native of Earth to disrupt the solitude.

Tes, younger and less patient than her husband, was the first to grow weary in the vigil. Some time after the passage of the lone car, she began tapping out on the communicator, in the general code which he had insisted on her learning in the conformity of the law, a rather irritated question about the expected duration of the watch. Thrykar had been expecting such an outbreak for hours,

and was pleasantly surprised at the patience his wife had displayed, so he replied, "One of us should remain on guard until dark, at least; but there is no reason why you shouldn't go down to the ship for food and rest, if you wish. You might bring me something to eat, also, when you've finished."

He crawled back to the point from which he could see Tes' hiding place, and watched her move to the edge of the quarry, poise, and dive; then he returned to his sentry duty.

His wife had eaten, rested, brought up food for him, and been back at her place for some time before anything else happened. Then it was Thrykar who saw the new-comer; and in the instant of perception he not only informed Tes, but formed a hypothesis which would account for the observed motions of the human beings and implied the possibility of productive action in a very short time.

The present passer turned out not to be alone; there were two individuals, once more carrying books. Thrykar watched them pass, mulling over his idea; and when they were out of sight he signaled Tes to come over to his hiding place. She came, working her way carefully among the bushes above the quarry, and asked what he wanted.

"I think I know what is going on now," he said. "These people we have seen pass apparently live some-where up the road, and are required for some reason to spend much of the day in town. It is therefore reasonable to assume that they will all be returning the way they went, sometime before dark. I am quite sure that the two who just passed were among those who went the other way this morning.

"Therefore, I want you to watch here, while I work my way down to the place where the little road from this quarry joins the other. You will signal me when more of these people approach; and I, concealed at the roadside, will be able to get a first specimen if and when a solitary human being passes. If others approach while I am at work, you can warn me; but it should take only a few seconds, and the creature need not be unconscious much longer than that. Even if others are following closely, I can arrange matters to seem as though it had a fall or some similar accident. I am assuming that no one will come from the other direction; it's a chance we have to take, but the amount of traffic so far today seems to justify it."

"All right," replied Tes. "I'll stay here and watch. I hope it doesn't take long; I'm getting mortally weary of waiting for something interesting or useful to happen."

Thrykar made a gesture of agreement, and gathered his equipment for the move.

Jackie Wade would have sympathized with Tes, had he dreamt of her existence. He, too, was thoroughly bored. Yesterday hadn't been so bad—the first day of school at least has the element of interest inherent in new classes, possible new teachers, and—stretching a point—even new books; but the second day was just school. Five years of education had not taught Jackie to like it; at the beginning of the sixth, it was simply one of life's less pleasant necessities.

He looked, for the hundredth time, at the lock placed by intent at the back of the room. It lacked two minutes of dismissal time; and he began stealthily to gather the few books he planned to take home for appearance's sake. He had just succeeded in buckling the leather strap about them when

the bell rang. He knew better than to make a dash for the door; he waited until the teacher herself had risen, looked over the class, and given verbal permission to depart. Fifteen seconds later he was in front of the school building.

His brother James, senior to him by two years and taller by nearly a head, joined him a moment later. They started walking slowly toward the country road, and within a minute or two the other dozen or so boys from valley farms had caught up with them. When the last of these had arrived, Jackie started to increase his pace; but his brother held him back. He looked up in surprise.

"What's the matter?" he asked. "You getting rheuma-tism?" Jimmy gestured toward small figures, some dis-tance in front.

"Fatty and Mice. Let 'em get good and far ahead. We're going swimming, and Fatty's a tattler if there ever was one."

Jack nodded understandingly, and the group dawdled on. The shortest way to the quarries would have taken them past the still active pits and—more to the point—past the houses lying farthest out on the road. The adult inhabitants of one or two of these dwellings had made themselves unpopular with the boys by interfering with the swimming parties; so before the country road was reached, the group turned north on a street which ran parallel to the desired route. This they followed until it degenerated into a rutted country lane; then they turned left again and proceeded to cross the fields and through a small wood—the straggling edge of the growth that covered the mountain—until the road was reached. It was approached with caution, the boys making an Indian stalk of the business.

There was no sign of anyone, according to the "scouts"; the two girls had presumably passed already. The party hastily crossed the road, and ran down the drive that led to the most secluded of the quarries. Thrykar was not the first to appreciate this quality. Thirteen boys, from seven years of age to about twice that, dived into convenient bushes, shed garments with more haste than neatness, and a moment later were splashing about in the appallingly deep water.

They, were all good swimmers; the parents of town and valley had long since given up hope of keeping their offspring out of the quarries all the time, and most of them had taken pains to do the next best thing. Jackie and Jimmie Wade were among the best.

Thrykar, whose journey down to the road had been interrupted by the boisterous arrival of the gang, didn't think too much of their swimming abilities; but he was fair-minded enough to realize their deficiencies in that respect were probably for anatomical reasons. His first emotion at the sight of them had been a fear that they would discover the hiding place where the gas cylinders and Tes were concealed, and he had returned thereto in a manner as expeditious as was consistent with careful concealment. The fear remained as he and Tes carefully watched from the edge of the pit; but there was nothing they could do to prevent such a discovery. On dry land they could not move nearly so fast as they had seen the boys run; and there were too many eyes about to risk a drop over the edge into the water.

Two or three of the boys did climb the sides of the quarry some distance, to dive back down; but Thrykar, after seeing the splashes they made on entry, decided they were not likely to come much higher. He wondered how long they were likely to stay; it was obvious that they had no motive

but pleasure. He also wondered if they would all leave together; and as that thought struck him, he glanced at the gas cylinders behind him.

The boys might have remained longer, but the local geography influenced them to some extent. The quarry was on the east side of the mountain, it was mid-afternoon, and most of the water had been in shadow at the time of their arrival. As the sun sank lower, depriving them of the direct heat that was necessary to make their swimming costume comfortable in mid-September, their enthusiasm began to decline. The youngest one present remembered that he lived farther up the valley than any of them, and presently withdrew, to return fully clothed and exhorting one or two of his nearest neighbors to accompany him.

Jackie Wade looked at the boy in surprise as he heard his request.

"Why go so soon? Afraid of something?" he jeered.

"No," denied the seven-year-old stoutly, "but it's get-ting late. Look at the sun."

"Go on home if you want, little boy," laughed Jack, plunging back into the water. He lived only a short distance out on the road, and was no less self-centered than any other child of ten. Two or three of the others, however, appreciated the force of the argument the youngster had implied, rather than the one he had voiced; and several more disappeared into the bushes where the clothes had been left. One of these was James, who had foresight enough to realize that the distance home was not sufficient to permit his hair to dry. After all, they weren't supposed to swim in the quarry, and there was no point in asking for trouble.

This action on the part of one of the oldest of the group produced results; when Jackie clambered out of the water again, none of the others was visible. He called his brother.

"Come on and dress, fathead!" was the answer of that youth. Jackie made a face. "Why so soon?" he called back. "It can't even be four o'clock yet. I'm going to swim a while longer." He suited action to the word, climbing up the heaped blocks of granite at the side of the quarry and diving from a point higher than had any of the others that day.

"You're yellow, Jim!" he called, as his head once more broke the surface. "Bet you won't go off from there!" His brother reappeared at the water's edge, dressed except fox the undershirt he had used as a towel—which would be redonned, dry or otherwise, before he reached home.

"You bet I won't," he replied as Jackie clambered out beside him, "and you won't either, not today. I'm going home, and you know what Dad will do if you go swimming alone and he hears about it. Come on and get dressed. Here's your clothes." He tossed them onto a block of stone near the water.

A voice from some distance up the road called, "Jim! Jackie! Come on!" and Jim answered with a wordless yell.

"I'm going," he said to his brother. "Hurry up and follow us." He turned his back, and disappeared toward the road. Jackie made a face at his departing back.

In a mood of rebellion against the authority conferred by age, he climbed back up to the rock from which he had just dived, forcing Thrykar, who was making his best speed down the hill with

a load of equipment in his tentacles, to drop behind the nearest cover. Jackie thought better of his intended action, however; the dan-gers of swimming alone had been well drilled into him at an early age, and there was a stratum of common sense underlying his youthful impetuousness. He clambered back down the rocks, sat down on the still warm surface of the block where his clothes lay, and began to dry himself. Thrykar resumed his silent progress downhill.

As he went, he considered the situation. The human being was sitting on the stone block and facing the water; at the moment, Thrykar was directly to his left, and still somewhat above him. Tes was more nearly in front, and still further above. If there was any wind at all, it was insufficient to ripple the water; and Thrykar had recourse to a method that was the equivalent of the moistened finger. He found that there was a very faint breeze blowing approximately from the east—from the rear of the seated figure. Thrykar felt thankful for that, though the circumstance was natural enough. With his skin still wet, Jackie felt the current of air quite sharply, and had turned his back to it without thought.

It was necessary for Thrykar to get behind him. This entailed some rather roundabout travel through the bushes and among the blocks of stone; and by the time the alien had reached a position that satisfied him, the boy had succeeded in turning his shorts right side out and donning them, and was working on the lace of one of his shoes—he had kicked them off without bothering to untie them.

Thrykar, watching him sedulously with one eye, set the tiny cylinders on the ground, carefully checked the single nozzle for dirt, and began to adjust the tiny valves. Satisfied at last, he held the jet well away from his body and toward Jackie, and pressed a triggerlike release on the nozzle itself. Watching carefully, he was able to see faintly the almost invisible bubble that appeared and grew at the jet orifice.

It was composed of an oily compound with high surface tension and very low vapor pressure; it could, under the proper conditions, remain intact for a long time. It was being filled with a mixture composed partly of the anaesthetic that Thrykar had compounded, and partly of hydrogen gas—the mixture had been carefully computed beforehand by Thrykar to be just enough lighter than air to maintain a bubble a yard in diameter in equilibrium.

He watched its growth carefully, releasing the trigger when it seemed to have attained the proper size. Two other tiny controls extruded an extra jet of the bubble fluid, and released another chemical that coagulated it sufficiently in the region near the nozzle to permit its being detached without rupture; and the almost invisible thing was floating across the open space toward Jackie's seat.

Thrykar would not have been surprised had the first one missed; but luck and care combined to a happier result. The boy undoubtedly felt the touch of the bubble film, for he twisted one arm behind his back as though to brush away a cobweb; but he never completed the gesture. At the first touch on his skin, the delicate film burst, releasing its contents; and Jackie absorbed a lungful of the potent mixture with his next breath. For once, the book appeared to be right. Thrykar had been able, with difficulty, to keep the bubble under observation; and as it vanished

he emerged from behind the concealing stone and dashed toward his subject. Jackie, seated as he was with feet clear of the ground, collapsed backwards across the block of granite; and by some miracle Thrykar managed to reach him and cushion the fall before his head struck the stone. The alien had not foreseen this danger until after the release of the bubble.

He eased the small body down on its back, and carefully examined the exposed chest and throat. A pulse was visible on the latter, and he gave a mutter, of ap-proval. Once more the handbook had proved correct.

Thrykar opened the small, waterproof case that had been with the equipment, and extracted a small bottle of liquid and a very Earth-appearing hypodermic syringe. Bending over the limp form on the rock, he opened the bottle and sniffed as the odor of alcohol permeated the air. With a swab that was attached to the stopper, he lightly applied some of the fluid to an area covering the visible pulse; then, with extreme care, he inserted the fine needle at the same point until he felt it penetrate the tough wall of the blood vessel, and very slowly retracted the plunger. The transparent barrel of the instrument filled slowly with a column of crimson.

The hypodermic filled, Thrykar carefully withdrew it, applied a tiny dab of a collodionlike substance to the puncture, sealed the needle with more of the same material, and replaced the apparatus in the case. The whole procedure, from the time of the boy's collapse, had taken less than two minutes.

Thrykar examined the body once more, made sure that the chest was still rising and falling with even breaths and the pulse throbbing as before. The creature seemed unharmed—it seemed unlikely that the loss of less than ten cubic centimeters of blood could injure a being of that size in any case; and knowing that the effects of the anaesthetic would disappear in a very few minutes, Thrykar made haste to gather up his equipment and return to the place where Tes was waiting.

"That puts the first waterfall behind as," he said as he rejoined her. "I'll have to take this stuff down to the ship to work on it—and the sooner it's done, the better. Coming?"

"I think I'll watch until it recovers," she said. "It shouldn't take long, and—I'd like to be sure we haven't done anything irreparable. Thrykar, why do we have to come here, and go to all this deceitful mummery to steal blood from a race that doesn't know what it's all about, when there are any number of intelligent creatures who would donate willingly? That creature down there looks so helpless that I rather pity it in spite of its ugliness."

"I understand how you feel," said Thrykar mildly, following the direction of her gaze and deducing that of her thoughts. "Strictly speaking, a world such as this is an emergency station. You know I tried to get a later vacation period, so that I'd come up for refreshment before we left; but I couldn't manage it. If we'd waited at home until I was finished, we might as well have stayed there—there wouldn't have been time enough left to see anything of Blahn after we got there. There was nothing to do but stop en route, and this was the only place for that. If we'd taken a mainliner, instead of our own machine, we could have reached Blahn in time for treatment, or even received it on board; but I didn't want that any more than you did. I know this

business isn't too pleasant for a civilized being, but I assure you that they are not harmed by it. Look!"

He pointed downwards. Jackie was sitting up again, wearing a puzzled expression which, of course, was lost on the witnesses. He was a healthy and extremely active youngster, so it was not the first time in his life he had fallen asleep during the daytime; but he had never before done so with a block of stone under him. He didn't puzzle over it long; he was feeling cold, and the other boys must be some distance ahead of him by now—he dressed hastily, looked for and finally found the books which Jimmy had neglected to bring with his clothes, and ran off up the road. Tes watched him go with a feeling of relief for which she was unable to account. As soon as he was out of sight, Thrykar picked up the gas cylinders and equipment case, made sure the latter was sealed watertight, and began once more to struggle down the hill with the load. He refused Tes' assistance, so she, unburdened, saved herself the climb by slipping over the edge of the pit. She was in the tiny galley preparing food by the time Thrykar came aboard; she brought him some within a few minutes and remained in the laboratory to watch what he was doing.

He had transferred the sample of blood to a small, narrow-necked flask, which was surrounded by a heating pad set for what the book claimed to be the human blood temperature. The liquid showed no sign of clotting; evidently some inhibiting chemical had been in the hypodermic when the specimen was obtained. Tes watched with interest as Thrykar bent over the flask and permitted a thin stream of his own blood, flowing from a valve in the great vein of his tongue, to mingle with that of the human being. The valve, and the tiny muscles controlling it, were a product of surgery; the biologists of Thrykar's race had not yet succeeded in tampering with their genes sufficiently to produce such a mechanism in the course of normal development. The delicate operation was performed at the same time the individual received his first "refreshment," and was the most unpleasant part of the entire process. Tes, not yet of age, was not looking forward to the change with pleasure.

The flask filled, Thrykar straightened up. His wife looked at the container with interest. "Their blood doesn't look any different from ours," she remarked. "Why this mixing outside?"

"There are differences sufficient to detect either chemi-cally or by microscope. It is necessary, of course, that there be some difference; otherwise there would be no reaction on the part of my own blood. However, when the blood is from two different species, it is best to let the initial reaction take place outside the body. That would be superfluous if my donor was a member of our own race, with merely a differing blood type. If you weren't the same as I, it would have saved us a lot of trouble."

"Why is it that two people who have been treated, like you, are not particularly helpful to each other if they wish to use each other's blood?"

"In an untreated blood stream, there are leucocytes—little, colorless, amoeboid cells which act as scavengers and defenders against invading organisms. The treatment destroys those, or rather, so modifies them that they cease to be independent entities—I speak loosely; of course they are never really independent—and form a single, giant cell whose ramifications extend throughout

the body of the owner, and which is in some obscure fashion tied in with, or at least sensitive to, his nervous system. As you know, a treated individual can stop voluntarily the bleeding from a wound, overcome disease and the chemi-cal changes incident to advancing age—in fact, have a control over the bodily functions usually called 'involun-tary' to a degree which renders him immune to all the more common causes of organic death." One of his tentacles reached out in a caress. "In a year or two you will be old enough for the treatment, and we need no longer fear—separation.

"But to return to your question. The giant leucocyte, after a few months, tends to break up into the original, uncontrollable type; and about half the time, if that process is permitted to reach completion, the new cells no longer act even as inefficient defenders; they attack, instead, and the victim dies of leukemia. The addition to the blood stream of white cells from another type of blood usually halts the breakdown—it's as though the great cell were intelligent, and realized it had to remain united to keep its place from being usurped; and in the few cases where this fails, at least the leukemia is always prevented."

"I knew most of that," replied Tes, "but not the leukemia danger. I suppose that slight risk is acceptable, in view of the added longevity. How long does that blood mixture of yours have to stand, before you can use it?"

"About four hours is best, I understand, though the precise time is not too important. I'll take this shot before we go to bed, let it react in me overnight, and tomorrow we'll catch another human being, get a full donation, and—then we can start enjoying our vaca-tion."

Jackie Wade ran up the road, still hoping to catch up with his brother. He knew he had fallen asleep, but was sure it had been for only a moment; Jim couldn't be more than five minutes ahead of him. He had not the slightest suspicion of what had happened during that brief doze; he had lost as much blood before, in the minor accidents that form a normal part of an active boy's existence. His throat did itch slightly, but he was hardened to the activities of the mosquito family and its relatives, and his only reaction to the sensation was mild annoyance.

As he had hoped, he caught the others before they reached his home, though the margin was narrow enough. Jim looked back as he heard his brother's running footsteps, and stopped to wait for him; the other boys waved farewell and went on. Jackie reached his brother's side and dropped to a walk, panting.

"What took you so long?" asked Jim. "I bet you went swimming again!" He glared down at the younger boy.

"Honest, I didn't," gasped Jackie. "I was just comin' on slowly—thinking."

"When did you start thinking, squirt?" An exploratory hand brushed over his hair. "I guess you didn't at that; it's almost as dry as mine. We'd both better stay outside a while longer. Here, drop my books on the porch and find out what time it is."

Jackie nodded, took the books as they turned in at the gate, and ran around to the small rear porch, where he dropped them. Looking in through the kitchen window, he ascertained that it was a few minutes after four; then he jumped down the steps and tore after his brother. Together, they managed to fill the hour and a half before supper with some of the work which they were

supposed to have done earlier in the day; and by the time their mother rang the cow bell from the kitchen door, hair and undershirts were dry. The boys washed at the pump, and clattered indoors to eat. No embarrassing questions were asked at the meal, and the Wade offspring decided they were safe this time.

Undressing in their small room that night, Jackie said as much. "How often do you think we can get away with it, Jim? It's so close to the road, I'm always thinking someone will hear us as they go by. Why don't they like us to swim there, anyway? We can swim as well as anyone."

"I suppose they figure if we did get drowned they'd have an awful time getting us out; they say it's over a hundred feet deep," responded the older boy, somewhat absently.

Jackie looked up sharply at his tone. Jim was carefully removing a sock and exposing a rather ugly scrape which obviously had been fresh when the sock was donned. Jackie came over to examine it. "How did you do that?" he asked.

"Hit my foot against the rock the first time I dived. It's a little bit sore," replied Jim.

"Hadn't we better have Mother put iodine on it?"

"Then how do I explain where I got it, sap? Go get the iodine yourself and I'll put it on; but don't let them see you get it."

Jackie nodded, and ran barefooted downstairs to the kitchen. He found the brown bottle without difficulty, brought it upstairs, watched Jim's rather sketchy applica-tion of the antiseptic, and returned the bottle to its place. When he returned from the second trip Jim was in bed; so he blew out the lamp without speaking and crawled under his own blankets.

The next morning was bright and almost clear; but a few thin cirrus clouds implied the possibility of another change in the weather. The boys, strolling down the road toward school, recognized the signs; they prompted a remark from Jackie as they passed the second quarry.

"I bet the middle of a rainstorm would be a good time to go swimming there. No one would be around, and you'd have a good excuse for being wet."

"You'd probably break your neck on the rocks," replied his brother. "They're bad enough when it's dry." Jim's foot was bothering him a little, and his attitude toward the quarry was a rather negative one. He had managed to conceal his trouble from their mother, but now he was limping slightly. They had already fallen behind the other boys, who had met them at the Wade gate, and there began to be a serious prospect of their being late for school. Jim realized this as they entered the town and with an effort increased his pace; they managed to get to their rooms with two or three minutes to spare, to Jim's relief. He had been foreseeing the need for a written excuse, which might have been difficult to provide.

When they met at lunch time, Jim refused to discuss his foot, and even Jackie began to worry about the situa-tion. He knew his elder brother would not lie about his means of acquiring the injury, and it seemed very likely that the question was going to arise. After school, there was no doubt of it. Jimmy insisted that his brother not wait for him, but go home and stay out of the way until he had faced the authorities; Jackie was willing to avoid the house, but wanted to keep with Jim until they got there. The older boy's personality triumphed, and Jackie went on with the main crowd, while James limped on behind.

They did not swim, that day. The older boys had determined to play higher up the mountain side, and the younger ones trailed along. They spent a riotous afternoon, with little thought to passage of time; and Jackie heard the supper bell ring when he was a hundred yards from the house. He took to his heels, paused briefly at the pump, burst into the kitchen, recovered his poise, and proceeded more sedately to the dining room. His mother looked up as he entered, and asked quietly, "Where's Jimmy?"

That morning, as on the previous day, Thrykar had made careful count of the number of human beings passing the quarry. Although only one automobile had passed the second day, the number of pedestrians had tallied three times—fifteen people had walked to town both mornings; two had walked back in the afternoon, and thirteen had paused to swim. He concluded that those fifteen could be counted on as regular customers, when he laid his plans for the second afternoon.
This time, he took up his station very near the road, concealed as best he could behind bushes. Tes was at his station of the day before, ready to give him warning of people approaching. He was not counting on a lone swimmer remaining behind at the quarry; he hoped to snatch one of the passersby from the road itself.
In consequence, he was more than pleased to see that the human beings did not stop to swim; the first group to pass consisted of twelve, whom he rightly assumed to be most of the previous day's swimmers, and the second was the pair of girls, which Thrykar, of course, was unable to recognize as such. There was one to go; and, though it seemed too good to be true, there was every chance that that one would pass alone.
He did. Tes signaled his approach, and Thrykar, not waiting for anything more, started blowing a bubble. The wind was against him today; he had to make a much larger one, of heavier material, and "anchor" it to the middle of the road. It was more visible, in consequence, than the other had been; but he placed it in the shadow of a tree. Jimmy might not have seen it even had he been less preoccupied. As it was, he almost missed it; Thrykar had time to lay but one trap, which he placed at the center of the road; and Jimmy, from long-established habit, walked on the left. In consequence, he was down-wind from the thing; and when it ruptured at his grazing touch, the alien had no reason to be dissatisfied with the result.

The boy hit the ground before Thrykar could catch him, but there were no visible marks to suggest injury to his head when the trapper examined him. Thrykar picked up the unconscious form with an effort, collected the books which had fallen from its hand, and staggered back to the place where he had concealed the rest of his equipment.
This was not the place from which he had been watching; there was more equipment this time, the opera-tion would take longer, and it would have been foolhardy to work so close to the road. He had found another space between large, discarded granite blocks about midway be-tween road and quarry; and this he made his operating room.
Before going to work, he applied an extra dose of the anaesthetic directly to the boy's nostrils; and he laid the cylinder containing the substance close at hand. He uncased a much larger needle,

connected by transparent, flexible tubing to a small jar graduated for volumetric measure; and, not trusting his memory, he laid the book beside it, open to the page which gave the quantity of blood that might safely be removed from a human being—a quantity determined long before by experi-ment.

As he had done the day before, he swabbed the unprotected throat with alcohol, and inserted the needle; a tiny rubberlike bulb, equipped with a one-way valve, attached to the jar, provided the gentle suction needed, and the container slowly filled to the indicated gradua-tion. Thrykar promptly stopped pumping, extracted the needle, and sealed the puncture as before. Then, before the blood had time to cool appreciably, he removed a small stopper from the jar, inserted his slender tongue, and spent the next two minutes absorbing the liquid into his own circulatory system.

That accomplished, he quickly replaced the apparatus in its case. Then he exerted himself to pick up Jimmy's body and carry it back to the road, at the point where the boy had fallen. There he laid him, face down, as nearly as he could recall in the attitude in which he had collapsed; the books were replaced near his left hand, and after a few minutes' search the alien found a fair-sized fragment of granite, which he placed near the boy's foot to serve as a reason for falling. He considered placing another under the head to account for the loss of consciousness, but couldn't bring himself to provide the necessary additional bruise.

Looking around carefully to make sure none of the human being's property was unreasonably far from the body, Thrykar returned to his watching place and set himself to await the boy's return to consciousness. He had no fears himself for the subject's health, but he remembered Tes' reaction the day before, and wanted to be able to reassure her.

He lay motionless, watching. He was beginning to feel restless, and could tell that he was running a mild fever—the normal result of the refresher reaction. He would be a trifle below par for the rest of the day. That was not worrying him seriously; he could rest until blackness fell, and as soon as that desirable event had occurred, they could be out and away.

He did feel a little impatient with his subject, who was taking a long time to regain consciousness. Of course, the creature had received a far heavier dose of anaesthetic than had the other, and had lost more blood; it might be a little longer in recuperating, on that score; but he had occupied fully ten minutes with the operation and stage-setting, which was about twice as long as the total period of unconsciousness of yesterday's subject.

His patience wore thinner in the additional ten minutes that elapsed before Jimmy Wade began to stir. His first motion attracted the alien's wandering attention, and Thrykar gathered himself together preparatory to leaving. Jimmy moaned a little, stirred again, and suddenly rolled over on his back. After a moment his eyes opened, to stare blankly at the overshadowing tree; then he rolled over again, this time obviously under conscious control, and started to get to his feet.

Thrykar, behind his concealing bush, did likewise. He was the only one to complete the movement. The boy got as far as his hands and knees, and was starting to get one foot under him, when Thrykar saw the small body go limp as though it had received a second shot of gas, and slump back into a huddled heap on the road.

Thrykar stood frozen for a moment, as though he expected to be similarly stricken; and even when he relaxed, be kept both eyes fixed on the inert form for fully half a minute. Then, heedless of the risk of being seen should the creature regain its senses, he rushed out on the road and bent over the body, simultaneously tapping out an urgent call to Tes. Once more he picked Jimmy up, feeling as though his tentacles were about to come out at the roots, and bore him carefully back to the scene of the operation.

His emotions were almost indescribable. To say that he felt criminally guilty in causing serious injury to a sensitive being would not be strictly true; although he had an intellectual realization that human beings were social creatures in a plane comparable to that of his own race, he could not sympathize with them in the etymologically correct sense of the word. At the same time, he was profoundly shocked at what he had done; and he experi-enced an even deeper feeling of pity than had Tes the day before.

With careful tentacles he opened the loose shirt, and felt for the heart he had located the day before. It was still beating, but fully twice as rapidly as it should have been; and so weakly that for a moment Thrykar could not find it. The chest was rising and falling slightly, in slow, shallow breaths. A man would have detected at once the pallor underlying the tan on the boy's face, but it was unnoticeable to the alien.

Tes arrived and bent over the pair, as her husband performed the examination. Thrykar told her what had happened in a few words, without looking up. She gave a single word of understanding, and let a tentacle slide gently across Jimmy's forehead.

"What can you do?" she asked at last.

"Nothing, here. We'll have to get it down to the ship somehow. I'm afraid to take it under water—none of them went more than a few feet below the surface yesterday, and none stayed down for more than a few seconds. I hate to do it, but we'll have to bring the ship up in broad daylight. I'll stay there; you go down, cast off, and bring the ship over to this side of the pit. Raise it just far enough to bring the upper hatch out of the water. I'll keep this communicator, and when you are ready to come up call me to make sure it's safe."

Tes whirled and made for the quarry without question or argument; a few seconds later Thrykar heard the faint splash as she hurled herself into the water. She must have worked rapidly; a bare five minutes later Thrykar's communicator began to click, and when he responded, the curved upper hull of the spaceship appeared immedi-ately at the near edge of the quarry. Thrykar picked up the boy once more, carried him to the water's edge, eased him in and followed, holding the head well above the surface. He swam the few feet necessary, found the climbing niches in the hull with his own appendages, crawled up the shallow curve of metal, and handed the limp form in to Tes, who was standing below the hatch. She almost fell as the weight came upon her, but Thrykar had not entirely released his hold, and no damage resulted. A few moments later Jimmy was stretched on a metal table in a room adjacent to the control chamber, and the ship was lying at the bottom of the quarry.

Tes had to go out once more for the equipment Thrykar had left above, which included the all-important book. She took only a few minutes, and reported that there was no sign of any other human being.

Thrykar seized the book, although he had already practically memorized the section dealing with Earth and its natives. He had already set the room thermostat at human blood temperature for safety's sake, and had the air not been already saturated with moisture Jimmy's clothes would have dried very quickly. As it was, he was at least free from chill. The chemist checked as quickly as possible the proper values for respiration rate and fre-quency of heartbeat, and sought for information on symptoms of excessive exsanguination; but he was unable to find the last. His original opinion about heartbeat and breathing was confirmed, however; the subject's pulse was much too rapid and his breathing slow and shallow.

There was only one logical cause, book or no book, symptoms or no symptoms. The only source of organic disturbance of which Thrykar had any knowledge was his own removal of the creature's blood. It was too late to do anything about that. The extra dose of gas might be a contributing factor, but the worried chemist doubted it, having seen the negligible effects of the stuff on the human organism the day before.

"Why does that blasted handbook have to be right often enough to make me believe it, and then, when I trust it on something delicate, turn so horribly wrong?" he asked aloud. "I would almost believe I was on the wrong planet, from what it says of the cultural level of this race; then it describes their physical make-up, and I know it's right; then I trust it for the right amount of blood to take, and—this. What's wrong?"

"What does it say about their physical structure?" asked Tes softly. "I know it is fantastically unlikely, but we might have the wrong reference."

"If that's the case, we're hopelessly lost," replied her husband. "I know of no other race sufficiently like this in physical structure to be mistaken for it for a single moment. Look—there are close-ups of some of the most positive features. Take the auditory organ—could that be duplicated by chance in another face? And here—a table giving all the stuff I've been using: standard blood temperature, coloration, shape, height, representative weights . . . Tes!"

"What is wrong?"

"Look at those sizes and weights! I couldn't have moved a body that bulky a single inch, let alone carry one twenty yards! You had the right idea; it is the wrong race . . . or ... or else—"

"Or else," said Tes softly but positively. "It is the right planet, the right race, and the right reference. Those values refer to adult members of that race; we took as a donor an immature member—a child."

Thrykar slowly gestured agreement, inwardly grateful for her use of the plural pronoun. "I'm afraid you must be right. I took blood up to the limit of tolerance of an adult, with a reasonable safety margin; this specimen can't be half grown. Yesterday's must have been still younger. How could I possibly have been so unobservant? No wonder it collapsed in this fashion. I hope and pray the collapse may not be permanent—by the way, Tes, could you make some sort of blindfold that will cover its eyes without injuring them? They seem deeply enough set to make

that a fairly simple job. If it does recover consciousness, there are still laws which should not be broken."
"You could not be blamed for the mistake, anyway," added Tes, comfortingly. "This creature is as large as any we have seen in the open; and who would have thought that children would have been permitted to run freely so far from adult supervision?" She turned away in search of some opaque fabric as she spoke.
"The question is not of blame, but of repairing my error," replied Thrykar. "I can only do my best; but that I certainly will do." He turned back to book, boy, and laboratory.

One thing was extremely clear: the lost blood must be made up in some fashion. Direct transfusion was impos-sible; the creature's body must do the work. Given time and material, it was probably capable of doing so; but Thrykar was horribly afraid that time would be lacking, and he had no means of learning what materials were usable and acceptable to those digestive organs. One thing he was sure would do no chemical harm—water; and he had almost started to pour some down the creature's throat when he recalled that he had heard these beings speak with their mouths, and that there must consequently be a cross-connection of some sort between the alimentary and pulmonary passages. If it was com-pletely automatic, well and good; but it might not be, and there was in consequence a definite risk of strangling the child. He considered direct intravenous injection of sterile water, but chemical knowledge saved him from that blunder.
Tes designed and applied a simple blindfold; after that at Thrykar's direction, she made periodic tests of the subject's blood temperature, pulse, and respiration. That left her husband free to think and read in the forlorn hope of finding something that would enable him to take positive action of some sort. Simply sitting and watching the helpless little creature die before his eyes was as impossible for him as for any human being with a heart softer than flint.
Unquestionably it could have used some form of sugar; perhaps dextrose, such as Thrykar himself could di-gest—perhaps levulose or fructose or even starch. That was something that Thrykar could have learned for himself, even though the book contained no information on the matter; for he was a chemist, and a good one.
But he didn't dare take another blood sample from those veins, even for a test. And he didn't dare resort to trial and error; there would probably be only a single error.
A saliva test would have given him the answer, had he dreamt that an important digestive juice could be found so high in any creature's alimentary canal. He didn't; and the afternoon passed at a funereal tempo, with the faint breathing of the victim of his carelessness sounding in his too-keen ears.
It must have been about sunset when Tes spoke to him.
"Thrykar, it's changing a little. The heart seems stronger, though it's still very fast; and the blood temper-ature has gone up several degrees. Maybe it will recover without help."
The chemist whirled toward the table. "Gone up?" he exclaimed. "It was about where it should be before. If that thing is running a fever—" He did not finish the sentence, but checked Tes' findings himself. They were correct; and looking again at the figures in the book, he lost all doubt

that the creature was suffering from a fever which would have been dangerous to a member of Thrykar's own race and was probably no less so to his. He stood motionless beside the metal table, and thought still more furiously.

What had caused the fever? Certainly not loss of blood—not directly, at least. Had the creature been suffering from some disease already? Quite possible, but no way to make sure. An organic tendency peculiar to the race, resulting from lowered blood pressure, prolonged unconsciousness, or similar unlikely causes? Again, no way to prove it. A previously acquired injury? That, at least, gave hope of providing evidence. He had noted no signs of physical disrepair during the few moments he had seen the creature conscious, but it was more or less covered with artificial fabric which might well have concealed them. The exposed portion of the skin showed nothing—or did it? Thrykar looked more closely at the well-tanned legs, left bare from ankle to just below the knee by the corduroy knickers.

One—the right—was perceptibly larger than its fellow; and touching the brown skin, Thrykar found that it was noticeably hotter. With clumsy haste he unlaced and removed the sneakers, and peeled off the socks; and knew he had the source of the trouble. On the right foot, at the joint of the great toe, was an area from which the skin appeared to have been scraped. All around this the flesh was an angry crimson; and the whole foot was swollen to an extent that made Thrykar wonder how he had managed to get the shoe off. The swelling extended up the leg, in lesser degree, almost to the knee; the positions of the veins in foot and ankle were marked by red streaks.

Ignorant as he was of human physiology, Thrykar could see that he had a bad case of infection on his hands; taken in connection with the fever, it was probably blood poisoning. And, even more than before, there was nothing he could do about it.

He was right, of course, on all counts. Jimmy, in replacing his sock over the scrape the day before, had assured himself of trouble; the iodine had come far too late. By the next morning a battle royal was raging in the neighborhood of the injury. His healthy blood had been marshaling its forces all night and day, and struggling to beat back the organisms that had won a bridgehead in his body; it might possibly have won unaided had nothing further occurred; but the abrupt destruction of his powers of resistance by the removal of nearly half a liter of blood had given the balance a heavy thrust in the wrong direc-tion. James Wade was an extremely ill young man.

Tes, looking on as her husband uncovered the injured foot, realized as clearly as he the seriousness of the situation. The fear that she had been holding at bay for hours an emotion composed partly of the purely selfish terror that they might do something for which the law could punish them, but more of an honest pity for the helpless little being which had unwittingly aided her husband—welled up and sought expression; Thrykar's next words set off the explosion.

"Thank goodness for this!" was what he said, beyond any possibility of doubt; and his wife whirled on him.

"What can you mean? You find yet another injury you've caused this poor thing, and you sound glad of it!"

Thrykar gave a negative flip of his great fins. "I'm sorry; of course my words would give that

impression. But that was not what I meant. I am powerless to help the creature, and have been from the first, though I stubbornly refused to admit the fact to myself. This discovery has at least opened my eyes.

"I wanted to treat it myself before, because of the law against making our presence known; and I wasted my time trying to figure out means of doing so. 1 was attacking the wrong problem. It is not to cure this being ourselves, so that our presence will remain unsuspected; it is to get it to the care of its own kind, without at the same time betraying the secret. I suppose I assumed, without thinking, that the latter problem was insoluble."

"But how can you know that the human race has a medical science competent to deal with this problem?" asked Tes. "According to the handbook, their science is practically nonexistent; they're still in the age of supersti-tion. Now that I think of it, I once read a story that was supposed to take place on Earth, and the men treated some member of our own race on the assumption that he was an evil, supernatural being. Whoever wrote the story must have had access to information about the planet." Thrykar smiled for the first time in hours as he an-swered.

"Probably the same information used by whoever compiled the Earth digest in this handbook. Tes, my dear, can't you see that whoever investigated this world couldn't have stirred a mile from the spot he landed—and must have landed in a very primitive spot. He made no mention of electrical apparatus, metallurgical develop-ment, aircraft—all the things we've seen since we got here. Mankind must be in the age of scientific develop-ment. That investigator was criminally lax. If it weren't for the letter of the law, I'd reveal myself to a human being right now.

"All sciences tend to progress in relation to each other; and I don't believe that a race capable of creating the flying machine we saw two days ago would be lacking in the medical skill to treat the case we have here. We will figure out a means to get this being into the hands of its own people again, and that will solve the problem. We should be able to get away sometime tonight."

Tes felt a great weight roll from her mind. There seemed little doubt that the program her husband had outlined was practical.

"Just how do you plan to approach a man, or group of them, carrying an injured member of their own race—a child, at that—and get away not only unharmed, but unobserved?" she asked, from curiosity rather than de-structive criticism.

"It should not be difficult. There are several dwelling places not far down the road. I can take the creature, place it in plain sight in front of one of them, then withdraw to a safe distance, and attract attention by throwing stones or starting a fire or something of that sort. It must be dark enough by now; we'll go up right away, and if it isn't we can wait a little while."

It was. It was also raining, though not heavily; the boy's prediction of the morning had been fulfilled. Tes maneuvered the little ship as close as possible to the quarry's edge, while Thrykar once again transferred his burden across the short but unavoidable stretch of water. He pulled it out on dry, or comparatively dry, land, and signaled Tes to close the hatch and submerge. She was to wait for him just below the surface, ready to depart the moment he returned.

That detail attended to, he turned, straightened up, and coiled and uncoiled his tentacles two or

three times after the manner of a man flexing his muscles for a severe task. He realized that, in the transportation of a one-hundred--fifteen pound body some three-quarters of a mile, he had taken on a job to which his strength might barely be equal; but the alternative of bringing .he ship closer to the town was unthinkable as yet. He bent over, picked Jimmy up, and started toward the road, keeping to the right side of the drive that led to the quarry.

It was even harder than he had expected. His muscles were strained and sore from the unaccustomed exertion earlier in the day; and by the time he was halfway to the road he knew that some other means of transportation would have to be found. He let his supple body curve under its load, and gently eased his burden to the ground.

Whether he had grown careless, or the rain had muffled the scuffling sound of approaching human feet, he was never sure; but he was unaware of the fact that he was not alone until the instant a beam of light lanced out of the darkness straight into his eyes, paralyzing him with astonishment and dismay.

Jackie Wade had heard nothing, either; but that may be attributed to Thrykar's unshod feet, the rain, and Jackie's own preoccupation with the question of his brother's whereabouts. He was not yet actually worried, though his parents were beginning to be. Once or twice before, one or the other of the boys had remained at a comrade's home for supper. They were, however, supposed to telephone in such an event, and the rather stringent penalties imposed for failure to do so had made them both rather punctilious in that matter.

Jackie had not told about his brother's sore foot; he had simply offered, after supper, to go looking for him on the chance that he might be at the home of a friend who did not possess a telephone. He had no expectation that Jimmy would be at the quarry; he could think of no reason why he should be; but in passing the drive, he thought it would do no harm to look. Jimmy might have been there, and left some indication of the fact.

He knew the way well enough to dispense with all but occasional blinks of the flashlight he was carrying; so he was almost on top of the dark mass in the drive before he saw it. When he did he stopped, and, without dreaming for a moment that it was more than a pile of brush or something of that sort, left, perhaps, by one of the other boys, turned the beam of his light on it.

He didn't even try to choke back the yell of astonish-ment and terror that rose to his lips. His gaze flickered over, accepted, and dismissed in one split second the body of his brother stretched on the wet ground; he stared for a long moment at the object bent over it.

He saw a black, glittering wet body, wide and thick as his own at the upper end, and tapering downwards; a dome-shaped head set on top of the torso without any intermediary neck; great, flat appendages, suggestive in the poor light of wings, spreading from the sides of the body; and a pair of great, staring, wide-set eyes that reflected the light of his flash as redly as do human optics. That was all he had time to see before Thrykar moved, and he saw none of that very clearly. The alien straight-ened his flexible body abruptly, at the same time rocking backward on his short legs away from Jimmy's body; and the muscles in his sinewy, streamlined torso and abdomen did not share any part of the feebleness inherent in his slender tentacles. When he straightened, it was with a snap; he did not merely come erect, but leaped upward and backward out of the cone of

light, with his great fins spread wide for all the assistance they could give. He completely cleared the enormous block of stone lying beside the drive, and the sound of his descent on the other side was drowned in Jackie's second and still more heartfelt yell.

For a moment Thrykar lay where he had fallen; then he recognized his surroundings, dark as it was. He was in the space he had used that afternoon for an operating theater; and with that realization he remembered the path among the rocks and bushes which he had used in carrying the boy to the ship. As silently as he could, he crept along it toward the water; but as yet he did not dare signal Tes.

Behind him he heard the voice of the creature who had seen him. It seemed to be calling —"Jimmy! Jimmy! Wake up! What's the matter!"—but Thrykar could not understand the words. What he did understand was the pound of running feet, diminishing along the drive and turning down the road toward the town. Instantly he rapped out an urgent signal to Tes, and abandoning caution made his way as rapidly as possible to the quarry's edge. A faint glow a few feet away marked the hatch in the top of the hull, and he plunged into the water toward it. Thirty seconds later he was inside and at the control board, with the hatch sealed behind him; and without further preamble or delay, he sent the little ship swooping silently upward, into and through the dripping overcast, and out into the void away from Earth.

Jackie, questioned by his father while the doctor was at work, told the full truth to the best of his ability; and was in consequence sincerely grieved at the obvious doubt that greeted his tale. He honestly believed that the thing he had seen crouched over his brother's body had been winged, and had departed by air. The doctor had already noted and commented on the wound in Jim's throat, and the head of the Wade family had been moved to find out what he could about vampire bats. In consequence, he was doing his best to shake his younger son's insistence on the fact that he had seen something at least as large as a man. He was not having much luck, and was beginning to lose his temper.

Dr. Envers, entering silently at this stage and listening without comment for several seconds, gleaned the last fact, and was moved to interrupt.

"What's wrong with the lad's story?" he asked. "I haven't heard it myself, but he seems to be sure of what he's saying. Also," looking at the taut, almost tearful face of the boy sitting before him, "he's a bit excited, Jim. I think you'd better let him get to bed, and thrash your question out tomorrow."

"I don't believe his story, because it's impossible," replied Wade. "If you had heard it all, you'd agree with me. And I don't like—"

"It may, as you say, be impossible; but why pick on only one feature to criticize?" He glanced at the open encyclopedia indicated by Wade. "If you're trying to blame Jimmy's throat wound on a vampire bat, forget it. Any animal bite would be as badly infected as that toe, and that one looks as though it had received medical treatment. It's practically healed; it was a clean puncture by something either surgically sterile, or so nearly so that it was unable to offer a serious threat to the boy's health even in his present weak condition. I don't know what made it, and I don't care

very much; it's the least of his troubles."
"I told you so!" insisted Jackie. "It wasn't one of your crazy little bats I saw. It was bigger than I am; it looked at me for a minute, and then flew away."
Envers put his hand on the youngster's shoulder, and looked into his eyes for a moment. The face was flushed and the small body trembled with excitement and indig-nation.
"All right, son," said the doctor gently. "Remember, neither your father nor I have ever heard of such a thing as you describe, and it's only human for him to try to make believe it was something he does know about. You forget it for now, and get some sleep; in the morning we'll have a look to find out just what it might have been."
He watched Jackie's face carefully as he spoke, and noted suddenly that a tiny lump, with a minute red dot at the center, was visible on his throat at almost the same point as Jimmy's wound. He stopped talking for a moment to examine it more closely, and Wade stiffened in his chair as he saw the action. Envers, however, made no comment, and sent the boy up to bed without giving the father a chance to resume the argument. Then he sat in thought for several minutes, a half smile on his face. Wade finally interrupted the silence.
"What was that on Jackie's neck?" he asked. "I same sort of thing that—"
"It was not like the puncture in Jimmy's throat, replied the doctor wearily. "If you want a medical opinion, I'd say it was a mosquito bite. If you're trying to connect it with whatever happened to the other boy, forget it; if Jackie knew anything unusual about it, he'd have told you. Remember, he's been trying to put stuffing in a rather unusual story. I'd stop worrying about the whole thing, if I were you; Jimmy will be all right when we get these strep bugs out of his system, and there hasn't been anything wrong with his brother from the first. I know it's perfectly possible to read something dramatic into a couple of insect bites—I read `Dracula' in my youth, too—but if you start reading it back to me I'm quitting. You're an educated man, Jim, and I only forgive this mental wandering because I know you've had a perfectly justifiable worry about Jimmy."
"But what did Jackie see?"
"Again I can offer only a medical opinion; and that is—nothing. It was dark, and he has a normal imagina-tion, which can be pretty colorful in a child."
"But he was so insistent—"

The doctor smiled: "You were getting pretty positive yourself when I walked in, Jim. There's something in human nature that thrives on opposition. I think you'd better follow the prescription I gave for Jackie, and get to bed. You needn't worry about either of them, now." Envers rose to go, and held out his hand. Wade looked doubtful for a moment, then laughed suddenly, got to his feet, shook hands, and went for the doctor's coat.

Like Wade, Tes had a few nagging worries. As Thrykr turned away from the controls, satisfied that the ship was following the radial beam emanating from the broadcaster circling Sol, she voiced them.
"What can you possibly do about that human being who saw you?" she asked. "We lived for three

Earth days keyed up to a most unpleasant pitch of excitement, simply because of a law which forbade our making ourselves known to the natives of that planet. Now, when you've done exactly that, you don't seem bothered at all. Are you expecting the creature to pass us off as supernatural visitants, as they are supposed to have accounted for the original surveyors?"
"No, my dear. As I pointed out to you before, that idea is the purest nonsense. Humanity is obviously in a well-advanced stage of scientific advancement, and it is unthinkable that they should permit such a theory to satisfy them. No—they know about u, now, and must have been pretty sure since the surveyors' first visit."
"But perhaps they simply disbelieved the individuals who encountered the surveyors, and will similarly dis-credit the one who saw you."
"How could they do that? Unless you assume that all those who saw us were not only congenital liars but were known to be such by their fellows, and were nevertheless allowed at large. To discredit them any other way would require a line of reasoning too strained to be entertained by a scientifically trained mind. Rationalization of that nature, Tes, is as much a characteristic of primitive peoples as is superstition. I repeat, they know what we are; and they should have been permitted galactic intercourse from the time of the first survey—they cannot have changed much in sixty or seventy, years, at least in the state of material progress.
"And that, my dear, is the reason I am not worried about having been seen. I shall report the whole affair to the authorities as soon as we reach Blalhn, and I have no doubt that they will follow my recommendation—which will be to send an immediate official party to contact the human race." He smiled momentarily, then grew serious again. "I should like to apologize to that child whose life was risked by my carelessness, and to its parents, who must have been caused serious anxiety; and I imagine I will be able to do so." He turned to his wife.
"Tes, would you like to spend my next vacation on Earth?"

Technical Error

Seven spacesuited human beings stood motionless, at the edge of the little valley. Around them was a bare, jagged plain of basalt, lit sharply by the distant sun and unwavering stars; a dozen miles behind, hidden by the abrupt curvature of the asteriod's surface, was a half-fused heap of metal that had brought them here; and in front of them, almost at their feet, in the shallow groove scraped by a meteor ages before, was an object which caused more than one of those men to doubt his sanity.
Before them lay the ship whose heat-ruined wreckage had been left behind them only minutes ago—perfectly whole in every part. Seven pairs of eyes swept it from end to end, picking out and recognizing each line. Driving and steering jet pits at each end; six bulging observation ports around its middle; rows of smaller ports, their transparent panes gleaming, obviously intact, in the sun-light; the silvery, prolate hull itself—all forced themselves on the minds that sought desperately to reject them as impossibilities. The Giansar was gone—they had fled from the threat of its disordered atomic engines, watched it glow and melt and finally cool again, a nearly

formless heap of slag. So what was this?
None of them even thought of a sister ship. The Giansar had none. Spaceships are not mass production articles; only a few hundred exist as yet, and each of those is a specialized, designed-to-order machine. A
spaceman of any standing can recognize at a glance, by shape alone, any ship built on Earth—and no other intelligent race than man inhabits Sol's system.
Grant was the first to throw off the spell. He glanced up at the stars overhead, and figured; then he shook his head.
"We haven't circled, I'll swear," he said after a moment. "We're a quarter of the way around this world from where we left the ship, if I have allowed right for rotation. Besides, it wasn't in a valley."
The tension vanished as though someone had snapped a switch. "That's right," grunted Cray, the stocky engine man. "The place was practically flat, except for a lot of spiky rocks. And anyway, no one but a nut could think that was the Giansar, after leaving her the way we did. I wonder who left this buggy here."
"Why do you assume it has been left?" The query came, in a quiet voice, from Jack Preble, the youngest person present. "It appears uninjured. I see no reason to suppose that the crew is not waiting for us to enter at this moment, if they have seen us."
Grant shook his head. "That ship might have been here for years—probably has, since none of us can place it. The crew may be there, but, I fear, not alive. It seems unlikely that this craft has been registered in the lifetime of any of us. I doubt that it would have remained here unless it were disabled; but you must all have realized by now that it holds probably our only chance of life. Even if it won't fly, there may be a transmitter in repair. We had better investigate."

The men followed the captain as he took a long, slow leap down the slope. Little enthusiasm showed in the faces behind the helmet masks; even young Preble had accepted the fact that death was almost inevitable. At another time, they might have been eager and curious,even in the face of a spectacle as depressing as a derelict usually is; now they merely followed silently. Here, probably,' a similar group of men had, no one knew how long ago, faced a fate identical to theirs; and they were about to see what had befallen those others. No one saw humor in the situation, but a wry smile was twisting more than one face as the group stopped beneath the circular entrance port. More than one thought of the possible irony of their being taken for a rescue crew.
Grant looked at the port, twenty-five feet above their heads. Any of them could easily have jumped to it; but even that effort was not necessary, for a row of niches, eight inches square and two deep, provided a ladder to the rim. It was possible to cling to them even on the lower curve of the hull, for they were deeply grooved around the inside edges. The captain found that his gauntlets could grip easily, and he made his way up the wall of metal, the others watching from below. Arriving at the port, he found that the niches formed a circle around it, and other rows of them extended over the hull in different directions. It was at the entrance, however, that he met the first of the many irregularities.

The others saw him reach the port, and stop as though looking around. Then he traveled entirely around it, stopped again, and began feeling the mirrorlike metal with his gloved hands. Finally he called out:

"Cray, could you come up here, please? If anyone can find the opening mechanism, you should."

The engineer remained exactly where he was.

"Why should there be any?" he asked. "The only reason we use it on our ships is habit; if the door opens inward, atmospheric pressure will hold it better than any lock. Try pushing; if the inner door is sealed, you shouldn't have much trouble—the lock chamber will be exhausted, probably."

Grant got a grip near the edge of the door, and pushed.

There was no result. He moved part way around the rim and tried again, with the same lack of success. After testing at several more points, he spoke again:

"No luck. I can't even tell which side the hinge is on, or even if there is a hinge. Cray, you and a couple of others had better come up and give a hand at pushing; maybe there's a trace of air in the inner chamber."

Cray grunted, "If there's anywhere near an atmos-phere's pressure, it'll take tons to budge the door—it's twelve feet across." But this time he began to climb the bull. Royden, probably the most powerful one present, and a chemist named Stevenson followed him. The four men grouped themselves about the forward edge of the port, their feet braced on the door itself and hands firmly gripping the climbing niches; and all four tensed their bodies and heaved. The door still refused to budge. They rested a moment, and followed Grant to the opposite side of the metal disk.

This time their efforts produced results. The pressure on the other side of the valve must have been only a few millimeters of mercury; enough to give four or five hundred pounds' resistance to an outside thrust at the edge opposite the hinge. When the door opened a crack, that pressure vanished almost instantly, and the four men shot feet first through the suddenly yawning opening. Grant and Stevenson checked the plunge by catching the edge of the port frame; the other two disappeared into the inner darkness, and an instant later the shock of their impact upon some hard surface was felt by those touch-ing the hull.

The captain and the chemist dropped to the floor of the lock and entered; Preble leaped for the open door, followed by Sorrell and McEachern. All three judged accurately, sailing through the opening, checking their flight against the ceiling, and landing feet down on thefloor, where they found the others standing with belt lights in their hands. The sun was on the far side of the ship,. and the chamber was lighted dimly by reflection from the rocks outside; but the corridors of the vessel themselves must be dark.

The inner valve of the air lock was open—and had apparently been so from the beginning. Cray and Royden had shot through it, and been brought up against the far-ther wall of a corridor running parallel to the ship's long axis. They were both visible, standing back to back, sweep-ing the corridor in both directions with their lights. Grant took a step that carried him over to them, motioning the others to remain where they were, and added his light to those already in action.

To the right, as one entered it, the corridor extended almost to the near end of the ship—the bow, as the men thought of it for no good reason. in another direction, it ran about ten yards and opened into a large chamber which, if this craft resembled the Giansar as closely within as it did without, was probably the control room. At least, it was just about amidships. Smaller doors opened at intervals along the hallway; some were open, the majority were closed. Nothing moved anywhere.

"Come on," said Grant finally. He walked toward the central room, and paused on the threshold, the others at his heels. The floor they were walking on continued in the form of a catwalk; the chamber they were entering occupied the full interior of the hull at this point. It was brightly lighted, for it was this compartment that possess-ed the six great view ports, equally spaced around its walls, and the sun shone brightly through these. The men extinguished their own lights. Cray looked about him, and shook his head slowly.

"I still think I must be dreaming, and about to wake up on our own ship," he remarked. "This looks more and more like home, sweet home."

Grant frowned. "Not to me," he replied. "This control layout is the first serious difference I've seen. You wouldn't notice that, of course, spending all your life with the engines. It might be a good idea for you to see if the drive on this ship is enough like ours for you to puzzle out, and whether there's a chance of repairing it. I'll look over this board for signs of a transmitter—after all, the Mizar shouldn't be too far away."

"Why shouldn't I be able to understand the drive?" retorted Cray. "It should be like ours, only a little more primitive—depending on how long this boat's been here."

Grant shot him an amazed glance. "Do you still think this is a Terrestrial ship, and has been here only a few decades?" he asked.

"Sure. Any evidence otherwise?"

Grant pointed to the floor beneath their feet. All looked down, and for the first time noticed that they left footprints in a thin, even layer of dust that coated the corridor floor.

"That means that the ship held its air for a longer time than I care to think about—long enough not only to reduce the various organic substances on board to dust, but at random currents to distribute it through the open spaces. Yet when we came the air was almost gone—leaked out through the joints and valves, good as they were, so that there was not enough left to resist us when we pushed a twelve-foot piston against its pressure. Point one."

The finger swung to the control board. "Point two." He said nothing further, but all could see what he meant.

The center of the control room was occupied by a thick-walled hemisphere—a cup, if you like—swung in gimbals which permitted its flat side always to the uppermost with respect to the ship's line of net accelera-tion. The control board occupied the inner surface and upper edge of this cup, all around the circumference; andin the center of the assembly was the pilot's seat—if it could be called a seat.

It was a 'dome-shaped structure protruding from the floor about two feet; five broad, deep

grooves were spaced equally about its sides, but did not quite reach the top. It looked somewhat like a jelly mold; and the one thing that could be stated definitely about its history was that no human being had ever sat in it. Cray absorbed this evident fact with a gulp, as though he had not chewed it sufficiently.

The rest of the men stared silently at the seat. It was as though the ghost of the long-dead pilot had materialized there and held their frozen attention; overwrought imagi-nations pictured him, or strove to picture him, as he might have looked. And they also tried to picture what emergency, what unexpected menace, had called upon him to leave the place where he had held sway—to leave it forever. All those men were intelligent and highly trained; but more than one pair of eyes explored the corridor the human invaders had just used, and its mate stretching on from the other side of the control room.

Cray swallowed again, and broke the silence. "I should be able to figure out the engines, anyway," he said, "if they're atomics at all like ours. After all, they have to do the same things ours did, and they must have correspond-ing operations and parts."

"I hope you're right." Grant shrugged invisibly in the bulky suit. "I don't expect to solve that board until you fix something and the pilot lights start signaling—if they have pilot lights. We'd all better get to work. Cray's regular assistants can help him, McEachem had better stay with me and help on the board, and Preble and Stevenson can look over the ship in general. Their fields of specialty won't help much at our jobs. Hop to it." He started across the catwalk toward the control board, with McEachem trailing behind him.

Stevenson and Preble looked at each other. The younger man spoke. "Together, or should we split up?"

"Together," decided the chemist. "That way, one of us will probably see anything the other misses. It won't take much longer; and I doubt that there's much hurry for our job, anyway. We'll follow Cray and company to which-ever engine room they go to, and then work from that end to the other. All right?"

Preble nodded, and the two left the control room. The engineers had gone toward the bow—so called because the main entrance port was nearer that end—and the two general explorers followed. The others were not far ahead, and their lights were visible, so the two did not bother to use their own. Stevenson kept one hand on the right-hand wall, and they strode confidently along in the semidarkness.

After a short distance, the chemist's hand encountered the inner door of the air lock by which they had entered. It had been swung by the men all the way back against the wall, leaving both doors open, so that the light was a little better here. In spite of this, he did not see the object on the floor until his foot struck it, sending it sliding along the corridor with a metallic scraping sound that was easily transmitted through the metal of the floor and their suits.

He found it a few feet away, and, near it, two more exactly similar objects. He picked them up, and the two men examined them curiously. They were thick, oval rings, apparently of steel, with an inch or so of steel cable welded to one side of each. The free end of the cable seemed to have been sheared off by some sharp tool. Stevenson and Preble looked at each other, and both

directed their lights on the floor about the inner portal of the air lock.

At first, nothing else was noticeable; but after a moment, they saw that the chemist's foot, just beforestriking the ring, had escaped a groove in a layer of dus much thicker than that over the rest of the floor. It wa; piled almost 'to the low sill of the valve, and covered al area two or three feet in radius. Curiously, the mer looked at the outer side of the sill, and found a similai flat pile of dust, covering even more of the floor; and near the edges of this layer were five more rings.

These, examined closely, proved larger than the first ones, which had been just a little too small for an average human wrist; but like them, each had a short length of wire cable fused to one side, and cut off a short distance out. There was nothing else solid on the floor of the lock or the corridor, and no mark in the dust except that made by Stevenson's toe. Even the dust and rings were not very noticeable—the seven men had entered the ship through this lock without seeing them. Both men were sure they had some meaning, perhaps held a clue to the nature of the ship's former owners; but neither could decipher it. Preble dropped the rings into a pocket of his spacesuit, and they headed down the corridor again on the track of the engineers.

They caught up with them about a hundred and fifty feet from the control room. The three were standing in front of a heavy-looking, circular door set in a bulkhead which blocked off the passage at this point. It was not featureless, as the air lock doors had been, but had three four-inch disks of darker metal set into it near the top, the bottom, and the left side. Each disk had three holes, half an inch in diameter and of uncertain depth, arranged in the form of an isosceles triangles. The men facing it bore a baffled air, as though they had already tackled the problem of opening it.

"Is this your engine room?" asked Preble, as he and Stevenson stopped beside the others. "It looks more like a pressure lock to me."

"You may be right," returned Cray gloomily. "But
there's nowhere else in this end of the ship where an engine room could be, and you remember there were jets at both ends. For some reason they seem to keep the room locked tight—and we don't even know whether the locks are key or combination. If it's combination, we might as well quit now; and if it's key, where is it?"

":'hey look like the ends of big bolts, to me," sug-gested Stevenson. "Have you tried unscrewing them?"

Cray nodded. "Royden got that idea, too. Take a closer look at them before you try turning the things, though. If you still feel ambitious, Royden will show you the best way to stick your fingers into the holes."

Preble and the chemist accepted the suggestion, and examined the little disks at close range. Cray's meaning was evident. They were not circular, as they had seemed at first glance; they presented a slightly elliptical cross section, and obviously could never be made to turn in their sockets. The lock theory seemed to remain unchal-lenged.

That being granted, it behooved them to look for a key. There was no sense toying with the combination idea—there was no hope whatever of solving even a simple combination without specialized knowledge which is seldom acquired legally. They resolutely ignored the probability

that the key, if any, was only to be found in the company of the original engineer, and set to work.

Each of them took one of the nearby rooms, and commenced going over it. All the room doors proved to be unlocked, which helped some. Furniture varied but little; each chamber had two seats similar to that in the control room, and two articles which might at one time have been beds; any mattress or other padding they had ever contained was now fine dust, and nothing save metal troughs, large enough to hold a man lying at full length, were left. There was also a desklike affair, which con-tained drawers, which opened easily and soundlessly, and was topped by a circular, yardwide, aluminum-faced mirror. The drawers themselves contained a variety of objects, perhaps toilet articles, of which not one sufficient-ly resembled anything familiar to provide a clue to its original use.

A dozen rooms were ransacked fruitlessly before the men reassembled in the corridor to exchange reports. One or two of them, hearing of the others' failure, returned to the search; Preble, Stevenson, and Sorrell strolled back to the door which was barring their way. They looked at it silently for several moments; then Sorrell began to speak.

"It doesn't make sense," he said slowly. "Why should you lock an engine-room door? If the motors have to be supervised all the time, as ours do, it's a waste of time. If you grant that these creatures had their motors well enough designed to run without more than an occasional inspection, it might be worth while to seal the door against an accidental blowoff; but I still wouldn't lock it. Of course we don't know anything about their ideas of what was common sense.

"But I'd say that that door either isn't fastened at all, and is putting up a bluff like the outer air-lock valve, or else it's really sealed, and would be opened by tools rather than keys. You may think that's quibbling, but it isn't. Keys, you carry around with you, in your pocket or on your belt. Tools have a place where you leave 'em, and are supposed to stay there. Kid, if you were an engineer, in the practice of unsealing this door every few days, perhaps, and needed something like a monkey wrench to do it with, where would you keep the monkey wrench."

Preble ignored the appellation, and thought for a moment. Finally he said, "If I were fastening the door against intentional snooping, I'd keep the tool in my own quarters, locked up. If, as you suggested, it. were merely
a precaution against accident, I'd have a place for it near the door here. Wouldn't you say so?"

The machinist nodded, and swept his light slowly over the bulkheads around the door. Nothing showed but smooth metal, and he extended the search to the corridor walls for several yards on both sides. The eye found nothing, but Sorrell was not satisfied. He returned to the edge of the door and began feeling over the metal, putting a good deal of pressure behind his hand.

It was a slow process, and took patience. The others watched, holding their lights to illuminate the operation. For several minutes the suit radios were silent, those of the more distant men cut off by the metal walls of the rooms they were searching and the three at the door prosecuting their investigation without speech. Sorrell was looking for a wall cabinet, which did credit to his imagination; such a thing seemed to him the last place to keep tools. He was doing his best to allow for the probably unorthodox ideas of the builders of the ship, reducing the problem as far as

he could toward its practical roots, and hoping no physical or psychological traits of the being he never expected to meet would invalidate his answers. As Preble had said, a tool used for only one, specialized purpose logically would be kept near the place in which it was used.

The machinist turned out to be right, though not exactly as he had expected. He was still running his hands over the wall when Preble remembered a standard type of motor-control switch with which even he was familiar; and, almost without thinking, he reached out, inserted his fingers in the three holes of one of the disks, and pulled outward. A triangular block, indistinguishable in color from the rest of the disk, slid smoothly out into his hand.

The other two lights converged on it, and for a secondor two there was silence; then Sorrell chuckled. "You win, Jack," he admitted. "I didn't carry my own reason-ing far enough. Go ahead."

Preble examined the block of metal. What had been the inner face was copper-colored, and bore three holes similar to those by which he had extracted it. There was only one other way to fit it into the disk again; he reserved it, with the copper face outward, and felt it slip snugly back into place. Sorrell and Stevenson did the same with the upper and lower disks, which proved to contain similar blocks. Then they stood back, wondering what happened next.

They were still waiting when Cray and Royden re-joined them. The former saw instantly what had been done to the door, and started to speak; then he took a second, and closer look, and, without saying a word, reached up, inserted three fingers in the holes in the coppery triangles of the block face, and began to unscrew the disk. It was about five inches thick, and finally came out in his hands. He stared doubtfully at it, and took a huge pair of vernier calipers from the engineer's kit at his side and measured the plug along several diameters. It was perfectly circular, to within the limit of error of his instrument.

He looked at the others at length, and spoke with a note of bewilderment. "I could have sworn this thing was elliptical when we first examined it. The hole still is, if you'll look." He nodded toward the threaded opening from which the disk had come. "I saw the line where it joined the door seemed a good deal wider at the top and bottom; but I'm sure it fitted tightly all around, before."

Sorrell and Royden nodded agreement. Evidently re-versing the inset block had, in some fashion, changed the shape of the disk. Cray tried to pull the block out again, but it resisted his efforts, and he finally gave up with a shrug. The men quickly unscrewed the other disks, and

Royden leaned against the heavy door. It swung silently inward; and four of the men instantly stepped through, to swing their lights about the new compartment. Cray alone remained at the door, 'puzzling over the hard-yet-plastic metal object. The simple is not always obvious.

Grant and McEachern, in the control room, were having trouble as well. They had approached the control cup along the catwalk, and the captain had vaulted into its center without difficulty. And he might just as well have remained outside.

The control buttons were obvious enough, though they did not project from the metal in which they were set. They occurred always in pairs—probably an "on" and "off" for each operation; and

beside each pair were two little transparent disks that might have been monitor lights. All were dark. Sometimes the pairs of buttons were alone; sometimes they were in groups of any number up to eighteen or twenty. Each group was isolated from its neighbors; and they extended completely around the footwide rim of the cup, so that it was not possible to see them all at once. But the thing that bothered Grant the most was the fact that not a single button, light, or group was accom-panied by a written label of any sort. He would not have expected to be able to read any such writing; but there had been the vague hope that control labels might have been matched with similar labels on the machines or charts—if the other men found any of either. It was peculiar, for there were in all several hundred buttons; and many of the groups could easily have been mistaken for each other. He put this thought into words, and McEachern frowned behind his helmet mask before reply-ing.

"According to Cray's logic, why should they be la-beled?" he remarked finally. "Do we allow anyone to pilota ship if he doesn't know the board blindfolded? We do label ours, of course, on the theory that an inexperienced man might have to handle them in an emergency; but that's self-deception. I've never heard of any but a first-rank pilot bringing a ship through an emergency. Label-ing controls is a carry-over from the family auto and airplane."

"There's something in that," admitted the captain. "There's also the possibility that this board is labeled, in a fashion we can't make out. Suppose the letters or characters were etched very faintly into .hat metal, which isn't polished, you'll notice, and were meant to be read by, say, a delicate sense of touch. I don't believe that myself, but it's a possibility—one we can't check, since we can't remove our suits to feel. The fact that there are no obvious lights for this board lends it some support; they couldn't have depended on sunlight all the time."

"In either case, fooling around here at this stage may do more harm than good," pointed out McEachern. "We'll have to wait until someone gets a machine iden-tified, and see if tampering with it produces any results here."

Grant's helmet nodded agreement. "? never had much hope of actually starting the ship," he said, "since it seems unlikely that anything but mechanical damage of a serious nature could have stranded it here; but I did have some hopes for the communicators. There must be some."

"Maybe they didn't talk," remarked the navigator.

"If that's your idea of humor, maybe you'd better not, yourself," growled Grant. He vaulted back to the catwalk, and morosely led the way forward, to see if the engineers or free-lance investigators had had any luck. McEachern followed, regretting the remark, which must have jarred the commander's optimism at an unfortunate time. He
tried to think of something helpful to say, but couldn't, so he wisely kept quiet.

Halfway to the bow; they met Preble and Stevenson, who had satisfied themselves that the others could do better in the engine room and were continuing their own general examination of the ship. They gave the officers a brief report on events forward, showed them the metal rings found by the air lock, and went on aft to find some means of visiting the corridors which presumably existed above and below the main one. The control room seemed the logical place to look first,

though neither had noticed any other openings from it when they were there the first time. Perhaps the doors were closed, and less obvious.

But there were no other doors, apparently. Only two means of access and egress to and from the control room appeared to exist, and these were the points where the main corridor entered it.

"There's a lot of room unaccounted for, just the same," remarked Stevenson after the search, "and there must be some way into it. None of the rooms we investigated looking for that `key' had any sign of a ramp or stairway or trapdoor; but we didn't cover them all. I suggest we each take one side of the bow corridor, and look behind every door we can open. None of the others was locked, so there shouldn't be much trouble."

Preble agreed, and started along the left-hand wall of the passage, sweeping it with his light as he went. The chemist took the right side and did likewise. Each reached a door simultaneously, and pushed it open; and a simultaneous "Here it is" crackled from the suit radios. A spiral ramp, leading both up and down, was revealed on either side of the ship, behind the two doors.

"That's more luck than we have a right to expect," laughed Stevenson. "You take your side, I'll take mine, and we'll meet un above."

Preble again agreed silently, and started up the ramp. It was not strictly accurate to call it a spiral; it was a curve evidently designed as a compromise to give some traction whether the ship were resting on its belly on a high-gravity planet, or accelerating on its longitudinal axis, and it did not make quite a complete turn in arriving at the next level above. Preble stepped onto it facing the port side, and stepped off facing sternward, with a door at his left side. This he confidently tried to push open, since like the others it lacked knob or handle; but unlike them, it refused to budge.

There was no mystery here. The most cursory of examinations disclosed the fact that the door had been welded to its frame all around—raggedly and crudely, as though the work had been done in frantic haste, but very effectively. Nothing short of a high explosive or a heavy-duty cutting arc could have opened that portal. Preble didn't even try. He returned to the main level, meeting Stevenson at the foot of the ramp. One look at his face was enough for the chemist.

"Here, too?" he asked. "The door on my side will never open while this ship is whole. Someone wanted to keep something either outside or inside that section."

"Probably in, since the welding was done from out-side," replied Preble. "I'd like to know what it was. It would probably give us an idea of the reason for the desertion of this ship. Did you go down to the lower level?"

"Not yet. We might as well go together—if one side is sealed, the other probably will be, too. Come on."

They were still on the left-hand ramp, so it was on this side that they descended. A glance at the door here showed that, at least, it was not welded; the pressure of a hand showed it to be unlocked. The two men found themselves at the end of a corridor similar in all respects to the one above, except that it came to a dead end to the right of the door instead of continuing on into the central chamber. It was pitch-dark, except for the reflections of the hand lights on the. polished metal walls and along either side were doors, perhaps a trifle larger than most of the

others on the ship. Many of these were ajar, others closed tightly; and by common consent the men stepped to the nearest of the former.

The room behind it proved similar in size to those above, but it lacked the articles which the men had come to look upon as the furniture of the long-dead crew. It was simply a bare, empty cubicle. The other chambers, quickly examined, showed no striking difference from the first. Several contained great stacks of metal ingots, whose inertia and color suggested platinum or iridium; all were thickly coated with dust, as was the floor of the corridor. Here, too, there must have been organic materials, whether crew or cargo none could tell, which had slowly rotted away while the amazingly tight hull held stubbornly to its air. The makers of the ship had certainly been superb machinists—no vessel made by man would have held atmosphere more than a few months, without constant renewal.

"Have you noticed that there is nothing suggestive of a lock on any of these doors?" asked Preble, as they reached the blank wall which shut them off from the engine room in front.

"That's right," agreed Stevenson. "The engine-room port was the only one which had any obvious means of fastening. You'd think there would be need to hold them against changes in acceleration, if nothing else."

He went over to the nearest of the doors and with some care examined its edge, which would be hidden when it was closed; then be beckoned to Preble. Set in the edge, almost invisible, was a half-inch circle of metal slightly different in color from the rest of the door. Itseemed perfectly flush with the metal around it. Just above the circle was a little dot of copper.

Both , objects were matched in the jamb of the door—the copper spot by another precisely similar, the circle by a shallow, bowl-shaped indentation of equal size and perhaps a millimeter deep. No means of activating the lock, if it were one, were visible. Stevenson stared at the system for several minutes, Preble trying to see around the curve of his helmet.

"It's crazy," the chemist said at last. "If that circle marks a bolt, why isn't it shaped to fit the hollow on the jamb? It couldn't be moved forward a micron, the way it is. And the thing can't be a magnetic lock—the hollow proves that, too. You'd want the poles to fit as snugly as possible, not to have the field weakened by an air gap. What is it?"

Preble blinked, and almost bared his head in reverence, but was stopped by his helmet. "You have it, friend," he said gently. "It is a magnetic lock. I'd bet"—he glanced at the lung dial on his wrist—"my chance of living another hundred hours that's the story. But it's not based on magnetic attraction—it's magnetostriction. A magnetic field will change the shape of a piece of metal—some-what as a strong electric field does to a crystal. They must have developed alloys in which the effect is extreme. When the current is on, that `bolt' of yours fits into the hollow in the jamb, without any complicated lever system to move it. This, apparently, is a cargo hold, and all the doors are probably locked by one master switch—perhaps on the control board, but more probably down here somewhere. So long as a current is flowing, the doors are locked. The current in any possible storage device must have been exhausted ages ago, even if these were left locked."

"But what about the engine-room door?" asked Ste-.

venson. "Could that have been of this type? It was locked, remember." Preble thought for a moment.
"Could be. The removable block might have been a permanent magnet that opposed another when it was in one way, and reinforced it when it was reversed. Of course, it would be difficult to separate them once they were placed in the latter position; maybe the ship's current was used to make that possible. Now that the current is off, it may be that there will be some difficulty in returning that block to its original position. Let's go and see." He led the way back along the corridor to the ramp.

Cray received the theory with mingled satisfaction and annoyance; he should, he felt, have seen it himself. He had already discovered that the triangular blocks had developed an attachment for heir new positions, and had even considered magnetism in that connection; but the full story had escaped him. He had had other things to worry about, anyway.
The free-lance seekers had met the engineer at the entrance to the engine room. Now the three moved inside, stepping out onto a catwalk similar to that in the control room. This chamber, however, was illuminated only by the hand torches of the men; and it was amazing to see bow well they lit up the whole place, reflecting again and again from polished metal surfaces.
When one had seen the tube arrangement from outside the ship, it was not difficult to identify most of the clustered machines. The tube breeches, with their heavy injectors and disintegrators, projected in a continuous ring around the walls and in a solid group from the forward bulkhead. Heavily insulated leads ran from the tubes to the supplementary cathode ejectors. It seemed evident that the ship had been driven and steered by reaction jets of heavy-metal ions, as were the vessels ofhuman make. All the machines were incased in heavy shields, which suggested that their makers were not immune to nuclear radiation.
"Not a bad layout," remarked Preble. "Found out whether they'll run?"
Cray glared. "No!" he answered almost viciously. "Would you mind taking a look at their innards for us?"
Preble raised his eyebrows, and stepped across the twenty-foot space between the catwalk and the nearest tube breech. It was fully six feet across, though the bore was probably not more than thirty inches—the walls had to contain the windings for the field which kept the ion stream from actual contact with the metal. The rig which was presumably the injector-distintegrator unit was a three-foot bulge in the center, and the insulated feed tube led from it to a nearby fuel container. The fuel was probably either mercury or some other easily vaporized heavy metal, such as lead.
All this seemed obvious and simple enough, and was similar in basic design to engines with which even Preble was familiar; but there was a slight departure from convention in that the entire as-sembly, from fuel line to the inner hull, appeared to be one seamless surface of metal. Preble examined it closely all over, and found no trace of a joint.
"I see what you mean," he said at last, looking up. "Are they &l the same?" Cray nodded.
"They seem to be. We haven't been able to get into any one of them—even the tanks are tight. They look like decent, honest atomics, but we'll never prove it by look-ing at the outside."

"But how did they service them?" asked Stevenson. "Surely they didn't weld the cases on and hope their machines were good enough to run without attention. That's asking too much, even frcm a race that built a hull that could hold air as long as this must have."

"How could I possibly know?" grcwled Cray. "Maybe they went outside and crawled in through the jets to service 'em—only I imagine it's some trick seal like the door of this room. After all, that was common sense, if you look at it right. The fewer moving parts, the less wear. Can anyone think of a way in which this breech mechanism could be fastened on, with an invisible joint, working from the same sort of common sense?"

Why no one got the answer then will always remain a mystery; but the engineer was answered by nothing but half a dozen thought expressions more or less hidden in space helmets. He looked around hopefully for a mo-ment, then shrugged his shoulders. "Looks like we'll just have to puzzle around and hope for the best," he concluded. "Jack and Don might as well go back to their own snooping—and for Heaven's sake, if you get any more ideas, come a-runnin'."

After glancing at Grant for confirmation of the sugges-tion, Preble and Stevenson left the engine room to continue their interrupted tour. "I wonder if the upper section behind the control room is sealed," remarked the chemist as they entered the darkness of the corridor. "I think we've covered the bow fairly well." Preble nodded; and without further speech they passed through the control chamber, glancing at the board which had given Grant and McEachern such trouble, and found, as they expected, ramps leading up and down opening from the rear corridor just as one entered. They stayed together this time, and climbed the star-board spiral. The door at the top opened easily, which was some relief; but the hallway beyond was a disap-pointment. It might have been any of the others already visited; and a glance into each of the rooms revealed nothing but bare metal gleaming in the flashlight beams, and dust-covered floors. The keel corridor was also open; but here was an indication that one, at least, of the rooms had been used for occupancy rather than cargo.

Stevenson looked into it first, since it was on the side of the corridor he had taken. He instantly called hi; companion, and Preble came to look at the object standing in the beam of the chemist's light.

It was a seat, identical to the one in the contro chamber—a mound of metal, with five deep groove; equally spaced around it. The tiny reflected images of th(flashlights stared up from its convex surfaces like lumi nous eyes. None of the other furniture that had character ized the room in the central bow corridor was present but the floor was not quite bare.

Opposite each of the five grooves in the seat, perhaps foot out from it, a yard-long metal cable was neatl! welded to the floor. A little farther out, and also equall! spaced about the seat, were three more almost twice a long. The free end of each of the eight cables was cut of cleanly, as though by some extremely efficient instrument the flat cut surfaces were almost mirrorsmooth. Stevensoi and Preble examined them carefully, and then looked a each other with thoughtful expressions. Both were begin ring to get ideas. Neither was willing to divulge them.

There remained to explore only the stern engine roon and the passage leading to it, together with the room; along the latter. They had no tools with which to remove a specimen of one of the

cables, so they carefully notes the door behind which the seat and its surroundings has been found, and climbed once more to the central deck Before making their last find, they had begun to be bore(with the rather monotonous search, particularly sins(they had no clear idea of what they were searching for without it, they might have been tempted to ignore the rooms along the corridor and go straight to the engine room. Now, however, they investigated every chamber carefully; and their failure to find anything of interest was proportionally more disappointing. And then they reached the engine-room door.

Flashlights swept once. over the metal surface, picking out three disks with their inset triangular blocks, as the men had expected, but the coppery reflection from two of the blocks startled them into an instant motionlessness. Of the three seals, they realized, only one—the upper-most—was locked. It was as though whoever had last been in the room had left hastily—or was not a regular occupant of the ship.

Preble quickly reversed the remaining block, and un-screwed the three disks; then the two men leaned against the door and watched it swing slowly open. Both were unjustifiably excited; the state of the door had stimulated their imaginations, already working overtime on the ma-terial previously provided. For once, they were not dis-appointed.

The light revealed, besides the tanks, converters, and tube breeches which had been so obvious in the forward engine room, several open cabinets which had been mere bulges on the walls up forward. Tools and other bits of apparatus filled these and lay about on the floor. Light frameworks of metal, rather like small building scaffolds, enclosed two of the axial tube breeches; and more tools lay on these. It was the first scene they had encountered on the ship that suggested action and life rather than desertion and stagnation. Even the dust, present here as everywhere, could not eradicate the impression that the workers had dropped their tools for a brief rest, and would return shortly.

Preble went at once to the tubes upon which work had apparently been in progress. He was wondering, as he had been since first examining one, how they were openedfor servicing. He had never taken seriously Cray's remark that it might have been done from outside.

His eye caught the thing at once. The dome of metal that presumably contained the disintegrator and ionizing units had been disconnected from the fuel tank, as he had seen from across the room; but a closer look showed that it had been removed from the tube, as well, and replaced somewhat carelessly. It did not match the edges of its seat all around, now; it was displaced a little to one side, exposing a narrow crescent of flat metal on each of the two faces normally in complete contact. An idea of the position can be obtained by placing two pennies one on the other, and giving the upper one a slight sideward displacement.

The line of juncture of the two pieces was, therefore, visible all around. Unfortunately, the clamping device Preble expected to find was not visible anywhere. He got a grip—a very poor one, with his gloved hand—on the slightly projecting edge of the hemisphere, and tried to pull it free, without success; and it was that failure which gave him the right answer—the only possible way in which an air-tight and pressure-tight seal could be fastened solidly, even with the parts out

of alignment, with nonmagnetic alloys. It was a method that had been used on Earth, though not on this scale; and he was disgusted at his earlier failure to see it.

Magnetism, of course, could not be used so near the ion projectors, since it would interfere with the control-ling fields; but there was another force, ever present and available—molecular attraction. The adjoining faces of the seal were plane, not merely flat. To speak of their accuracy in terms of the wave length of sodium light would be useless; a tenth-wave surface, representing hours of skilled human hand labor, would be jagged in comparison. Yet the relatively large area of these seals and the frequency with which the method appeared to
have been used argued mass production, not painstaking polishing by hand.

But if the seal were actually wrung tight, another problem presented itself. How could the surfaces be separated, against a force sufficient to confine and direct the blast of the ion rockets? No marks on the breech suggested the application of prying tools—and what blade could be inserted into such a seal?

Stevenson came over to see what was keeping Preble so quiet, and listened while the latter explained his discovery and problems.

"We can have a look through these cabinets," the chemist remarked finally. "This seems to fit Sorrell's idea of a tool-requiring job. Just keep your eyes and mind open."

The open mind seemed particularly indicated. The many articles lying in and about the cabinets were undoubtedly tools, but their uses were far from obvious. They differed from man-made tools in at least one vital apsect. Many of our tools are devices for forcing: hammers, wrenches, clamps, pliers, and the like. A really good machine job would need no such devices. The parts would fit, with ju't enough clearance to eliminate unde-sired friction—and no more.

That the builders of the ship were superb designers and machinists was already evident. What sort of tools they would need was not so obvious. Shaping devices, of course; there were planers, cutters, and grinders among the littered articles. All were portable, but solidly built, and were easily recognized even by Preble and Stevenson. But what were the pairs of slender rods which clung together, obviously magnetized? What were the small, sealed-glass tubes; the long, grooved strips of metal and plastic; the featureless steel-blue spheres; the iridescent, oddly shaped plates of paper-thin metal? The amateurinvestigators could not even guess, and sent for profes-sional help.

Cray and his assistants almost crooned with pleasure as they saw the untidy floor and cabinets; but an hour of careful examination and theorizing left them in a less pleasant mood. Cray conceded that the molecular attrac-tion theory was most probably correct, but made no headway at all on the problem of breaking the seal. Nothing in the room seemed capable of insertion in the air-tight joint.

"Why not try sliding them apart?" asked Stevenson. "If they're as smooth as all that, there should be no diffi-culty."

Cray picked up a piece of metal. "Why don't you imagine a plane through this bar, and slide it apart along that?" he asked. "The crystals of the metal are practically as close together, and grip

each other almost as tightly, in the other case. You'll have to get something between them."
The chemist, who should have known more physics, nodded. "But it's more than the lubricant that keeps the parts of an engine apart," he said.
"No, the parts of one of our machines are relatively far apart, so that molecular attraction is negligible," an-swered the machinist. "But—I believe you have something there. A lubricant might do it; molecules might conceiv-ably work their way between those surfaces. Has anybody noticed anything in this mess that might fill the bill?"
"Yes," answered Preble promptly, "these glass tubes. They contain liquid, and have been fused shut—which is about the only way you could seal in a substance such as you would need."
He stepped to a cabinet and picked up one of the three-inch long, transparent cylinders. A short nozzle, its end melted shut, projected from one end, and a small bubble
was visible in the liquid within. The bubble moved slug-gishly when the tube was inverted, and broke up into many small ones when it was shaken. These recombined instantly when the liquid came to rest, which was en-couraging. Evidently the stuff possessed a very low vis-cosity and surface tension.
Cray took the tube over to the breech which had been partly opened and carelessly closed so '_ong ago, held the nozzle against the edge of the seal, and, after a moment's hesitation, snapped off the tip with his gloved fingers. He expected the liquid to ooze out in the asteriod's feeble gravity, but its vapor pressure must have been high, for it sprayed out in a heavy stream. Droplets rebounded from the metal and evaporated almost instantly; with equal speed the liquid which spread over the surface vanished. Only a tiny fraction of a percent, if that, could have found its way between the surfaces.
Cray stared tensely at the dome of metal as the tube emptied itself. After a moment, he dropped the empty cylinder and applied a sideways pressure.
A crescent, of shifting rainbow colors, appeared at the edge of the seal; and the dome slowly slid off to one side. The crescent did not widen, for the lubricant evaporated the instant it was exposed. Preble and Stevenson caught the heavy dome and eased its mass to the central catwalk.
The last of the rainbow film of lubricant evaporated from the metal, and the engineers crowded around the open breech. There was no mass of machinery inside; the disintegrators would, of course, be within the dome which had been removed. The coils which generated the fields designed to keep the stream of ionized vapor from contact with the tube walls were also invisible, being sealed into the tube lining. Neither of these facts bothered the men, for their own engines had been similarly de-signed. Cray wormed his way down the full length of thetube to make sure it was not field failure which had caused it to be opened in the first place; then the three specialists turned to the breech which had been removed.
The only visible feature of its flat side was the central port through which the metallic vapor of the exhaust had entered the tube; but application of another of the cylinders of lubricant, combined with the asteroid's gravity, caused most of the plate to fall away and reveal the disintegrator mechanism within. Preble, Stevenson, Grant, and McEachern watched for a while as pieces of the disintegrator began to cover the floor of the room; but they finally realized that they

were only getting in the way of men who seemed to know what they were doing, so a gradual retreat to the main corridor took place.

"Do you suppose they can find out what was wrong with it?" queried Stevenson.
"We should." It was Cray's voice on the radio. "The principle of this gadget is exactly like our own. The only trouble is that they've used that blasted molecular-attrac-tion fastening method everywhere. It's taking quite a while to get it apart."
"It's odd that the technology of these beings should have been so similar to ours in principle, and yet so different in detail," remarked Grant. "I've been thinking it over, and can't come to any conclusion as to what the reason could be. I thought perhaps their sense organs were different from ours, but I have no idea how that could produce such results—not surprising, since I can't imagine what sort of senses could exist to replace or supplement ours."
"Unless there are bodies in the sealed-off corridor and rooms, I doubt if you'll ever find the answer to that one," answered Preble. "1'll be greatly surprised if anyone ever proves that this ship was made in this solar system."
"I'll be surprised enough if anyone proves anything at all constructive about it," returned Grant.
Cray's voice interrupted again.
"There's something funny about part of this," he said. "I think it's a relay, working from your main controls, but that's only a guess. It's not only connected to the electric part of the business, but practically built around the fuel inlet as well. By itself it's all right; solenoid and moving core type. We've had it apart, too."
"What do you plan to do?" asked Grant. "Have you found anything wrong with the unit as a whole?"
"No, we haven't. It has occurred to me that the breech was unsealed for some purpose other than repair. It would make a handy emergency exit—and that might account for the careless way it was resealed. We were thinking of putting it back together, arranging the relay so that we can control it from here and test the whole tube. Is that all right with you?"
"If you think you can do it, go ahead," replied Grant. "We haven't got much to lose, I should say. Could you fix up the whole thing to drive by local control?"
"Possibly. Wait till we see what happens to this one." Cray moved out of the line of sight in the engine-room doorway, and his radio waves were cut off.
Stevenson moved to the doorway to watch the process of reassembly; the other three went up to the control room. The eeriness of the place had worn off—there was no longer the suggestion of the presence of the unknow-able creature who had once controlled the ship. Preble was slightly surprised, since it was now night on this part of the asteroid; any ghostly suggestions should have been enhanced rather than lessened. Familiarity must have bred contempt.
No indicator lights graced the control panel. Grant had half hoped that the work in the engine room might have been recorded here; but he was not particularly surprised.
He had given up any hopes of controlling the vessel fron this board, as his remark to Cray had indicated.

"I hope Cray can get those tubes going," he said after a lengthy silence. "It would be enough if we could pus' this ship even in the general direction of Earth. LucldI3 the orbit of this body is already pretty eccentric. About all we would have to do is correct the plane of motion."

"Even if we can't start enough tubes to control a flight, we could use one as a signal flare," remarked Preble, "Remember, the Mizar is in this sector; you once had hopes of contacting her with the signal equipment of this ship, if you could find any. The blast from one of these tubes, striking a rock surface, would make as much light as you could want."

"That's a thought," mused Grant. "As usual, too simple for me to think of. As a matter of fact, it probably represents our best chance. We'll go down now and tell Cray simply to leave the tube going, if he can get it started."

The four men glided back down the corridor to the engine room. The reassembly of the breech mechanism was far from completed, and Grant did not like to interrupt. He was, of course, reasonably familiar with such motors, and knew that their assembly was a delicate task even for an expert.

Cray's makeshift magnetic device for controlling the relay when the breech was sealed was a comment on the man's ingenuity. It was not his fault that none of the men noticed that the core of the relay was made of the same alloy as the great screw cocks which held the engine-room doors shut, and the small bolts on the doors in the cargo hold. It was, in fact, a delicate governor, controlling the relation between fuel flow and the breech field strength—a very necessary control, since the field had to be strong enough to keep the hot vapor from actual
contact with the breech, but not strong enough to over-come the effect of the fields protecting the throat of the tube, which were at right angles to it. There was, of course, a similar governor in man-made motors, but it was normally located in the throat of the tube and was controlled by the magnetic effect of the ion steam. The device was not obvious, and of course was not of a nature which a human engineer would anticipate. It might have gone on operating normally for an indefinite period, if Cray had used any means whatever, except magnetic manipulation, to open and close the relay.

The engineers finally straightened and stood back from their work. The breech was once more in place, this time without the error in alignment which had caused the discovery of the seal. Clamped to the center of the dome, just where the fuel feed tube merged with its surface, was the control which had been pieced together from articles found in the tool cabinets. It was little more than a coil whose field was supposed to be strong enough to replace that of the interior solenoid through the metal of the
breech.

Preble had gone outside, and now returned to report that the slight downward tilt of the end of the ship in which they were working would cause the blast from this particular tube to strike the ground fifty or sixty yards to the rear. This was far enough for safety from splash, and probably close enough so that the intensity of the blast would not be greatly diminished.

Cray reported that the assembly, as nearly as he could
tell, should work.

"Then I suggest that you and anyone you need to help you remain here and start it in a few moments, while the rest of us go outside to observe results. We'll keep well clear of the stern, so don't worry about us," said Grant. "We're on the night side of the asteroid now, and, as I remember, the Mizar was outward and counter-clockwise ofthis asteroid's position twenty-four hours ago—by heaven, I've just realized that all this has occurred in less than twenty, hours. She should be able to sight the flare at twenty million miles, if this tube carries half the pep that one of ours would."

Cray nodded. "I can start it alone," he said. "The rest of you go on out. I'll give you a couple of minutes, then turn it on for just a moment. I'll give you time to send someone in if anything is wrong."

Grant nodded approval, and led the other five men along the main corridor and out the air lock. They leaped to a position perhaps a hundred and fifty yards to one side of the ship, and waited. The tube in question was one of the lowest in the bank of those parallel to the ship's longitudinal axis. For several moments after the men had reached their position it remained lifeless; then a silent, barely visible ghost of flame jetted from its lip. This changed to a track of dazzling incandescence at the point where it first contacted the rock of the asteroid; and the watchers automatically snapped the glare shields into place on their helmets. These were all in place before anyone realized that the tube was still firing, cutting a glowing canyon into the granite and hurling a cloud of boiling silica into space. Grant stared for a moment, leaped for the air lock, and disappeared inside. As he entered the control room from the front, Cray burst in from the opposite end, making fully as good time as the captain. He didn't even pause, but called out as he came: "She wouldn't cut off, and the fuel flow is increasing. I can't stop it. Get out before the breech gives—I didn't take time to close the engine-room door!"

Grant was in midair when the engineer spoke, but he grasped a stanchion that supported the cat-walk, swung around it like a comet, and reversed his direction of flight
before the other man caught up to him. They burst out of the air lock at practically the same instant.

By the time they reached the others, the tube fields had gone far out of balance. The lips of the jet tube were glowing blue-white and vanishing as the stream caught them; and the process accelerated as the men watched. The bank of stern tubes glowed brightly, began to drip, and boiled rapidly away; the walls of the engine room radiated a bright red, then yellow, and suddenly slumped inward. That was the last straw for the tortured disinte-grator; its own supremely resistant substance yielded to the lack of external cooling, and the device ceased to exist. The wreckage of the alien ^hip, glowing red now for nearly its entire length, gradually cooled as the source of energy ceased generating; but it would have taken super-natural intervention to reconstruct anything useful from the rubbish which had been its intricate mechanism. The men, who had seen the same thing happen to their own ship not twenty hours before, did not even try to do so.

The abruptness with which the accident had occurred left the men stunned. Not a word was

spoken, while the incandescence faded slowly from the hull. There was nothing to say. They were two hundred million miles from Earth, the asteroid would be eighteen months in reaching its nearest point to the orbit of Mars—and Mars would not be there at the time. A search party might eventually find them, since the asteroid was charted and would be known to have been in their neighborhood at the time of their disappearance. That would do them little good.

Rocket jets of the ion type are not easily visible unless matter is in the way—matter either gaseous or solid. Since the planetoid was airless and the Mizar did not actually land, not even the usually alert Preble saw her approach. The first inkling of her presence was the voiceof her commander, echoing through the earphones of the seven castaways.

"Hello, down there. What's been going on? We saw a flare about twenty hours ago on this body that looked as though an atomic had misbehaved, and headed this way. We circled the asteroid for an hour or so, and finally did sight your ship—just as she did go up. Will you please tell us what the other flare could have been? Or didn't you see it?"

It was the last question that proved too much for the men. They were still laughing hysterically when the Mizar settled beside the wreck and took them aboard. Cray alone was silent and bitter. "In less than a day," he said to his colleague on the rescue ship, "I wrecked two ships—and I haven't the faintest idea how I wrecked either one of them. As a technician, I'd be a better ground-car mechanic. That second ship was just lying there waiting to teach me more about shop technique than I'd have learned in the rest of my life; and some little technical slip ruined it all." But whose was the error in technique?

Technical Error

Seven spacesuited human beings stood motionless, at the edge of the little valley. Around them was a bare, jagged plain of basalt, lit sharply by the distant sun and unwavering stars; a dozen miles behind, hidden by the abrupt curvature of the asteroid’s surface, was a half-fused heap of metal that had brought them here; and in front of them, almost at their feet, in the shallow groove scraped by a meteor ages before, was an object which caused more than one of those men to doubt his sanity.

Before them lay the ship whose heat-ruined wreckage had been left behind them only minutes ago—perfectly whole in every part. Seven pairs of eyes swept it from end to end, picking out and recognizing each line. Driving and steering jet pits at each end; six bulging observation ports around its middle; rows of smaller ports, their transparent panes gleaming, obviously intact, in the sun-light; the silvery, prolate hull itself—all forced themselves on the minds that sought desperately to reject them as impossibilities. The Giansar was gone—they had fled from the threat of its disordered atomic engines, watched it glow and melt and finally cool again, a nearly formless heap of slag. So what was this?

None of them even thought of a sister ship. The Giansar had none. Spaceships are not mass production articles; only a few hundred exist as yet, and each of those is a specialized, designed-

to-order machine. A spaceman of any standing can recognize at a glance, by shape alone, any ship built on Earth—and no other intelligent race than man inhabits Sol's system.
Grant was the first to throw off the spell. He glanced up at the stars overhead, and figured; then he shook his head.
"We haven't circled, I'll swear," he said after a moment. "We're a quarter of the way around this world from where we left the ship, if I have allowed right for rotation. Besides, it wasn't in a valley."
The tension vanished as though someone had snapped a switch. "That's right," grunted Cray, the stocky engine man. "The place was practically flat, except for a lot of spiky rocks. And anyway, no one but a nut could think that was the Giansar, after leaving her the way we did. I wonder who left this buggy here."
"Why do you assume it has been left?" The query came, in a quiet voice, from Jack Preble, the youngest person present. "It appears uninjured. I see no reason to suppose that the crew is not waiting for us to enter at this moment, if they have seen us."
Grant shook his head. "That ship might have been here for years—probably has, since none of us can place it. The crew may be there, but, I fear, not alive. It seems unlikely that this craft has been registered in the lifetime of any of us. I doubt that it would have remained here unless it were disabled; but you must all have realized by now that it holds probably our only chance of life. Even if it won't fly, there may be a transmitter in repair. We had better investigate."

The men followed the captain as he took a long, slow leap down the slope. Little enthusiasm showed in the faces behind the helmet masks; even young Preble had accepted the fact that death was almost inevitable. At another time, they might have been eager and curious, even in the face of a spectacle as depressing as a derelict usually is; now they merely followed silently. Here, probably, a similar group of men had, no one knew how long ago, faced a fate identical to theirs; and they were about to see what had befallen those others. No one saw humor in the situation, but a wry smile was twisting more than one face as the group stopped beneath the circular entrance port. More than one thought of the possible irony of their being taken for a rescue crew.
Grant looked at the port, twenty-five feet above their heads. Any of them could easily have jumped to it; but even that effort was not necessary, for a row of niches, eight inches square and two deep, provided a ladder to the rim. It was possible to cling to them even on the lower curve of the hull, for they were deeply grooved around the inside edges. The captain found that his gauntlets could grip easily, and he made his way up the wall of metal, the others watching from below. Arriving at the port, he found that the niches formed a circle around it, and other rows of them extended over the hull in different directions. It was at the entrance, however, that he met the first of the many irregularities.
The others saw him reach the port, and stop as though looking around. Then he traveled entirely around it, stopped again, and began feeling the mirrorlike metal with his gloved hands. Finally he called out:
"Cray, could you come up here, please? If anyone can find the opening mechanism, you should."

The engineer remained exactly where he was.
"Why should there be any?" he asked. "The only reason we use it on our ships is habit; if the door opens inward, atmospheric pressure will hold it better than any lock. Try pushing; if the inner door is sealed, you shouldn't have much trouble—the lock chamber will be exhausted, probably."
Grant got a grip near the edge of the door, and pushed.
There was no result. He moved part way around the rim and tried again, with the same lack of success. After testing at several more points, he spoke again:
"No luck. I can't even tell which side the hinge is on, or even if there is a hinge. Cray, you and a couple of others had better come up and give a hand at pushing; maybe there's a trace of air in the inner chamber."
Cray grunted, "If there's anywhere near an atmos-phere's pressure, it'll take tons to budge the door—it's twelve feet across." But this time he began to climb the bull. Royden, probably the most powerful one present, and a chemist named Stevenson followed him. The four men grouped themselves about the forward edge of the port, their feet braced on the door itself and hands firmly gripping the climbing niches; and all four tensed their bodies and heaved. The door still refused to budge. They rested a moment, and followed Grant to the opposite side of the metal disk.
This time their efforts produced results. The pressure on the other side of the valve must have been only a few millimeters of mercury; enough to give four or five hundred pounds' resistance to an outside thrust at the edge opposite the hinge. When the door opened a crack, that pressure vanished almost instantly, and the four men shot feet first through the suddenly yawning opening. Grant and Stevenson checked the plunge by catching the edge of the port frame; the other two disappeared into the inner darkness, and an instant later the shock of their impact upon some hard surface was felt by those touch-ing the hull.

The captain and the chemist dropped to the floor of the lock and entered; Preble leaped for the open door, followed by Sorrell and McEachern. All three judged accurately, sailing through the opening, checking their flight against the ceiling, and landing feet down on the floor, where they found the others standing with belt lights in their hands. The sun was on the far side of the ship, and the chamber was lighted dimly by reflection from the rocks outside; but the corridors of the vessel themselves must be dark.
The inner valve of the air lock was open—and had apparently been so from the beginning. Cray and Royden had shot through it, and been brought up against the far-ther wall of a corridor running parallel to the ship's long axis. They were both visible, standing back to back, sweep-ing the corridor in both directions with their lights. Grant took a step that carried him over to them, motioning the others to remain where they were, and added his light to those already in action.
To the right, as one entered it, the corridor extended almost to the near end of the ship—the bow, as the men thought of it for no good reason, in another direction, it ran about ten yards and opened into a large chamber which, if this craft resembled the Giansar as closely within as it did without, was probably the control room. At least, it was just about amidships. Smaller doors

opened at intervals along the hallway; some were open, the majority were closed. Nothing moved anywhere.

"Come on," said Grant finally. He walked toward the central room, and paused on the threshold, the others at his heels. The floor they were walking on continued in the form of a catwalk; the chamber they were entering occupied the full interior of the hull at this point. It was brightly lighted, for it was this compartment that possess-ed the six great view ports, equally spaced around its walls, and the sun shone brightly through these. The men extinguished their own lights. Cray looked about him, and shook his head slowly.

"I still think I must be dreaming, and about to wake up on our own ship," he remarked. "This looks more and more like home, sweet home."

Grant frowned. "Not to me," he replied. "This control layout is the first serious difference I've seen. You wouldn't notice that, of course, spending all your life with the engines. It might be a good idea for you to see if the drive on this ship is enough like ours for you to puzzle out, and whether there's a chance of repairing it. I'll look over this board for signs of a transmitter—after all, the Mizar shouldn't be too far away."

"Why shouldn't I be able to understand the drive?" retorted Cray. "It should be like ours, only a little more primitive—depending on how long this boat's been here."

Grant shot him an amazed glance. "Do you still think this is a Terrestrial ship, and has been here only a few decades?" he asked.

"Sure. Any evidence otherwise?"

Grant pointed to the floor beneath their feet. All looked down, and for the first time noticed that they left footprints in a thin, even layer of dust that coated the corridor floor.

"That means that the ship held its air for a longer time than I care to think about—long enough not only to reduce the various organic substances on board to dust, but at random currents to distribute it through the open spaces. Yet when we came the air was almost gone—leaked out through the joints and valves, good as they were, so that there was not enough left to resist us when we pushed a twelve-foot piston against its pressure. Point one."

The finger swung to the control board. "Point two." He said nothing further, but all could see what he meant.

The center of the control room was occupied by a thick-walled hemisphere—a cup, if you like—swung in gimbals which permitted its flat side always to the uppermost with respect to the ship's line of net accelera-tion. The control board occupied the inner surface and upper edge of this cup, all around the circumference; and in the center of the assembly was the pilot's seat—if it could be called a seat.

It was a dome-shaped structure protruding from the floor about two feet; five broad, deep grooves were spaced equally about its sides, but did not quite reach the top. It looked somewhat like a jelly mold; and the one thing that could be stated definitely about its history was that no human being had ever sat in it. Cray absorbed this evident fact with a gulp, as though he had not chewed it sufficiently.

The rest of the men stared silently at the seat. It was as though the ghost of the long-dead pilot had materialized there and held their frozen attention; overwrought imagi-nations pictured him, or strove to picture him, as he might have looked. And they also tried to picture what emergency, what unexpected menace, had called upon him to leave the place where he had held sway—to leave it forever. All those men were intelligent and highly trained; but more than one pair of eyes explored the corridor the human invaders had just used, and its mate stretching on from the other side of the control room.

Cray swallowed again, and broke the silence. "I should be able to figure out the engines, anyway," he said, "if they're atomics at all like ours. After all, they have to do the same things ours did, and they must have correspond-ing operations and parts."

"I hope you're right." Grant shrugged invisibly in the bulky suit. "I don't expect to solve that board until you fix something and the pilot lights start signaling—if they have pilot lights. We'd all better get to work. Cray's regular assistants can help him, McEachem had better stay with me and help on the board, and Preble and Stevenson can look over the ship in general. Their fields of specialty won't help much at our jobs. Hop to it." He started across the catwalk toward the control board, with McEachem trailing behind him.

Stevenson and Preble looked at each other. The younger man spoke. "Together, or should we split up?"

"Together," decided the chemist. "That way, one of us will probably see anything the other misses. It won't take much longer; and I doubt that there's much hurry for our job, anyway. We'll follow Cray and company to whichever engine room they go to, and then work from that end to the other. All right?"

Preble nodded, and the two left the control room. The engineers had gone toward the bow—so called because the main entrance port was nearer that end—and the two general explorers followed. The others were not far ahead, and their lights were visible, so the two did not bother to use their own. Stevenson kept one hand on the right-hand wall, and they strode confidently along in the semidarkness.

After a short distance, the chemist's hand encountered the inner door of the air lock by which they had entered. It had been swung by the men all the way back against the wall, leaving both doors open, so that the light was a little better here. In spite of this, he did not see the object on the floor until his foot struck it, sending it sliding along the corridor with a metallic scraping sound that was easily transmitted through the metal of the floor and their suits.

He found it a few feet away, and, near it, two more exactly similar objects. He picked them up, and the two men examined them curiously. They were thick, oval rings, apparently of steel, with an inch or so of steel cable welded to one side of each. The free end of the cable seemed to have been sheared off by some sharp tool. Stevenson and Preble looked at each other, and both directed their lights on the floor about the inner portal of the air lock.

At first, nothing else was noticeable; but after a moment, they saw that the chemist's foot, just before striking the ring, had escaped a groove in a layer of dust much thicker than that over the rest of the floor. It was piled almost to the low sill of the valve, and covered al area two or three

feet in radius. Curiously, the men looked at the outer side of the sill, and found a similar flat pile of dust, covering even more of the floor; and near the edges of this layer were five more rings. These, examined closely, proved larger than the first ones, which had been just a little too small for an average human wrist; but like them, each had a short length of wire cable fused to one side, and cut off a short distance out. There was nothing else solid on the floor of the lock or the corridor, and no mark in the dust except that made by Stevenson's toe. Even the dust and rings were not very noticeable—the seven men had entered the ship through this lock without seeing them. Both men were sure they had some meaning, perhaps held a clue to the nature of the ship's former owners; but neither could decipher it. Preble dropped the rings into a pocket of his spacesuit, and they headed down the corridor again on the track of the engineers.

They caught up with them about a hundred and fifty feet from the control room. The three were standing in front of a heavy-looking, circular door set in a bulkhead which blocked off the passage at this point. It was not featureless, as the air lock doors had been, but had three four-inch disks of darker metal set into it near the top, the bottom, and the left side. Each disk had three holes, half an inch in diameter and of uncertain depth, arranged in the form of an isosceles triangle. The men facing it bore a baffled air, as though they had already tackled the problem of opening it.

"Is this your engine room?" asked Preble, as he and Stevenson stopped beside the others. "It looks more like a pressure lock to me."

"You may be right," returned Cray gloomily. "But there's nowhere else in this end of the ship where an engine room could be, and you remember there were jets at both ends. For some reason they seem to keep the room locked tight—and we don't even know whether the locks are key or combination. If it's combination, we might as well quit now; and if it's key, where is it?"

"They look like the ends of big bolts, to me," sug-gested Stevenson. "Have you tried unscrewing them?"

Cray nodded. "Royden got that idea, too. Take a closer look at them before you try turning the things, though. If you still feel ambitious, Royden will show you the best way to stick your fingers into the holes."

Preble and the chemist accepted the suggestion, and examined the little disks at close range. Cray's meaning was evident. They were not circular, as they had seemed at first glance; they presented a slightly elliptical cross section, and obviously could never be made to turn in their sockets. The lock theory seemed to remain unchal-lenged.

That being granted, it behooved them to look for a key. There was no sense toying with the combination idea—there was no hope whatever of solving even a simple combination without specialized knowledge which is seldom acquired legally. They resolutely ignored the probability that the key, if any, was only to be found in the company of the original engineer, and set to work.

Each of them took one of the nearby rooms, and commenced going over it. All the room doors proved to be unlocked, which helped some. Furniture varied but little; each chamber had two seats similar to that in the control room, and two articles which might at one time have been beds;

any mattress or other padding they had ever contained was now fine dust, and nothing save metal troughs, large enough to hold a man lying at full length, were left. There was also a desklike affair, which con-tained drawers, which opened easily and soundlessly, and was topped by a circular, yardwide, aluminum-faced mirror. The drawers themselves contained a variety of objects, perhaps toilet articles, of which not one sufficiently resembled anything familiar to provide a clue to its original use.

A dozen rooms were ransacked fruitlessly before the men reassembled in the corridor to exchange reports. One or two of them, hearing of the others' failure, returned to the search; Preble, Stevenson, and Sorrell strolled back to the door which was barring their way. They looked at it silently for several moments; then Sorrell began to speak.

"It doesn't make sense," he said slowly. "Why should you lock an engine-room door? If the motors have to be supervised all the time, as ours do, it's a waste of time. If you grant that these creatures had their motors well enough designed to run without more than an occasional inspection, it might be worth while to seal the door against an accidental blowoff; but I still wouldn't lock it. Of course we don't know anything about their ideas of what was common sense.

"But I'd say that that door either isn't fastened at all, and is putting up a bluff like the outer air-lock valve, or else it's really sealed, and would be opened by tools rather than keys. You may think that's quibbling, but it isn't. Keys, you carry around with you, in your pocket or on your belt. Tools have a place where you leave 'em, and are supposed to stay there. Kid, if you were an engineer, in the practice of unsealing this door every few days, perhaps, and needed something like a monkey wrench to do it with, where would you keep the monkey wrench."

Preble ignored the appellation, and thought for a moment. Finally he said, "If I were fastening the door against intentional snooping, I'd keep the tool in my own quarters, locked up. If, as you suggested, it were merely a precaution against accident, I'd have a place for it near the door here. Wouldn't you say so?"

The machinist nodded, and swept his light slowly over the bulkheads around the door. Nothing showed but smooth metal, and he extended the search to the corridor walls for several yards on both sides. The eye found nothing, but Sorrell was not satisfied. He returned to the edge of the door and began feeling over the metal, putting a good deal of pressure behind his hand.

It was a slow process, and took patience. The others watched, holding their lights to illuminate the operation. For several minutes the suit radios were silent, those of the more distant men cut off by the metal walls of the rooms they were searching and the three at the door prosecuting their investigation without speech. Sorrell was looking for a wall cabinet, which did credit to his imagination; such a thing seemed to him the last place to keep tools. He was doing his best to allow for the probably unorthodox ideas of the builders of the ship, reducing the problem as far as he could toward its practical roots, and hoping no physical or psychological traits of the being he never expected to meet would invalidate his answers. As Preble had said, a tool used for only one, specialized purpose logically would be kept near the place in which it was used.

The machinist turned out to be right, though not exactly as he had expected. He was still running

his hands over the wall when Preble remembered a standard type of motor-control switch with which even he was familiar; and, almost without thinking, he reached out, inserted his fingers in the three holes of one of the disks, and pulled outward. A triangular block, indistinguishable in color from the rest of the disk, slid smoothly out into his hand.

The other two lights converged on it, and for a second or two there was silence; then Sorrell chuckled. "You win, Jack," he admitted. "I didn't carry my own reason-ing far enough. Go ahead."

Preble examined the block of metal. What had been the inner face was copper-colored, and bore three holes similar to those by which he had extracted it. There was only one other way to fit it into the disk again; he reserved it, with the copper face outward, and felt it slip snugly back into place. Sorrell and Stevenson did the same with the upper and lower disks, which proved to contain similar blocks. Then they stood back, wondering what happened next.

They were still waiting when Cray and Royden rejoined them. The former saw instantly what had been done to the door, and started to speak; then he took a second, and closer look, and, without saying a word, reached up, inserted three fingers in the holes in the coppery triangles of the block face, and began to unscrew the disk. It was about five inches thick, and finally came out in his hands. He stared doubtfully at it, and took a huge pair of vernier calipers from the engineer's kit at his side and measured the plug along several diameters. It was perfectly circular, to within the limit of error of his instrument.

He looked at the others at length, and spoke with a note of bewilderment. "I could have sworn this thing was elliptical when we first examined it. The hole still is, if you'll look." He nodded toward the threaded opening from which the disk had come. "I saw the line where it joined the door seemed a good deal wider at the top and bottom; but I'm sure it fitted tightly all around, before."

Sorrell and Royden nodded agreement. Evidently re-versing the inset block had, in some fashion, changed the shape of the disk. Cray tried to pull the block out again, but it resisted his efforts, and he finally gave up with a shrug. The men quickly unscrewed the other disks, and Royden leaned against the heavy door. It swung silently inward; and four of the men instantly stepped through, to swing their lights about the new compartment. Cray alone remained at the door, puzzling over the hard-yet-plastic metal object. The simple is not always obvious.

Grant and McEachern, in the control room, were having trouble as well. They had approached the control cup along the catwalk, and the captain had vaulted into its center without difficulty. And he might just as well have remained outside.

The control buttons were obvious enough, though they did not project from the metal in which they were set. They occurred always in pairs—probably an "on" and "off" for each operation; and beside each pair were two little transparent disks that might have been monitor lights. All were dark. Sometimes the pairs of buttons were alone; sometimes they were in groups of any number up to eighteen or twenty. Each group was isolated from its neighbors; and they extended completely around the footwide rim of the cup, so that it was not possible to see them all at once. But the thing that bothered Grant the most was the fact that not a single button, light, or group

was accom-panied by a written label of any sort. He would not have expected to be able to read any such writing; but there had been the vague hope that control labels might have been matched with similar labels on the machines or charts—if the other men found any of either. It was peculiar, for there were in all several hundred buttons; and many of the groups could easily have been mistaken for each other. He put this thought into words, and McEachern frowned behind his helmet mask before reply-ing.

"According to Cray's logic, why should they be la-beled?" he remarked finally. "Do we allow anyone to pilot a ship if he doesn't know the board blindfolded? We do label ours, of course, on the theory that an inexperienced man might have to handle them in an emergency; but that's self-deception. I've never heard of any but a first-rank pilot bringing a ship through an emergency. Label-ing controls is a carry-over from the family auto and airplane."

"There's something in that," admitted the captain. "There's also the possibility that this board is labeled, in a fashion we can't make out. Suppose the letters or characters were etched very faintly into that metal, which isn't polished, you'll notice, and were meant to be read by, say, a delicate sense of touch. I don't believe that myself, but it's a possibility—one we can't check, since we can't remove our suits to feel. The fact that there are no obvious lights for this board lends it some support; they couldn't have depended on sunlight all the time."

"In either case, fooling around here at this stage may do more harm than good," pointed out McEachern. "We'll have to wait until someone gets a machine iden-tified, and see if tampering with it produces any results here."

Grant's helmet nodded agreement. "I never had much hope of actually starting the ship," he said, "since it seems unlikely that anything but mechanical damage of a serious nature could have stranded it here; but I did have some hopes for the communicators. There must be some."

"Maybe they didn't talk," remarked the navigator.

"If that's your idea of humor, maybe you'd better not, yourself," growled Grant. He vaulted back to the catwalk, and morosely led the way forward, to see if the engineers or free-lance investigators had had any luck. McEachern followed, regretting the remark, which must have jarred the commander's optimism at an unfortunate time. He tried to think of something helpful to say, but couldn't, so he wisely kept quiet.

Halfway to the bow; they met Preble and Stevenson, who had satisfied themselves that the others could do better in the engine room and were continuing their own general examination of the ship. They gave the officers a brief report on events forward, showed them the metal rings found by the air lock, and went on aft to find some means of visiting the corridors which presumably existed above and below the main one. The control room seemed the logical place to look first, though neither had noticed any other openings from it when they were there the first time. Perhaps the doors were closed, and less obvious.

But there were no other doors, apparently. Only two means of access and egress to and from the control room appeared to exist, and these were the points where the main corridor entered it.

"There's a lot of room unaccounted for, just the same," remarked Stevenson after the search, "and

there must be some way into it. None of the rooms we investigated looking for that `key' had any sign of a ramp or stairway or trapdoor; but we didn't cover them all. I suggest we each take one side of the bow corridor, and look behind every door we can open. None of the others was locked, so there shouldn't be much trouble."

Preble agreed, and started along the left-hand wall of the passage, sweeping it with his light as he went. The chemist took the right side and did likewise. Each reached a door simultaneously, and pushed it open; and a simultaneous "Here it is" crackled from the suit radios. A spiral ramp, leading both up and down, was revealed on either side of the ship, behind the two doors.

"That's more luck than we have a right to expect," laughed Stevenson. "You take your side, I'll take mine, and we'll meet up above."

Preble again agreed silently, and started up the ramp. It was not strictly accurate to call it a spiral; it was a curve evidently designed as a compromise to give some traction whether the ship were resting on its belly on a high-gravity planet, or accelerating on its longitudinal axis, and it did not make quite a complete turn in arriving at the next level above. Preble stepped onto it facing the port side, and stepped off facing sternward, with a door at his left side. This he confidently tried to push open, since like the others it lacked knob or handle; but unlike them, it refused to budge.

There was no mystery here. The most cursory of examinations disclosed the fact that the door had been welded to its frame all around—raggedly and crudely, as though the work had been done in frantic haste, but very effectively. Nothing short of a high explosive or a heavy-duty cutting arc could have opened that portal. Preble didn't even try. He returned to the main level, meeting Stevenson at the foot of the ramp. One look at his face was enough for the chemist.

"Here, too?" he asked. "The door on my side will never open while this ship is whole. Someone wanted to keep something either outside or inside that section."

"Probably in, since the welding was done from outside," replied Preble. "I'd like to know what it was. It would probably give us an idea of the reason for the desertion of this ship. Did you go down to the lower level?"

"Not yet. We might as well go together—if one side is sealed, the other probably will be, too. Come on."

They were still on the left-hand ramp, so it was on this side that they descended. A glance at the door here showed that, at least, it was not welded; the pressure of a hand showed it to be unlocked. The two men found themselves at the end of a corridor similar in all respects to the one above, except that it came to a dead end to the right of the door instead of continuing on into the central chamber. It was pitch-dark, except for the reflections of the hand lights on the polished metal walls and along either side were doors, perhaps a trifle larger than most of the others on the ship. Many of these were ajar, others closed tightly; and by common consent the men stepped to the nearest of the former.

The room behind it proved similar in size to those above, but it lacked the articles which the men had come to look upon as the furniture of the long-dead crew. It was simply a bare, empty cubicle. The other chambers, quickly examined, showed no striking difference from the first. Several

contained great stacks of metal ingots, whose inertia and color suggested platinum or iridium; all were thickly coated with dust, as was the floor of the corridor. Here, too, there must have been organic materials, whether crew or cargo none could tell, which had slowly rotted away while the amazingly tight hull held stubbornly to its air. The makers of the ship had certainly been superb machinists—no vessel made by man would have held atmosphere more than a few months, without constant renewal.

"Have you noticed that there is nothing suggestive of a lock on any of these doors?" asked Preble, as they reached the blank wall which shut them off from the engine room in front.

"That's right," agreed Stevenson. "The engine-room port was the only one which had any obvious means of fastening. You'd think there would be need to hold them against changes in acceleration, if nothing else."

He went over to the nearest of the doors and with some care examined its edge, which would be hidden when it was closed; then be beckoned to Preble. Set in the edge, almost invisible, was a half-inch circle of metal slightly different in color from the rest of the door. It seemed perfectly flush with the metal around it. Just above the circle was a little dot of copper.

Both objects were matched in the jamb of the door—the copper spot by another precisely similar, the circle by a shallow, bowl-shaped indentation of equal size and perhaps a millimeter deep. No means of activating the lock, if it were one, were visible. Stevenson stared at the system for several minutes, Preble trying to see around the curve of his helmet.

"It's crazy," the chemist said at last. "If that circle marks a bolt, why isn't it shaped to fit the hollow on the jamb? It couldn't be moved forward a micron, the way it is. And the thing can't be a magnetic lock—the hollow proves that, too. You'd want the poles to fit as snugly as possible, not to have the field weakened by an air gap. What is it?"

Preble blinked, and almost bared his head in reverence, but was stopped by his helmet. "You have it, friend," he said gently. "It is a magnetic lock. I'd bet"—he glanced at the lung dial on his wrist—"my chance of living another hundred hours that's the story. But it's not based on magnetic attraction—it's magnetostriction. A magnetic field will change the shape of a piece of metal—some-what as a strong electric field does to a crystal. They must have developed alloys in which the effect is extreme. When the current is on, that `bolt' of yours fits into the hollow in the jamb, without any complicated lever system to move it. This, apparently, is a cargo hold, and all the doors are probably locked by one master switch—perhaps on the control board, but more probably down here somewhere. So long as a current is flowing, the doors are locked. The current in any possible storage device must have been exhausted ages ago, even if these were left locked."

"But what about the engine-room door?" asked Stevenson. "Could that have been of this type? It was locked, remember." Preble thought for a moment.

"Could be. The removable block might have been a permanent magnet that opposed another when it was in one way, and reinforced it when it was reversed. Of course, it would be difficult to separate them once they were placed in the latter position; maybe the ship's current was used to make that possible. Now that the current is off, it may be that there will be some difficulty in

returning that block to its original position. Let's go and see." He led the way back along the corridor to the ramp.

Cray received the theory with mingled satisfaction and annoyance; he should, he felt, have seen it himself. He had already discovered that the triangular blocks had developed an attachment for heir new positions, and had even considered magnetism in that connection; but the full story had escaped him. He had had other things to worry about, anyway.

The free-lance seekers had met the engineer at the entrance to the engine room. Now the three moved inside, stepping out onto a catwalk similar to that in the control room. This chamber, however, was illuminated only by the hand torches of the men; and it was amazing to see bow well they lit up the whole place, reflecting again and again from polished metal surfaces.

When one had seen the tube arrangement from outside the ship, it was not difficult to identify most of the clustered machines. The tube breeches, with their heavy injectors and disintegrators, projected in a continuous ring around the walls and in a solid group from the forward bulkhead. Heavily insulated leads ran from the tubes to the supplementary cathode ejectors. It seemed evident that the ship had been driven and steered by reaction jets of heavy-metal ions, as were the vessels of human make. All the machines were incased in heavy shields, which suggested that their makers were not immune to nuclear radiation.

"Not a bad layout," remarked Preble. "Found out whether they'll run?"

Cray glared. "No!" he answered almost viciously. "Would you mind taking a look at their innards for us?"

Preble raised his eyebrows, and stepped across the twenty-foot space between the catwalk and the nearest tube breech. It was fully six feet across, though the bore was probably not more than thirty inches—the walls had to contain the windings for the field which kept the ion stream from actual contact with the metal. The rig which was presumably the injector-distintegrator unit was a three-foot bulge in the center, and the insulated feed tube led from it to a nearby fuel container. The fuel was probably either mercury or some other easily vaporized heavy metal, such as lead. All this seemed obvious and simple enough, and was similar in basic design to engines with which even Preble was familiar; but there was a slight departure from convention in that the entire as-sembly, from fuel line to the inner hull, appeared to be one seamless surface of metal. Preble examined it closely all over, and found no trace of a joint.

"I see what you mean," he said at last, looking up. "Are they all the same?" Cray nodded. "They seem to be. We haven't been able to get into any one of them—even the tanks are tight. They look like decent, honest atomics, but we'll never prove it by look-ing at the outside."

"But how did they service them?" asked Stevenson. "Surely they didn't weld the cases on and hope their machines were good enough to run without attention. That's asking too much, even from a race that built a hull that could hold air as long as this must have."

"How could I possibly know?" growled Cray. "Maybe they went outside and crawled in through the jets to service 'em—only I imagine it's some trick seal like the door of this room. After all, that was common sense, if you look at it right. The fewer moving parts, the less wear. Can

anyone think of a way in which this breech mechanism could be fastened on, with an invisible joint, working from the same sort of common sense?"

Why no one got the answer then will always remain a mystery; but the engineer was answered by nothing but half a dozen thought expressions more or less hidden in space helmets. He looked around hopefully for a mo-ment, then shrugged his shoulders. "Looks like we'll just have to puzzle around and hope for the best," he concluded. "Jack and Don might as well go back to their own snooping—and for Heaven's sake, if you get any more ideas, come a-runnin'."

After glancing at Grant for confirmation of the sugges-tion, Preble and Stevenson left the engine room to continue their interrupted tour. "I wonder if the upper section behind the control room is sealed," remarked the chemist as they entered the darkness of the corridor. "I think we've covered the bow fairly well." Preble nodded; and without further speech they passed through the control chamber, glancing at the board which had given Grant and McEachern such trouble, and found, as they expected, ramps leading up and down opening from the rear corridor just as one entered. They stayed together this time, and climbed the star-board spiral. The door at the top opened easily, which was some relief; but the hallway beyond was a disap-pointment. It might have been any of the others already visited; and a glance into each of the rooms revealed nothing but bare metal gleaming in the flashlight beams, and dust-covered floors. The keel corridor was also open; but here was an indication that one, at least, of the rooms had been used for occupancy rather than cargo.

Stevenson looked into it first, since it was on the side of the corridor he had taken. He instantly called his companion, and Preble came to look at the object standing in the beam of the chemist's light.

It was a seat, identical to the one in the control chamber—a mound of metal, with five deep groove; equally spaced around it. The tiny reflected images of the flashlights stared up from its convex surfaces like luminous eyes. None of the other furniture that had characterized the room in the central bow corridor was present but the floor was not quite bare.

Opposite each of the five grooves in the seat, perhaps foot out from it, a yard-long metal cable was neatly welded to the floor. A little farther out, and also equally spaced about the seat, were three more almost twice a long. The free end of each of the eight cables was cut of cleanly, as though by some extremely efficient instrument the flat cut surfaces were almost mirror smooth. Stevenson and Preble examined them carefully, and then looked at each other with thoughtful expressions. Both were beginning to get ideas. Neither was willing to divulge them.

There remained to explore only the stern engine room and the passage leading to it, together with the room; along the latter. They had no tools with which to remove a specimen of one of the cables, so they carefully noted the door behind which the seat and its surroundings has been found, and climbed once more to the central deck Before making their last find, they had begun to be bored with the rather monotonous search, particularly since they had no clear idea of what they were searching for without it, they might have been tempted to ignore the rooms along the corridor and go straight to the engine room. Now, however, they investigated every chamber carefully; and their failure to find anything of interest was proportionally more disappointing.

And then they reached the engine-room door.

Flashlights swept once over the metal surface, picking out three disks with their inset triangular blocks, as the men had expected, but the coppery reflection from two of the blocks startled them into an instant motionlessness. Of the three seals, they realized, only one—the upper-most—was locked. It was as though whoever had last been in the room had left hastily—or was not a regular occupant of the ship.

Preble quickly reversed the remaining block, and un-screwed the three disks; then the two men leaned against the door and watched it swing slowly open. Both were unjustifiably excited; the state of the door had stimulated their imaginations, already working overtime on the ma-terial previously provided. For once, they were not dis-appointed.

The light revealed, besides the tanks, converters, and tube breeches which had been so obvious in the forward engine room, several open cabinets which had been mere bulges on the walls up forward. Tools and other bits of apparatus filled these and lay about on the floor. Light frameworks of metal, rather like small building scaffolds, enclosed two of the axial tube breeches; and more tools lay on these. It was the first scene they had encountered on the ship that suggested action and life rather than desertion and stagnation. Even the dust, present here as everywhere, could not eradicate the impression that the workers had dropped their tools for a brief rest, and would return shortly.

Preble went at once to the tubes upon which work had apparently been in progress. He was wondering, as he had been since first examining one, how they were opened for servicing. He had never taken seriously Cray's remark that it might have been done from outside.

His eye caught the thing at once. The dome of metal that presumably contained the disintegrator and ionizing units had been disconnected from the fuel tank, as he had seen from across the room; but a closer look showed that it had been removed from the tube, as well, and replaced somewhat carelessly. It did not match the edges of its seat all around, now; it was displaced a little to one side, exposing a narrow crescent of flat metal on each of the two faces normally in complete contact. An idea of the position can be obtained by placing two pennies one on the other, and giving the upper one a slight sideward displacement.

The line of juncture of the two pieces was, therefore, visible all around. Unfortunately, the clamping device Preble expected to find was not visible anywhere. He got a grip—a very poor one, with his gloved hand—on the slightly projecting edge of the hemisphere, and tried to pull it free, without success; and it was that failure which gave him the right answer—the only possible way in which an air-tight and pressure-tight seal could be fastened solidly, even with the parts out of alignment, with nonmagnetic alloys. It was a method that had been used on Earth, though not on this scale; and he was disgusted at his earlier failure to see it.

Magnetism, of course, could not be used so near the ion projectors, since it would interfere with the controlling fields; but there was another force, ever present and available—molecular attraction. The adjoining faces of the seal were plane, not merely flat. To speak of their accuracy in terms of the wave length of sodium light would be useless; a tenth-wave surface, representing

hours of skilled human hand labor, would be jagged in comparison. Yet the relatively large area of these seals and the frequency with which the method appeared to have been used argued mass production, not painstaking polishing by hand.

But if the seal were actually wrung tight, another problem presented itself. How could the surfaces be separated, against a force sufficient to confine and direct the blast of the ion rockets? No marks on the breech suggested the application of prying tools—and what blade could be inserted into such a seal?

Stevenson came over to see what was keeping Preble so quiet, and listened while the latter explained his discovery and problems.

"We can have a look through these cabinets," the chemist remarked finally. "This seems to fit Sorrell's idea of a tool-requiring job. Just keep your eyes and mind open."

The open mind seemed particularly indicated. The many articles lying in and about the cabinets were undoubtedly tools, but their uses were far from obvious. They differed from man-made tools in at least one vital aspect. Many of our tools are devices for forcing: hammers, wrenches, clamps, pliers, and the like. A really good machine job would need no such devices. The parts would fit, with just enough clearance to eliminate unde-sired friction—and no more.

That the builders of the ship were superb designers and machinists was already evident. What sort of tools they would need was not so obvious. Shaping devices, of course; there were planers, cutters, and grinders among the littered articles. All were portable, but solidly built, and were easily recognized even by Preble and Stevenson. But what were the pairs of slender rods which clung together, obviously magnetized? What were the small, sealed-glass tubes; the long, grooved strips of metal and plastic; the featureless steel-blue spheres; the iridescent, oddly shaped plates of paper-thin metal? The amateur investigators could not even guess, and sent for profes-sional help.

Cray and his assistants almost crooned with pleasure as they saw the untidy floor and cabinets; but an hour of careful examination and theorizing left them in a less pleasant mood. Cray conceded that the molecular attrac-tion theory was most probably correct, but made no headway at all on the problem of breaking the seal. Nothing in the room seemed capable of insertion in the air-tight joint.

"Why not try sliding them apart?" asked Stevenson. "If they're as smooth as all that, there should be no diffi-culty."

Cray picked up a piece of metal. "Why don't you imagine a plane through this bar, and slide it apart along that?" he asked. "The crystals of the metal are practically as close together, and grip each other almost as tightly, in the other case. You'll have to get something between them."

The chemist, who should have known more physics, nodded. "But it's more than the lubricant that keeps the parts of an engine apart," he said.

"No, the parts of one of our machines are relatively far apart, so that molecular attraction is negligible," an-swered the machinist. "But—I believe you have something there. A lubricant might do it; molecules might conceiv-ably work their way between those surfaces. Has anybody

noticed anything in this mess that might fill the bill?"
"Yes," answered Preble promptly, "these glass tubes. They contain liquid, and have been fused shut—which is about the only way you could seal in a substance such as you would need."
He stepped to a cabinet and picked up one of the three-inch long, transparent cylinders. A short nozzle, its end melted shut, projected from one end, and a small bubble was visible in the liquid within. The bubble moved slug-gishly when the tube was inverted, and broke up into many small ones when it was shaken. These recombined instantly when the liquid came to rest, which was encouraging. Evidently the stuff possessed a very low vis-cosity and surface tension.
Cray took the tube over to the breech which had been partly opened and carelessly closed so long ago, held the nozzle against the edge of the seal, and, after a moment's hesitation, snapped off the tip with his gloved fingers. He expected the liquid to ooze out in the asteroid's feeble gravity, but its vapor pressure must have been high, for it sprayed out in a heavy stream. Droplets rebounded from the metal and evaporated almost instantly; with equal speed the liquid which spread over the surface vanished. Only a tiny fraction of a percent, if that, could have found its way between the surfaces.
Cray stared tensely at the dome of metal as the tube emptied itself. After a moment, he dropped the empty cylinder and applied a sideways pressure.
A crescent, of shifting rainbow colors, appeared at the edge of the seal; and the dome slowly slid off to one side. The crescent did not widen, for the lubricant evaporated the instant it was exposed. Preble and Stevenson caught the heavy dome and eased its mass to the central catwalk. The last of the rainbow film of lubricant evaporated from the metal, and the engineers crowded around the open breech. There was no mass of machinery inside; the disintegrators would, of course, be within the dome which had been removed. The coils which generated the fields designed to keep the stream of ionized vapor from contact with the tube walls were also invisible, being sealed into the tube lining. Neither of these facts bothered the men, for their own engines had been similarly designed. Cray wormed his way down the full length of the tube to make sure it was not field failure which had caused it to be opened in the first place; then the three specialists turned to the breech which had been removed.
The only visible feature of its flat side was the central port through which the metallic vapor of the exhaust had entered the tube; but application of another of the cylinders of lubricant, combined with the asteroid's gravity, caused most of the plate to fall away and reveal the disintegrator mechanism within. Preble, Stevenson, Grant, and McEachern watched for a while as pieces of the disintegrator began to cover the floor of the room; but they finally realized that they were only getting in the way of men who seemed to know what they were doing, so a gradual retreat to the main corridor took place.

"Do you suppose they can find out what was wrong with it?" queried Stevenson.
"We should." It was Cray's voice on the radio. "The principle of this gadget is exactly like our own. The only trouble is that they've used that blasted molecular-attrac-tion fastening method everywhere. It's taking quite a while to get it apart."

"It's odd that the technology of these beings should have been so similar to ours in principle, and yet so different in detail," remarked Grant. "I've been thinking it over, and can't come to any conclusion as to what the reason could be. I thought perhaps their sense organs were different from ours, but I have no idea how that could produce such results—not surprising, since I can't imagine what sort of senses could exist to replace or supplement ours."

"Unless there are bodies in the sealed-off corridor and rooms, I doubt if you'll ever find the answer to that one," answered Preble. "I'll be greatly surprised if anyone ever proves that this ship was made in this solar system."

"I'll be surprised enough if anyone proves anything at all constructive about it," returned Grant. Cray's voice interrupted again.

"There's something funny about part of this," he said. "I think it's a relay, working from your main controls, but that's only a guess. It's not only connected to the electric part of the business, but practically built around the fuel inlet as well. By itself it's all right; solenoid and moving core type. We've had it apart, too."

"What do you plan to do?" asked Grant. "Have you found anything wrong with the unit as a whole?"

"No, we haven't. It has occurred to me that the breech was unsealed for some purpose other than repair. It would make a handy emergency exit—and that might account for the careless way it was resealed. We were thinking of putting it back together, arranging the relay so that we can control it from here and test the whole tube. Is that all right with you?"

"If you think you can do it, go ahead," replied Grant. "We haven't got much to lose, I should say. Could you fix up the whole thing to drive by local control?"

"Possibly. Wait till we see what happens to this one." Cray moved out of the line of sight in the engine-room doorway, and his radio waves were cut off.

Stevenson moved to the doorway to watch the process of reassembly; the other three went up to the control room. The eeriness of the place had worn off—there was no longer the suggestion of the presence of the unknow-able creature who had once controlled the ship. Preble was slightly surprised, since it was now night on this part of the asteroid; any ghostly suggestions should have been enhanced rather than lessened. Familiarity must have bred contempt.

No indicator lights graced the control panel. Grant had half hoped that the work in the engine room might have been recorded here; but he was not particularly surprised.

He had given up any hopes of controlling the vessel from this board, as his remark to Cray had indicated.

"I hope Cray can get those tubes going," he said after a lengthy silence. "It would be enough if we could push this ship even in the general direction of Earth. Luckily the orbit of this body is already pretty eccentric. About all we would have to do is correct the plane of motion."

"Even if we can't start enough tubes to control a flight, we could use one as a signal flare," remarked Preble, "Remember, the *Mizar* is in this sector; you once had hopes of contacting her with the signal equipment of this ship, if you could find any. The blast from one of these tubes, striking a rock surface, would make as much light as you could want."

"That's a thought," mused Grant. "As usual, too simple for me to think of. As a matter of fact, it probably represents our best chance. We'll go down now and tell Cray simply to leave the tube going, if he can get it started."

The four men glided back down the corridor to the engine room. The reassembly of the breech mechanism was far from completed, and Grant did not like to interrupt. He was, of course, reasonably familiar with such motors, and knew that their assembly was a delicate task even for an expert.

Cray's makeshift magnetic device for controlling the relay when the breech was sealed was a comment on the man's ingenuity. It was not his fault that none of the men noticed that the core of the relay was made of the same alloy as the great screw cocks which held the engine-room doors shut, and the small bolts on the doors in the cargo hold. It was, in fact, a delicate governor, controlling the relation between fuel flow and the breech field strength—a very necessary control, since the field had to be strong enough to keep the hot vapor from actual contact with the breech, but not strong enough to overcome the effect of the fields protecting the throat of the tube, which were at right angles to it. There was, of course, a similar governor in man-made motors, but it was normally located in the throat of the tube and was controlled by the magnetic effect of the ion steam. The device was not obvious, and of course was not of a nature which a human engineer would anticipate. It might have gone on operating normally for an indefinite period, if Cray had used any means whatever, except magnetic manipulation, to open and close the relay.

The engineers finally straightened and stood back from their work. The breech was once more in place, this time without the error in alignment which had caused the discovery of the seal. Clamped to the center of the dome, just where the fuel feed tube merged with its surface, was the control which had been pieced together from articles found in the tool cabinets. It was little more than a coil whose field was supposed to be strong enough to replace that of the interior solenoid through the metal of the breech.

Preble had gone outside, and now returned to report that the slight downward tilt of the end of the ship in which they were working would cause the blast from this particular tube to strike the ground fifty or sixty yards to the rear. This was far enough for safety from splash, and probably close enough so that the intensity of the blast would not be greatly diminished.

Cray reported that the assembly, as nearly as he could tell, should work.

"Then I suggest that you and anyone you need to help you remain here and start it in a few moments, while the rest of us go outside to observe results. We'll keep well clear of the stern, so don't worry about us," said Grant. "We're on the night side of the asteroid now, and, as I remember, the *Mizar* was outward and counter-clockwise of this asteroid's position twenty-four hours ago—by heaven, I've just realized that all this has occurred in less than twenty, hours. She should be able to sight the flare at twenty million miles, if this tube carries half the pep that one of ours would."

Cray nodded. "I can start it alone," he said. "The rest of you go on out. I'll give you a couple of minutes, then turn it on for just a moment. I'll give you time to send someone in if anything is wrong."

Grant nodded approval, and led the other five men along the main corridor and out the air lock. They leaped to a position perhaps a hundred and fifty yards to one side of the ship, and waited. The tube in question was one of the lowest in the bank of those parallel to the ship's longitudinal axis. For several moments after the men had reached their position it remained lifeless; then a silent, barely visible ghost of flame jetted from its lip. This changed to a track of dazzling incandescence at the point where it first contacted the rock of the asteroid; and the watchers automatically snapped the glare shields into place on their helmets. These were all in place before anyone realized that the tube was still firing, cutting a glowing canyon into the granite and hurling a cloud of boiling silica into space. Grant stared for a moment, leaped for the air lock, and disappeared inside. As he entered the control room from the front, Cray burst in from the opposite end, making fully as good time as the captain. He didn't even pause, but called out as he came: "She wouldn't cut off, and the fuel flow is increasing. I can't stop it. Get out before the breech gives—I didn't take time to close the engine-room door!"

Grant was in midair when the engineer spoke, but he grasped a stanchion that supported the catwalk, swung around it like a comet, and reversed his direction of flight before the other man caught up to him. They burst out of the air lock at practically the same instant.

By the time they reached the others, the tube fields had gone far out of balance. The lips of the jet tube were glowing blue-white and vanishing as the stream caught them; and the process accelerated as the men watched. The bank of stern tubes glowed brightly, began to drip, and boiled rapidly away; the walls of the engine room radiated a bright red, then yellow, and suddenly slumped inward. That was the last straw for the tortured disinte-grator; its own supremely resistant substance yielded to the lack of external cooling, and the device ceased to exist. The wreckage of the alien ship, glowing red now for nearly its entire length, gradually cooled as the source of energy ceased generating; but it would have taken supernatural intervention to reconstruct anything useful from the rubbish which had been its intricate mechanism. The men, who had seen the same thing happen to their own ship not twenty hours before, did not even try to do so.

The abruptness with which the accident had occurred left the men stunned. Not a word was spoken, while the incandescence faded slowly from the hull. There was nothing to say. They were two hundred million miles from Earth, the asteroid would be eighteen months in reaching its nearest point to the orbit of Mars—and Mars would not be there at the time. A search party might eventually find them, since the asteroid was charted and would be known to have been in their neighborhood at the time of their disappearance. That would do them little good.

Rocket jets of the ion type are not easily visible unless matter is in the way—matter either gaseous or solid. Since the planetoid was airless and the *Mizar* did not actually land, not even the usually alert Preble saw her approach. The first inkling of her presence was the voice of her commander, echoing through the earphones of the seven castaways.

"Hello, down there. What's been going on? We saw a flare about twenty hours ago on this body

that looked as though an atomic had misbehaved, and headed this way. We circled the asteroid for an hour or so, and finally did sight your ship—just as she did go up. Will you please tell us what the other flare could have been? Or didn't you see it?"
It was the last question that proved too much for the men. They were still laughing hysterically when the *Mizar* settled beside the wreck and took them aboard. Cray alone was silent and bitter. "In less than a day," he said to his colleague on the rescue ship, "I wrecked two ships—and I haven't the faintest idea how I wrecked either one of them. As a technician, I'd be a better ground-car mechanic. That second ship was just lying there waiting to teach me more about shop technique than I'd have learned in the rest of my life; and some little technical slip ruined it all." But whose was the error in technique?

Impediment

Boss ducked back from the outer lock as a whir of wings became audible outside. The warning came barely in time; a five-foot silvery body shot through the opening, checked its speed instantly, and settled to the floor of the lock chamber. It was one of the crew, evidently badly winded. His four legs seemed to sag under the weight of the compact body, and his wings drooped almost to the floor. Flight, or any other severe exertion, was a serious undertaking in the gravity of this world; even accelerine, which speeded up normal metabolism to compensate for the increased demand, was not perfect.
Boss was not accustomed to getting out of anyone's way, least of all in the case of his own underlings. His temper, normally short enough, came dangerously near the boiling point; the wave of thought that poured from his mind to that of the weary flier was vitriolic.
"All right, make it good. Why do I have to dodge out of the path of every idiotic spacehand who comes tearing back here as though the planet was full of devils? Why? What's the rush, anyway? This is the first time 1 ever saw you in a hurry, except when I told you to hop!"
"But you told me this time, Boss," was the plaintive answer. "You said that the moment that creature you were after turned into the path leading here, I was to get word to you. It's on the way now."
"That's different. Get out of sight. Tell Second to make sure everybody's in his quarters, and that all the doors along the central hall are locked. Turn out all lights, except for one at each end of the hall. No one is to be visible from that hallway, and no other part of the ship is to be accessible from it. Is that understood?"
"Yes, Boss."
"Clear out, then. That's the way you wanted things, isn't it, Talker?"
The being addressed, who had heard the preceding dialogue with more amusement than respect, was watch-ing from the inner door of the air lock. Like the blustering commander and the obsequious crew member, he supported his body almost horizontally on four slender legs. Another pair of appendages terminated in prehensile organs as efficient as human hands, and a double pair of silvery-gray, membranous wings were folded along the sides of his streamlined,

insectile body.
He could best be described to an Earthman as a giant hawk moth, the resemblance being heightened by the broad, feathery antennae projecting some eighteen inches from a point above his eyes. Those appendages alone differentiated him from the others of his kind; those of the captain and crew were a bare eight inches in length, narrower, and less mobile.
His eyes were the most human characteristics—more accurately, the only ones—that he possessed. Two disks of topaz, more than three inches across, they lent a strangely sagacious expression to the grotesque counte-nance.
"You have understood well, commander," radiated Talker, "even though you seem unable to realize the necessity for this action. The creature must see enough of the ship to arouse his curiosity; at the same time he must gain no inkling of our presence."
"Why not?" asked Boss. "It seems to me that we could learn to communicate much more quickly if we capture him. You say he must be allowed to come and go as he pleases for many days, and must remain under the impression that this ship is deserted. I know you've been trained to communication all your life, but—"
"But nothing! That one fact should make it evident that I know more than you can hope to understand about the problem we're facing. Come up to the control room —that native will arrive shortly, and that's the only place from which we can watch him without being seen ourselves."
Talker led the way forward along the dimly lit main corridor, into which the inner door of the air lock opened directly. At its end, a low doorway opened, and a spiral ramp led to the control deck, half a level higher. Here the two paused. Metal grillework, its interstices filled with glass, formed the rear wall of the room and afforded a view the whole length of the corridor. Talker extinguished the control-room lights, and settled himself at this van-tage point.
His name was no indication of his temperament. The narrator, in fact, must accept full blame for the former. Had it been merely a question of translating from one vocal language to another, it would have been possible to set down a jumble of vowels and consonants, the more unpronounceable the better, and claim that the English alphabet provided no means of coming closer to the true pronunciation. Unfortunately, these beings were able to sense directly the minute electrical disturbances that accompany nerve currents; they conversed by broadcast-ing reproductions of the appropriate sensory impressions. The "language," if it could be so called, might be thought of as possessing the elements of a vocal tongue—nouns, verbs, and modifiers; interjections were replaced by the appropriate emotions, but most of the conversation was reproduced visual imagery.
Obviously, personal names were nonexistent; but theknowledge of identity was in no way impaired. An individual was thought of with respect to his position; temporary or permanent, in the group, or by his personal characteristics. The names used are attempts to show this fact.
No name would suit the arrogant, peppery commander of the vessel, other than the one we have used; but the cognomen "Talker" merits further explanation.
The rulers of his home planet had many of Boss' characteristics. They were the outcome of ages of govern-ment similar to the feudal systems of Earth's Middle Ages. Ranks corresponding to

kings, lords, and dukes existed; warfare was almost continuous. Talker belonged to a class having almost exactly the same duties as medieval heralds; he had been trained from infancy in the traditions, obligations, and special abilities of that class. He was one of a clique which, within itself, formed an international fraternity almost as powerful as any of the governments. Their indispensability protected them; they formed, in addition, probably the most intelligent group in the world. The rulers, and through them, the other inhabitants, looked up to them, and perhaps even feared them a little. The enormously developed faculty of communication implied an unparalleled ability to catch and decipher the mental radiations of others; the development of that power was the "herald's" chief exercise. These last facts should suffice to explain the power of the group, as well as the origin of Talker's name.

Once comfortably settled, Talker again addressed the captain.
"I can't blame you too much for failure to understand the need for this procedure. You lack the training, as you have said; and in addition, there is a condition present whose very possibility never before occurred to me. Tell me, Boss, could you imagine someone—one of your engineers, let us say—acting quite normally, and yet ra-diating impulses that meant absolutely nothing to you?"
"None of them knows enough to think anything I couldn't understand," was the incredulous answer. "If one of them did, I'd lock him up for examination."
"Exactly. You can't imagine a perfectly sane mind giving off anything but clear thoughts. But what are the thoughts, the waves, that you hear?"
"I hear what he's thinking."
"You don't. Your antennae pick up waves which are generated by the chemical processes going on in his brain. Through long practice, you have learned to interpret those waves in terms of the original thoughts; but what thought actually is, neither you nor I nor anyone else knows. We have `thought' in the same fashion all our lives; one brain radiates just like another. But this creature, with whom we have to communicate, is a member of another race; the same thoughts in his mind produce different radiations—the very structure of his brain is, quite likely, different from ours. That was why I was so long finding him; I could not disentangle his radiations from the nerve waves of the other relatively unintelligent life forms around here, until I actually saw him performing actions that proved unquestionably that he does possess a reasoning brain. Even then, it was some time before I realized just what was wrong—it was so new and different."
"Then what can you do? What good will those obser-vations do us!" asked Boss, almost tremulously. "I don't get it entirely, but you seem to. If you can't talk to him, how can we get the stuff we need? And if we don't get it, please tell me how we dare show our faces again within five light-years of home!"
"I am far from sure of just how much can be done," replied the other. "It will be necessary to determine, if possible, the relation between what this creature thinks and what he radiates; I don't think it will be easy. These observations are for the purpose of getting a start in that direction. ,
"As to the other questions, they are entirely your business. You command this ship; and this is the

first time I ever saw you want to talk to someone before you helped yourself to his belongings. If you find yourself unable to do so, we can go back, anyway—if labor is scarce, we might get off with a life sentence in the King's mines on the big moon."

"If they still belong to the King by then. I think I'd rather die here, or in space."

"At least, there would be no trouble in getting hold of arsenic," said Talker dryly. "Those mines produce more of that stuff than anything else. If there is any at all on this planet, we have no time to waste on a probably fruitless search, we must get it from the natives, if they know what it is and have any."

"And to find out if they have any, we must talk to them," answered Boss. "I wish us luck, Talker. Go to it."

The astroplane rested in a small arroyo not much wider than its own hull. The banks of this gully rose nearly to the control-room ports, and from where he lay, Talker could see the gap which marked the point where the trail across the main valley emerged from among the trees. Down that trail the native must come; he had been seen coming through the gap in the hills that bounded the valley on the south side, and no other trail led to the pass in the northern boundary, which was marked by even higher and far steeper cliffs. There seemed little in the valley itself to attract an intelligent being, except animals of various species; and the Talker knew that the camp on the other side of the southern hills was well supplied with food, so that the native would probably not be hunting.

Would he be superstitiously afraid of the ship, or intelli-gently curious enough to examine it more closely?

The question was not long in being answered. Talker sensed the nearness of the creature some time before it became visible; the herald judged, correctly, that it had seen the vessel first and was approaching cautiously, under cover. For several minutes, nothing happened; then the man walked boldly to the edge of the bank and stood there, carefully examining the long metal hull. Both aliens had seen him before, but only at a considerable distance. Talker's chief surprise at the hu-man form was that a being should support a mass about four times his own, against the relatively enormous gravity of Earth, on but two legs—though the legs, it is true, resembled tree trunks when compared to the stalk-like limbs of the visitors.

The man held a rifle in one hand. The watchers recognized it as a weapon of some sort, but were unable to make out its details even in the midmorning sunlight which shone upon the native. They waited, even Boss maintained an unaccustomed silence, while the new-comer took in the details of the forty-meter, cigar-shaped spaceship. He noticed that there were ports—round win-dows along the sides; these were covered, except for some near the bow, with metal shutters. The exposed windows contained round panes of glass or quartz; the room or rooms within were dark, however, and he could see nothing through them.

A little more than a quarter of the vessel's length back from the nose, was a larger port, evidently an entrance. It was elliptical, and about five feet high and twice as wide. It was half open, giving a curiously deserted appearance to the ship.

Talker and Boss could see the indecision in the man's attitude, although his thought waves, which

the former could perceive clearly, were completely indecipherable.
The doubt manifested itself in restless motion; the man paced toward the stern of the ship, passing out of the watchers' sight, and reappeared a few minutes later on the opposite bank of the gully. He crossed once more, under the curve of the ship's nose, but this time did not climb the bank. Instead, he disappeared sternward again, evidently having made up his mind.
Talker was sure he knew the decision that had been reached; for a moment he was jubilant, but an instant later he came as close to cursing himself as anyone can without benefit of language. The being quite evidently could not fly; the port was ten feet above its head and fifteen feet from the bank. Even if the man wished to, how could he enter?
Climbing, for obvious reasons, did not occur to Talker; he had never in his life had to climb, except in buildings too cramped for flying. He caught a glimpse of the man disappearing among the trees, and toyed with the idea of moving to some other part of the planet and trying again.
He did not crystallize this thought sufficiently to men-tion it to Boss; before he could do so, his attention was caught by something in motion. The man slowly reap-peared, dragging a hardwood sapling pole nearly twenty feet in length. He tossed this down the bank, and scrambled after it; then he picked up one end and dragged the pole out of sight along the hull.
Talker realized the plan, and gained new respect for the strength, to him almost inconceivable, that lay in those blocky arms and legs. He heard and correctly interpreted the scraping sound as the pole was laid against the lower sill of the air lock; and moments later, an indicator on the control panel showed that the outer door had been swung a little wider; to admit a pair of human shoulders.
Both aliens glued their eyes to the grillework, looking down the dimly lighted length of corridor to the place where the inner lock door swung wide open, partly blocking further vision. The hinge was to the rear, fortu-nately; the man would not be hidden from them by the door, if and when he stepped into the hallway.
Boss grew impatient as moments slipped uneventfully by; once he shifted his position, only to freeze motionless again at a warning flicker of radiation from Talker. He thought the latter had seen something, but another minute rolled by before the shadow dimming the light that came through the lock moved enough to show that the man had really entered.
An instant later he had stepped into view. He moved soundlessly, and carried his weapon in a manner that showed it was certainly something more than a club. He was evidently ill at ease; his cramped position accounted largely for that fact—the ceiling of the corridor was barely five feet above the floor. The owners of the ship, with their nearly horizontal carriage, needed little head room.
The man's first action was to peer behind the inner door, rifle held ready. He saw at once that, except for himself, the corridor was empty; but numerous low doors were visible along its full length, with larger portals at each end, and one directly opposite him. The one by which he had entered was the only one open; that immediately facing led, he judged, to a similar air lock on the port side of the ship.
For a minute or two he listened. Then he partly closed the inner door of the lock, so as to allow an

unimpeded view the full length of the hall, and walked cautiously forward. Once he raised his hand as though to pound on one of the doors, but evidently thought better of it. Two or three times he looked quickly behind him, turning his head to do so, much to Boss' astonishment. Talker had already deduced from the location of the eyes that the head must be mobile.

The light, set in the ceiling near the front end of the hall, was made the subject of a careful examination. The man looked back along the corridor, noting the row of similar, unlighted bulbs at equal intervals along the ceiling, and the single other lighted one at the far end. Talker was unable to tell from his attitude whether they were something utterly new or completely familiar to him.

Caution had by now succumbed entirely to curiosity. Several doors, including that which led to the control room, were tried. In accordance with Boss' orders, all were locked. For a few moments the man's face stared through the grillework not two feet from his observers; but the control room was in complete darkness, Talker having closed the shutters the instant he was sure the man had entered the lock. The reflection of the ceiling lamp from the glass filling helped to conceal them from the tiny human eyes, and the man turned away without realizing the nearness of the two.

He wandered down to the far end of the hallway, trying a door here and there. None yielded to his efforts, and eventually he swung open the air-lock door and passed out. Talker hastily opened the control-room shut-ters, in case the being had noticed their previous condi-tion, and saw him disappear in the direction from which he had come. Evidently whatever plans he had formed for the day had been given up.

"Did you get anything?" asked Boss eagerly, as the tension relaxed. He watched impatiently as Talker walked to the control desk, opened a drawer, and helped himself to a tablet of accelcrine before answering.

"As much as I expected," he replied finally. "I was able to isolate the radiations of his optical section, when he first looked at the single light at this end—that was why I arranged it that way. Concentrating on those emanations, I think I know the patterns corresponding to some of the more simple combinations of straight lines and circles—the impressions he got while examining the corridor and doors. It is still difficult, because he is highly intelligent and continuously radiates an extremely com-plex and continually changing pattern which must repre-sent not only the integration of his various sensory impressions, but the thought symbols of abstract ideas; I don't see how I can master those. I think all we can hope to do is to learn his visual pattern, and try to broadcast to him pictures that will explain what we want. That will take long enough, I fear."

"It better not take too long," remarked Boss. "We can breathe the air and eat the food of this planet, tough as the latter is. But we will live under this gravity just as long as the accelerine holds out, which won't be too many weeks."

"You can synthesize accelerine out of those plants with the straight needlelike leaves," answered Talker. "Doc told me this morning; that was some of his product that I just ate. Accelerine won't be enough, however. It speeds up our metabolism, makes us eat like power furnaces, and gives us

enough muscular strength to stand up and walk, or even fly; but if we keep taking it too long, it's an even bet whether we die young of old age, or get so accus-tomed to it that it becomes useless. Also, it's dangerous in another way—you were telling me that two of the fighters have broken legs, from landing too hard or trying to stand up too quickly. Our muscles can stand the gravity, helped by the dope, but our skeletons can't."

"Can't you ever deliver a little good news, without mixing it so thoroughly with bad that I feel worse than ever?" asked Boss. He stalked aft to the engine room, and relieved his feelings by promising a couple of unfor-tunate workers the dirty job of replacing the main attractor bar in the power converter, the next time the flood of incoming radiation from space riddled it into uselessness.

Talker squatted where he was, and thought. Learning a language was a new form of exercise to one who had never before dreamed of its necessity. He guessed, from the attitude of the native as he departed, that it would be necessary to reveal the presence of the aliens aboard if the man's interest in the ship was to be maintained. Thinking the matter over, it suddenly occurred to Talker that the man himself must have some means of communi-cating with his kind; and there had been no antennae visible. If the method were different from that employed by Talker's people, it might be more suited to present requirements. Yes, revealing their presence was definitely indicated, the more so since, finding himself unable to solve the ship's mystery alone, the man might go off to obtain others of his kind. It was no part of Boss' plan to reveal his presence to the main population of the planet in his present nearly defenseless condition.

It would be easy enough to induce the man to return. One of the crew, flying toward the ship, could "acciden-tally" pass over his camp. Whether, on finding the vessel inhabited, he would be bold enough to venture near any of the aliens, was a matter that could be tested only by experiment; Talker believed he would, since he had shown sufficient courage to enter the ship in ignorance of what lay within.

The herald crept to the controls, and pressed the signal switch indicating that the commander's presence was desired in the control room. Perhaps a minute later, Boss struggled up the spiral, air hissing from his breathing vents as his lungs tried to cope with the results of his haste. If he had had to rely on vocal speech, he probably couldn't have spoken at all.

"Careful," warned Talker; "remember those broken legs among the crew."

"What is it now?" asked the captain. "Come to think of it, why do I always have to come to you? I'm in command here."

Talker did not bother to dispute the statement. The feeling of superiority ingrained in every member of his class was, through motives of prudence, kept very much under cover. He informed the captain of the results of his cogitation, and let him give the necessary orders—orders which had to be relayed through Talker, in any ease.

There were no communicating devices on the ship; the herald had to radiate all of Boss' commands to the proper individuals. There was no machine known to these beings which was capable of receiving, analyzing and transmit-ting through wires or by wave the delicate impulses radiated by their minds. They had the signal system already referred to, which was limited to a

few standard commands; but in general, messages to be transmitted more than a few yards, or through the interference of metal walls, had to pass through the antennae of a herald. It is conceivable that the heralds themselves had subtly discouraged, for their own ends, research in mechanical communication.

One of the fighters was ordered to the air lock. Talker and Boss met him there, and the former carefully ex-plained the purpose of the flight. The soldier signified his understanding, made sure that his tiny case of accelerine tablets was securely fastened to his leg, and launched himself from the sill. He rose almost vertically, and disappeared over the trees. Talker, after a moment's thought, rose also, and settled on the bank opposite the air-lock door. Boss started to follow, but the other "advised" him not to.

"Stay in the doorway," said Talker, "but be sure you are in plain sight. I want him to concentrate his attention on me, but I don't want to give him the impression that you are trying to hide. He might misinterpret the action.

When he gets here, keep quiet. I'll have other things to do than listen to you."

The wait, which Talker had expected to be a few minutes, grew into half an hour, without any sign from the decoy. Boss, true to his nature, fumed and fidgeted, providing his companion with a good deal of—well- concealed—amusement. His temper did not improve when the fighter, appearing with a rush of wings, settled in front of Talker, instead of the commander, to make his report.

"He was still in the woods when I went out, sir," said the flier. "I found a spot where I could watch an open place on the trail. I was sure he hadn't come by yet, so I landed on a ridge—the place was near the cliffs—and waited. When he appeared at the edge of the clearing, I flew low; out of sight from the ground, to the other side of the hills; then I came back, quite high, toward here. I'm sure he saw me; I passed directly over him, and he stopped in the middle of the clearing with his whole head tipped up—I suppose he had to, in order to look up with those sunken-in little eyes."

"You have done well. Did you see the creature turn, as though to come back this way?"

"He turned to watch me as I passed overhead; he was still standing motionless the last I saw of him. I don't know what he was going to do. So far as I can tell, he doesn't think at all."

"All right. You may return to your quarters, and eat if you wish. Tell the rest of the crew they are free to move about in the ship, but the ports must be left closed—no one but Boss and me must be visible from the outside."

The soldier vanished into the vessel, showing his near exhaustion in the clumsiness of his movements. Boss looked after him.

"We can't get away from this place too soon to suit me," he commented finally. "A few more weeks and I won't have a single soldier or engineer fit for action. Why did you pick this ghastly planet as a place to restock, anyway? There are eight others in this system."

"Yes," replied Talker sarcastically, "eight others. One so far from the Sun we'd never have noticed it, if our course hadn't taken us within half a million miles; four almost as cold, the smallest of them four times the size of this world; two with decent gravity, but without air enough

to activate a lump of phosophorus—one of them near the Sun and continually facing it with one hemi-sphere; and one like this one, with air that would have mummified you at the first attempt to breathe. If you want to go to one of the others, all right—maybe it would be a better way to die, at that."

"All right, forget it—I was just wondering," answered Boss. "I'm so full of this blasted dope we have to take that I can't think straight, anyway. But when is that native coming back?"

"I'm not sure he is, just yet. The soldier flew so as to make it appear that he was coming from the other side of the hills; possibly the creature went to make sure his camp had not been molested. In that case, he may not return today; it's quite a trip for a ground animal, you know."

"Then what are we waiting here for? If he is very long coming, you won't be able to stay awake to meet him. You should have told the soldier to stay out until he was sure what the creature was going to do."

"That would probably have cost us the soldier. You saw the condition he was in when he came back. If you feel energetic, you can send out watchers in relays; but on a day like this, I don't see how they can keep out of sight—there's not a cloud in the sky. I was planning to allow a reasonable time for the native to come back from the point where he saw our soldier. If he doesn't show up, I'll get a night's sleep and expect him tomorrow morning."

"How do you know how long he'll take? You don't know the turns and twists in the trail, and you don't know how fast he walks when he's going somewhere."

"I know how long it took him to come from the pass this morning," answered Talker. "He was near there when the soldier saw him."

"Well, it's your idea, but I don't mind waiting. This sunlight is comfortable." Boss swung the air-lock door wide open, letting the sun shine some distance into the lock chamber, and settled himself on the smooth metal floor. Any long period of inactivity had one inevitable result; for it was necessary to sleep some sixteen hours out of twenty-four to offset the enormous consumption of energy exacted by Earth's gravity. Boss may have intended to watch, but he was asleep in two minutes.

Talker remained awake longer. He had indulged in less physical activity than anyone else on the ship, and his mind was normally by far the most active. He squatted on the soft carpet of grass, legs spread spiderwise on either side of his body, while the great topaz eyes took in the details of the surroundings.

Numerous living creatures were visible or audible. Birds were everywhere, as were the insects upon which many of them fed; for in August even Alaska knows that summer has been present for quite a while. The insects, naturally, interested Talker. Some of them bore rather close resemblance to himself, except in the matter of size. A few butterflies fluttered near him in erratic circles; he radiated a thought to them, but got no answer. He had expected none; but he continued to think to them, as a man thinks aloud to a dog, until their intoxicated flight carried them away from the neighborhood.

The flowers, too, caught his eye. They were "not much," as a human florist might have told him, but all were strange to Talker—his home planet had flowers, but they grew in the wilder regions,

where it was decidedly unsafe to venture at any time. The only plants allowed in the vicinity of the castlelike fortresses, in which all civilized beings dwelt, were those which were of use in sustaining life. The few vegetables of this variety which bore attractive blooms were too common to be appreciated.

Talker himself was half asleep when he became aware of the man's approach. Had the alien known more of Earthly conditions, he would have realized, from the fact that the man was audible at all of fifty yards, that he was a city dweller.

Talker folded his wings tight against his streamlined body and watched the opening of the trail. The native was even more cautious in his approach than he had been the first time; but in spite of this, the two saw each other almost simultaneously. The man had stepped from the forest with his eyes fixed on Boss, asleep in the air lock, and did not see Talker until the shelter of the trees was behind him.

He stopped instantly, rifle halfway to his shoulder; but Talker carefully refrained from moving anything but his eyes until the weapon was lowered again. To his surprise, the gun was not merely lowered, but slung across the man's back; the man himself took a step or two forward, and stopped about fifteen feet away from the alien.

Talker was wondering just how far he could go without alarming the other into flight. Allen Kirk was wondering exactly the same thing. The human being was on the less comfortable side of the exchange, for he was seeing for the first time a creature who had obviously not originated upon his own planet. He felt uncomfortable, under the unwinking stare of two pairs of eyes—the optical organs of Talker's kind are lidless, and Kirk had no means of knowing that Boss was alseep—and the uncanny stillness of the two strange beings got on his nerves. In spite of this, Talker was the first to break down the tension.

His antennae had been folded back, unnoticeable against the silver-gray fur of his body. Now they swung forward, expanding into two iridescent plumes as their owner sought to interpret the mental radiations from the human brain.

Kirk was at first startled, then interested. He knew that the antennae of terrestrial moths were strongly suspected of acting as organs of communication, in some cases at least. It was possible, then, that this mothlike entity was interested solely in conversing with him—a possibility made more probable by the fact that neither creature had as yet made a hostile move, so far as the Earthling could tell.

Talker was fortunate in encountering Kirk, instead of a member of one of the several small tribes dwelling in the surrounding territory. Kirk was educated—he had just completed his third year of university study, and was working during the summer recess at plotting the activi-ties of a minor insect pest which was threatening to spread south and west into Canada. He had majored in sociology, and had taken courses in biology, astronomy and psychology—though the last subject had bored him excessively.

He had realized from the first, of course, that the object in the gully was a flying machine of some sort; nothing else could have reached this spot without leaving traces in the surrounding forest.

He had noticed the air-tight construction of the doorway, but subconsciously refused to consider its full implication until he was actually confronted by one of the vessel's owners, and realized that neither ship nor navigators could possibly have originated on Earth.

With the realization that the being before him wanted to communicate, Kirk bent his thoughts in that direction. He regretted the nearly wasted psychology course; it was practically certain that none of the languages he knew would be of use. Nevertheless, he uttered a few words, to see if they produced any effect; for all he knew, the alien might not be able to hear.

Talker did hear, and showed the fact by a slight start; but the auditory impression he received was unimportant. As he had mentioned to Boss, he had managed to disentangle the cerebral radiations corresponding to a few simple line patterns, as received by the human eyes and symbolized in the brain; and he received, coincidentally with the vocal sounds, a thought-wave which he could translate easily into a series of just such patterns. Kirk, like many people, involuntarily visualized the written form of the words he uttered—not perfectly, but in sufficient detail for the keen mind of the listener to decipher.

Kirk saw the start, though he misinterpreted it. The motion that caught his attention was the sudden stiffening of the antennae as he spoke, the two plumelike organs expanding sideways and pointing diagonally forward, as though to bring his head between their tips. For almost a minute the two creatures remained absolutely motionless, Talker hoping for and expecting further speech, and Allen Kirk watching for some understandable signal. Then the antennae relaxed, and Talker considered the possible meaning of the images he had received.

His own race had a written language—or rather, a means for permanently recording events and ideas; since they had no vocal speech, their "writing" must have been utterly different in basis from that of any Earthly people, for the vast majority of terrestrial written languages are basically phonetic. At any rate, it is certain that Talker had severe difficulty in connecting with any, to him, normal means of communicating the symbols he learned from Kirk, for a time, at least; he did not realize that they were arbitrary line arrangements.

Kirk watched the nearly motionless insect for several minutes, without any idea of the true nature of the difficulty. Then, since speech had produced some effect the first time, he tried it again. The result caused him to doubt his own sanity.

Talker knew that he needed further data; in an attempt to obtain it he simply reached forward to a bare spot of earth and scratched with his odd "hand" the line pattern he had last seen in the human mind. Like Kirk's speak-ing, it was purely an experiment.

To the man, it was a miracle. He spoke; and the grotesque thing before him wrote—crudely and clumsily, to be sure, for Talker's interpretation was still imperfect, and he was, to put it mildly, unpracticed in the art of penmanship—the last few words that the man had uttered. Kirk was momentarily dumfounded, unable for an instant to think coherently; then he jumped to a natural, but erroneous, conclusion. The stranger, he decided, must lack vocal cords, but had learned written English from someone else. That implied previous friendly relationships with a human being, and for the first time Kirk felt fully at ease in the presence of the strange creatures.

He drew his knife, and with the tip scratched, "Who are you?" on the ground beside Talker's line.

The meaning of the question lay in his mind; but it was couched in terms far too abstract for Talker to connect directly with the marks. A problem roughly similar would be faced by a three-year-old child, not yet literate, presented with a brick covered with cuneiform writing and told that it meant something. Talker saw the same letters in the man's brain, but they were as utterly meaningless there as on the ground. The conference seemed to have reached an impasse.

In spite of his relatively deepset eyes, which should, in Talker's opinion, have limited his range of vision to what lay before him, Kirk was the first to see Boss move. He turned his head to see more clearly, and Talker followed his gaze with one eye. Boss had awakened, and was standing as high as his legs would lift him in an effort to see the marks on the ground—the top of the bank was about on the same level as the air-lock floor. He saw the attention of the other two directed his way, and spoke to Talker.

"What is that? Have you got in touch with him? I can't see what you have on the ground there."

Talker turned his antennae toward the air lock, not that it was necessary, but to assure the human being that Boss was being included in the conversation. "Come on over," he said resignedly, "though it won't do you much good to see. Don't fly too close to the native, and don't get nearer to him than I do at any time."

Kirk watched Boss spread his wings and launch himself toward Talker. The pinions moved too fast to be visible; it occurred to Kirk that these creatures were heavier than any Earthly bird, except for flightless forms like the ostrich, yet their wings spanned less than eight feet.

Boss took a single glance at the letters on the ground, and turned his attention to the Earthman. This was the first time he had seen him in full daylight, and he made the most of the opportunity, mercifully remaining silent the while. Talker promptly forgot him, as nearly as such an individual can be forgotten, and brought himself back to the matter in hand.

The "natural" method of learning a language consists of pointing out objects and having their names repeated until one can remember them. This is the first method that suggests itself to a human being, if no printed grammar is available. Talker hit upon it only after long and profound cogitation, when he suddenly realized that he had learned to interpret the human visual impressions in just that fashion—placing the subject in contact with simple objects, and examining the resulting mental radia-tions. He tried it.

Normally, the teacher of a language, whatever method he uses, knows what is being done. Kirk did not, for some time. Talker pointed at the ship with one of his hands, watching the man's mind intently for a series of marks such as had accompanied the sounds from his mouth. Kirk looked in the indicated direction, and then back at Talker. The latter pointed again; and a distinct picture, such as he had been seeking, appeared for an instant in the man's mind, to be replaced almost at once by an indecipherable complex of abstract thoughts.

Talker scratched the first impression on the ground—a perfectly recognizable word, "Ship," and looked up again. The man had disappeared. For an instant Talker was confused; then he heard various sounds from the gully, and crawled to the edge to look over. Kirk was below, raising his pole, which had been lying where he had left it, to the sill of the air lock. Still believing that

Talker was able to write English, he had completely misinter-preted the gestures and writing, and supposed he was being requested to enter the craft.

Talker had a feeling of helplessness, in the face of his troubles; then he pulled himself together, forcing himself to remember that his life, and the other lives on the ship, depended on his efforts. At least, he now knew that the marks had a definite meaning, and he had learned the symbol for "ship." It was, he tried to convince himself, a fair beginning.

The man was crouching in the lock entrance—it was not high enough for him to stand—watching expectantly. Talker beckoned him back. If the man misunderstood his first attempt, now was the time to straighten it out. Kirk looked annoyed, though the aliens could not interpret the expression, slid down the pole, and scrambled back up the bank.

Talker tried again, pointing this time to the early afternoon Sun, and writing the word when it formed in Kirk's mind. The Earthman looked down at the result.

"If that job were necessary, it would be hopeless, friend," he said, "but it isn't necessary. I can speak English, and read it, and write it, thank you. If you can't talk, why don't you just write out what you want me to know?"

Not a word of this was understandable to Talker; in a rather hopeless fashion, he wrote the word or two which had been pictured clearly enough for him to catch, and succeeded in exasperating Kirk still further.

The man certainly could not be accused of stupidity; it was not his fault that he failed to experience a flash of insight that would give the clue to the alien's meaning. The great majority of people would have done no better, except, perhaps, for some lucky chance. Human experi-ence of thought transference is limited to the claims of "psychics" and to fantastic literature, except for a few scientific experiments of doubtful value; Kirk was not addicted to the reading of any of these products of mental aberration, and made no claim to be any sort of scientist. He had begun by jumping to a conclusion, and for some time it simply did not occur to him that the conclusion might be erroneous—the evidence had been quite convincing, to him, that Talker was acquainted with the English language. It followed that the mothlike one's intentions, motivating all this gesticulation and writing, were to teach Kirk the same tongue: an idea so exactly opposite the true state of affairs as to be almost comi-cal.

Twice more Talker repeated his forlorn attempt to get his idea across to the other; twice Kirk repeated his expostulation, once going so far as to write it out on the ground, when it occurred to him that Talker might be deaf. The third time, the Earthling's temper broke free of its moorings—almost. He was not accustomed to using profanity; his family, whose elder members had carefully controlled his upbringing, was almost Puritanical in that respect, and habit got control of his reactions in time to prevent his speaking aloud the words in his mind. His reaction may be imagined when, without Kirk's having uttered a sound, except for a strangled snort, Talker extended a forelimb and scratched a perfectly legible "Damn" on the bare patch of ground.

The word "insight" provides a psychologist with mate-rial for hours of talk. Its precise meaning cannot be given without tacit assumption of understanding of its nature; neither Kirk nor the

narrator possesses that understand-ing. It is assumed that the readers have had experience of insight, and can understand the habit of cartoonists of symbolizing its presence by an incandescent bulb—whether this habit antedates or succeeds the coining of the phrase "to see light" is a purely academic question. All that matters to us is the fact that Kirk abruptly saw the light—dimly at first, and then, though it strained his credulity to the breaking point, with something like comprehension. Why that particular incident should have served to unlock the door we cannot say: certainly Talker's knowledge of a bit of English profanity could have had many other explanations. Insight, as we have intimated, is a rather obscure process.

For almost a full minute, Earthling and alien stared at each other, the former struggling with his own prejudices and the latter wondering what had happened—even he, unused to interpreting human attitudes, could perceive that Kirk was disturbed, Then the Earthman, with the seeds of truth rapidly maturing in his mind, deliberately visualized a simple design—a circle inscribed in a square. Talker promptly and accurately reproduced it on his improvised blackboard. Kirk tried various letters of the English and Greek alphabets, and finally satisfied himself that Talker was actually obtaining the impressions direct-ly from the thoughts. Talker, for his part, discovered that the visual impressions were almost as clear to him now as those of Boss, who had lost his patience and temper long before the Earthman, and had withdrawn by request. He was now sulking, once more squatting in the air lock.

The auditory impressions and abstract thoughts were still a hopeless confusion, so far as Talker was concerned; he never did make a serious attempt to unravel them. Both he and Kirk were satisfied to have found a common ground for expression, and completely ignored lesser matters. Kirk seated himself on the ground beside Talker, and an intensive course in English was rapidly embarked upon.

Not until the Sun was low did Kirk abandon the task, and then it was only because of hunger. Talker had already learned enough to understand the man's declara-tion that he would return in the morning; and Kirk went back to his camp in the gathering dusk, to prepare a meal and obtain a few hours' sleep—very few, as may well be imagined. He spent a good deal of the night awake in his blankets, staring up at the clear sky and wondering, at times aloud, from which of the thousands of points of light his new acquaintance had come. He was sufficiently adventurous by nature not to ask himself why they had come.

Talker watched the man disappear into the woods, and turned wearily toward the ship. He was overtired; the effects of the earlier dose of accelerine were beginning to abate, and he had a well-founded objection to taking more of the stuff than was necessary to keep him alive. With an effort, he flew the few yards between the bank and the air lock, settling heavily beside Boss. The sound of his wings woke the commander, who eagerly demanded a report on progress in communication. Talker obliged, somewhat shortly; his fatigue had brought him unusually close to anger.

"I have made a beginning, in spite of your aid. How long it will take to set up working communication, I don't know; but I will try to direct the conversations so that the ideas we need to impart are used. He will be back when the Sun rises again; in the meantime, I need sleep. Don't

disturb me until the native returns."
Boss was too elated at Talker's news to take offense at his manner. He allowed the herald to depart to his own quarters, and went off himself to spread the news, after closing the outer airlock door. The second in command received the information with glee, and in short order the crew was in better spirits than it had enjoyed since landing on this unhealthy and uncomfortable planet. Even the inhabitants of the sick bay, now three in number since the decoy who had gone after Kirk had returned with a complete set of pulled wing ligaments, began to feel that they were suffering in a good cause, and ceased thinking uncomplimentary thoughts about their officers. The doctor, too, usually by far the most pessimistic member of the ship's personnel, ceased making pointed remarks about "wasted effort" as he worked over his patients. Not one of them appreciated the very real difficulties that still lay ahead, before Talker would have any chance of making the human being understand their needs. None thought that anything more than the transmission of that knowledge would be necessary; and all, except Talker, regarded that matter as practically solved.
The herald had a better appreciation of what lay before him, and was far from sure of his course of action. He had promised Boss to arrange matters so that their needs would be among the first things to be transmitted to the Earthling; but he could not see how he was to fulfill the promise. Had it been merely a matter of keeping his word to the commander, Talker would not have been bothered in the least; he considered anything said to Boss was justified if it succeeded in bothering him. Unfortunately, Talker's own future existence depended on his ability to carry out the terms of that promise. Even with his lack of experience in learning, or teaching, languages, it occurred to him that making advanced chemistry the subject of the lessons was bound to be rather awkward. One cannot point out atoms and molecules individually; it would be pure chance if the man recognized either diagrams or samples, since the latter would be of value only to a chemist with a laboratory, and the former might not—probably would not—conform to human theories of atomic formation. It did not occur to Talker that the ship's pharmacist might be of help; he had been out of contact with his own class for so long that an unfortu-nate, but almost inevitable, sense of his own superiority had grown up within him. The rest of the crew, to him, were mere laborers; he had never talked with any of them as friend to friend; he had solved all his own problems since joining the crew, and would undoubtedly continue to do so unless and until something drastic forced him out of his rut. But it said for him that he was not conceited in the ordinary sense of the word; the feeling of superiority was the result of class training; and the ignoring of others' abilities was completely unconscious.

At the moment, Talker was not worrying about his course of action. He was sound asleep, crouched on the padding of the floor of his quarters. Boss, having made sure that his own contributions toward the present state of near-success were not being minimized in the rapidly spreading news, also retired. The second officer made sure that both air locks were fast, and made his way to the long wardroom in the lower part of the ship. Most of the soldiers and several engineers were gathered there, discussing the day's events and the chances of reaching their

original planetary system—they no longer had "homes" since Boss had broken allegiance with his overlord. The officer's presence did not interrupt the conversation; the Second was a member of the soldier class, and entered the discussion on an equal plane with the others.

It is exceedingly doubtful if any of the crew had ever objected to Boss' dereliction; the act had made little or no change in the course of their existence, and they cared little for whom they worked and fought. If anything, they preferred the new state of affairs, for the constant internecine warfare between the rulers of their home world resembled organized piracy more than anything else, and there was now no need to turn over most of the loot to their own overlord.

Boss, of course, had acted almost on impulse, giving little or no thought to such matters as the problem of replenishing exhausted food and ammunition—he expected to supply those wants from his victims. Unfortunately, an unexpected encounter with a full-armed ship belonging to his erstwhile ruler had left him in no condition to fight anybody; after three or four attempts to bluff supplies from isolated stations in his own system, he had made matters a little too hot for himself and fled in the handiest direction, which hap-pened to be straight away from the four pursuing warships. Near the speed of light, his vessel became indetect-able; and once out of his own system, he had not dared to stop until Sol was bright on his navigation plates. His reasons for landing on Earth have already been made clear. He had food in plenty, and his ship drew its power from stellar radiations; but, not a locker on his ship contained a round of ammunition.

If the discomfort of their environment had turned any of Boss' crew against him, Talker's recent efforts had brought them back. The second officer found himself in complete agreement with the crew—it was good to have a commander like Boss, to keep things under control! There passed a peaceful and happy evening on Boss' vessel.

Boss had found it almost impossible to set regular watches. No matter how often he relieved his men, the inactivity of the job promptly put the relief to sleep. The bodies of the crew, exhausted by the constant battle against Earth's savage gravity, would give up and drop the individuals into a coma before they realized that the stimulant accelerine had worn off. The sleep was short, but apparently unavoidable; Talker, alone, had been able to force himself to more or less regular waking and sleeping hours, simply because he did practically no manual labor. For this reason, as soon as he was convinced that there was nothing in the neighborhood that constituted a menace to the ship itself, Boss ceased setting watches and merely closed the ports at night. There were enough differences in physique among the crew members to make it practically certain that someone would always be awake, day or night. The whole thing was horribly unmilitary by any standards, but it was typical of Boss' line-of-least-resistance nature.

It chanced that Boss himself was asleep when Kirk showed up the next morning, and the ports were still sealed. The man threw a stone at the air-lock door, and examined the ship more closely while he waited for something to happen. The Sun had just cleared the tree and was shining directly on the bow of the vessel. This time, Kirk found that he could see a little through the control-room ports—a few glimpses of boards, covered with dials and levers, the latter oddly shaped to conform to the peculiar "hands" of the operators. He was not close enough to the ship

to obtain a very wide vision angle through the ports, and he had to move around to see the various parts of the chamber. While he was thus improving his knowledge, his eye caught a flash of reflected sunlight from the beveled edge of the air-lock door, and he turned to see who or what was emerging.

The sound of the stone Kirk had thrown had echoed through the main corridor and reached the "ears" of a party of engineers in the wardroom below. These individ-uals had interrupted a form of amusement startlingly similar to contract bridge, in which they were engaged, and one had gone to inform Boss. The latter cursed him, told him to rouse Talker, and went back to sleep.

It was Talker, therefore, followed by some of the more curious engineers, who emerged from the lock. Kirk was able to recognize the herald by his antennae, but could discern no difference between the other members of the group. The meeting adjourned, at Talker's direction, to a spot in the gully, in front of the ship, which bore a large and exceptionally smooth area of sun-dried clay, and lessons began. Talker had brought the appropriate materi-als with him, and had planned to take notes in his own form of "writing"; but he delegated this task to a member of the audience, and gave his full attention to the delicate matter of guiding the choice of words in the proper direction.

This task was no sinecure, since Talker was still extremely uncertain as to the precise nature of words. The meaning covered by a single word in English some-times requires several in another language; the reverse is also true. Talker had learned the symbol that indicated the ship; he discovered later, to his confusion, that there exist such things as synonyms, other words that mean the same thing. He never did discover the variety of objects that could have been meant by "ship." Kirk saw these sources of difficulty almost from the beginning, and went to considerable trouble to avoid them.

Each written word, to Talker, was a complete unit; it is doubtful if he ever discovered that they were made of twenty-six simple marks, in various combinations. Obvi-ously this fact complicated his task enormously, but there was nothing to be done about it. To explain the individ-ual letters would have been tantamount to teaching the verbal language; and months, or even years, would have been necessary to teach Talker's auditory organs to recognize the innumerable fine distinctions of pitch and overtone to be found in a single sentence.

The details of the weeks that were taken up in the learning would be of interest to psychologists and seman-ticists, but would extend the present narrative to an unjustifiable length. There were several short interrup-tions when Kirk had to forage for food, and once he, was forced to absent himself for nearly a week, in order to turn in his parasite report at the nearest center of civilization. He told no one of his find in the forest, and returned thereto as quickly as he could. He found the aliens impatiently waiting for him, and the herald at once returned to the task. Kirk had long since perceived that some tremendous anxiety was behind Talker's insistence, but no amount of effort served to make clear any details.

September and Kirk's patience were drawing to an end by the time that exchange of ideas had progressed to a point where it could be called conversation. Talker wrote with considerable

facility, using a pencil and pages from
Kirk's notebooks; the man spoke aloud, since he had discovered that this apparently resulted in a sharper mental image of the words. To him, the herald's need was less urgent than the satisfaction of his own curiosity; he asked, so far as Talker's rapidly increasing vocabulary would permit, questions designed to fill that want. He learned something of the physical and sociological nature of the alien's home world—not too much, for Talker had other ideas than the telling of his life story, and Boss became suspicious and almost aggressive when informed of the nature of the Earthman's curiosity. He could conceive of only one use to which such information could possibly be turned.

Kirk finally accepted the inevitable, and permitted Talker to run the conversation in his own fashion, hoping to get a few words of his own into the discussion when the herald's "urgent business" was completed. Talker had kept the man ignorant of Boss' attitude, justly fearing detrimental effects on Kirk's willingness to cooperate.

The attempts at explanation, however, seemed as futile as the first words had been. Talker's premonition of the futility of drawings and diagrams was amply justified; not only were the conventions used in drawing by the en-gineers of his people utterly different from those of Earth, but it is far from certain that the atoms and molecules the aliens tried to draw were the same objects that a terres-trial chemist would have envisioned. It must be remembered that the "atoms" of physics and of chemistry, used by members of the same race, differ to an embarrassing extent; those conceived in the minds of Talker's people would have been simply unrecognizable, even had Kirk possessed any knowledge of chemistry.

The supply of the requisite arsenic was completely exhausted, so that no samples were available; in any case, Kirk's lack of chemical knowledge would undoubtedly have rendered then valueless.

"There is no use in trying to make your needs known in this manner," the human being finally stated. "The only way in which I am at all likely to hit upon the proper word is for you to describe the more common charac-teristics of the substance, and the uses to which you put it. Your pictures convey no meaning."

"But what characteristics are you likely to recognize?" asked Talker, on the paper. "My engineers have been striving to do that very thing, since we started."

"They have sought to describe its chemical nature," responded Kirk. "That means nothing to me in any case, for I am not a chemist. What I must know are things like the appearance of the stuff, the appearance of the things that can be made from it, and the reasons you need it so badly. You have not told me enough about yourselves; if I met a party of my own kind stranded on an uninhabited land, I would naturally know many of the things of which they might stand in need, but there is no such guide for me in this case. Tell me why you are here, on a world for which you are so obviously unfitted; tell me why you left your own world, and why you cannot leave this one. Such things will guide me, as could nothing else you might do."

"You are probably right, man. My captain forbade me to divulge such knowledge to you, but I see no other way to make clear our need."

"Why should the commander forbid my learning of you?" asked Kirk. "I see no harm which

could result; and I have certainly been frank enough with you and your people. Mothman, I have considered you as being friend-ly, without seeking evidence of the fact; but I think it would be well for you to tell me much about yourselves, and tell it quickly, before any more efforts are made to supply your wants."

Kirk's voice had suddenly grown hard and toneless, though the aliens could neither appreciate nor interpret the fact. It had come as an abrupt shock to the man, the idea that the helpless-seeming creatures before him could have any motive that might augur ill to humanity, and with it came a realization of the delicacy and importance of his own position. Were these beings using him as a tool, to obtain knowledge of humanity's weaknesses, and to supply themselves with means to assault the race? Unbelievable as it may seem, the thought of such a possibility had not entered his head until that moment; and with its entrance, a new man looked forth at the aliens from Kirk's eyes—a man in whom the last trace of credulity had suddenly vanished, who had lost the simple curiosity that motivated the student of a few minutes before, a man possessed and driven by a suspicion of something which he himself could not fully imagine. The doubts that had failed to appear until now were making up for lost time, and were reinforced by the uncom-fortable emotion that accompanies the realization that, through no act or idea of one's own, one has barely been diverted from the commission of a fatal blunder.

Talker realized his own error before the Earthman had finished speaking, and wasted no time in endeavoring to repair it. His ignorance of human psychology was an almost insuperable obstacle in this attempt.

"We need the substance which I am trying to describe, far more urgently than we can say," he wrote. "It was the commander's idea, and my own, that it would be a fatal waste of time to allow the conversation to move to other topics, which I can well understand must interest you greatly. Had we learned where it might be found, there would have been no objection to answering any questions you might ask, while we were obtaining it; but we cannot remain here very long, in any case. You must have noticed—indeed your words have shown that you have noticed—how uncomfortable we are on this planet.

Nearly half of us, now, are disabled from fractured limbs and strained tendons, fighting your terrible gravity; we live at all only through the use of a drug, and too much of that will eventually prove as dangerous as the condi-tion it is meant to counteract."

"Is your vessel disabled, then?" asked Kirk.

"No, there is no mechanical trouble, and its power is drawn from the matter around it in space. We could travel indefinitely. However, before we dare return to a region where our enemies may locate us, we need a large store of—the material we seek."

"Have you no friends in that neighborhood, to whom you could have fled, instead of making such a long voyage to this solar system?"

"The voyage was not long—perhaps four hundred of your days. Our ship is powerful, and we used full acceleration until your Sun showed its nearness by increasing rapidly in brilliance. We would have risked—did risk, since we had no idea of the distance—a much longer flight, to get

away from that system. We had a ruler, but the captain decided we would do better on our own, and now there is no armed vessel within the orbit of the outermost planet that would not fire on us at sight."

"It would seem that you lack ammunition, then, and possibly weapons." Kirk proceeded to make clear the difference in meaning between the words, using his rifle as an example.

"Weapons we have; it is the ammunition we lack," affirmed Talker. "I see how your rifle works; ours are similar, throwing a projectile by means of explosives. We have already manufactured the explosives from organic materials we found here; but the element we use in our projectiles is lacking."

"It would, I suppose, be a metal, such as that from which my bullets, or possibly the gun, are made," decided Kirk. "I know where these substances may be found, but you have not yet convinced me that my people can trust you with them. Why, if you are an outlaw in your own system as you claim, do you wish to return at all? You could not, so far as I can see, hope for security there, even with weapons at your disposal."

"I do not understand your question," was the reply. "Where else would we go? And what do you mean by `security'? Our lot would be better than before, for we would not have to render up the greater portion of what we obtain to our ruler—we can keep it ourselves. There are many uninhabited portions of our world where we can make a base and live in ease."

"Something tells me that your way of life is different from ours," remarked Kirk dryly. "What is the metal you seek?" He wanted to know this for the sake of the knowledge; he had as yet no intention of helping the mothmen to obtain the substance. He wished that Talker's pencil could convey some idea of what the herald was really thinking. Writing, by one who barely knows a language, is not an extraordinarily efficient method of conveying emotions. "If you will show me one of your weapons, it may help," the man added as an afterthought.

Talker, naturally, had suspicions of his own arising from this suggestion. Unlike Boss, however, he was not blinded by them; and remembering that he had already divulged probably the most important characteristic of the weapons—the fact that they were projectile -throwers—he answered after a moment, "Come, then, and see."

It was characteristic of the herald that he tendered the invitation without consulting Boss, or even mentioning to Kirk the objections that the commander would probably raise. He had a contempt, born of long experience, for the captain's resolution, and it never occurred to Talker to doubt his own ability to override any objections. His confidence was justified. If Boss had possessed a heart, instead of a system of valves and muscle rings along the full length of his arterial and-venous systems, he would probably have had heart failure when Talker coolly announced his intention of displaying the ship's arma-ment to the Earthling; he was still sputtering half-formed thought waves as he followed the pair toward the air lock. Talker had merely explained the reason for his action, and acted; Boss would never have admitted, even to himself, that he considered Talker's opinion superior to his own, but he invariably accepted it as though it were. He was firmly convinced that his own genius was responsible for their successes to date, and Talker saw no reason to disillusion him.

Kirk learned little from the ships guns, though the sighting apparatus would have given an artilleryman hours of ecstasy. The weapons themselves were simply ordinary-looking small-caliber, smooth-bore cannon, but with extremely ingenious mountings which permitted them to be loaded, aimed, and fired without losing air from the ship. The turret rooms were divided by bulkheads into two parts, one containing the gun and auxiliary mecha-nisms, and the other, to Kirk's surprise, piled high with metal cylinders that could be nothing but projectiles. He picked up one of these, and found it to be open at one end, with an empty hollow taking up most of its interior. Talker, who had made explanations from time to time, began to write again.

"We need material to manufacture the filling of that projectile," were his words. "Empty, it is useless for any purpose whatsoever."

"And when it is full—" asked Kirk.

"The shell penetrates the walls of a ship, leaving only a small hole which is promptly sealed by the material between the inner and outer hulls. The projectile is ruptured by a small explosive charge, and its contents evaporate, releasing an odorless gas which takes care of the crew. The ship can then be towed to a planet and looted without opposition and without danger—if you can reach a habitable world unseen."

"Why can you not use an explosive charge which will open a large hole in the hull, and do your looting in space?" asked the man.

"Air extends only a short distance outward from each world," explained Talker, his respect for the Earth-man's knowledge dropping about fifty points, "so it is impossible to leave a ship or change ships while in space. An explosive shell, also, would probably destroy much of the interior, since the hull of a ship is far stronger than the inner partitions, and we want what is inside as nearly intact as possible."

Kirk waited rather impatiently for the herald to finish scrawling this message, and snapped, "Of course, I know about the airlessness of space; who doesn't? But have you no protective garment that will permit you to carry air and move about more or less freely, outside a ship?"

"Many attempts have been made to devise such a suit," was the answer, "but as yet there is nothing which can be trusted to permit all our limbs to move freely, carry air to our breathing orifices, and possess air-tight joints and fastenings. I can see that there might be very little difficulty in designing such a garment for your simply constructed body, but Nature built us with too many appendages."

Kirk said nothing as he half-crawled down the low corridor to the air lock, but he did a lot of thinking. He was reasonably sure that most of his cerebral operations were indecipherable to the alien, though it was chiefly mental laziness which kept him from making any partic-ular effort to couch his thoughts in nonvisual terms—such an effort would have been a distinct bar to constructive thinking, in any case. The herald's story, while strange from Kirk's Earthly point of view, was certainly not impossible; the conditions of life he had described had, in large measure, existed on Earth at various times, as the Earthling well knew. Kirk had gained considerable appre-ciation of Talker's rather cynical character, and had been somewhat amused at the unconscious

egotism displayed by the herald.

The Sun was low in the west when the group emerged from the air lock, and a stiff northeast wind made its presence felt at the top of the bank, out of the shelter of the hull. Kirk looked at the sky and forest for a few minutes, and then turned to Talker.

"I will return to my camp now, and eat. You have given all the help you can, I guess. I will try to solve the problem tonight. I can make no promise of success, and, even if I do discover what your chemical is, there is the possibility that I will still fear to trust you with it. Your people are peculiar, to me; I don't pretend to understand half of your customs or ideas of propriety, and my first consideration must be the safety of my own kind.

"Whatever happens, I cannot remain much longer in the territory. You may not be acquainted with the seasonal changes of this planet, but you must have noticed the drop in temperature that has been evident at night the last week or two. We are located almost upon the Arctic Circle"—Kirk pictured mentally just what he meant—"and I could not live very far into the winter with my outfit. I should have returned to my own country several weeks ago."

"I cannot control your actions, even if I wished to do so," answered Talker. "I can but hope for the best—an unusual situation, all around, for me."

Kirk grinned at the herald's wry humor, turned, and strode away in the direction of his camp—he had not moved it closer to the ship, because of the better water supply at its original location. As he walked, the grin melted quickly from his features, to be replaced by the blank expression which, for him, indicated thought. He had no idea of what he should do; as he had told the herald, the man's first consideration was his own kind, but he wanted to believe and trust in the alien, whom he had come to like.

It was evident that Talker had not exaggerated the seriousness of his own position. Kirk had seen members of the crew moving painfully about their duties on board the ship, and had seen one of them collapse as the horny exoskeleton of his absurdly thin legs gave way under a body weighing more than three times what it should have. On the other hand, a crew of Earthmen under such conditions would have left long since, weapons or no weapons. Kirk found himself unable to decide whether the stubbornness of these creatures was an admirable trait, or an indication of less worthy natures. It occurred to him, fleetingly, that their idea of a "worthy" trait probably differed widely from his own.

Possibly, if the man decided to refuse aid to the strangers, he could quiet his conscience by comparing them to children refusing to come in out of the rain until mother promised them some candy—but a scientist, working overtime in his laboratory, could be described by the same simile, and Kirk knew it. No, the need was surely real enough to them.

And why should they want to attack mankind? Earth was useless to them, as a dwelling place; if, as they claimed, their own king were against them, only fools would make such an attempt, however armed. And Kirk was not impressed with the gas guns of the aliens—they were, even he could realize, worth absolutely nothing except in the confined space of an ether ship. On the other hand, Talker might have stretched the truth beyond its yielding point; and the "king," whom he might still be serving, would not need excuses such as the possible utility of a world in order to

attack it, unless he differed greatly from Earthly rulers. The chance to extend his dominions would be motive enough.

Well, let that go for a minute. Kirk had arrived at his camp, and prepared a light meal. He ate slowly, still thinking, and washed the few utensils in the same fashion. The Sun had long been gone, and he sought his blankets with the intention of sleeping on the problem.

Sleep refused to come. He would absolutely refuse to consider one angle, and another promptly rose to torment him. What was the gas the aliens used? Kirk was not sure whether or not he regretted his ignorance of chemistry. The train of thought led by imperceptible, but perfectly natural, steps to the idea of insect poisons, his own original job in the territory, and the stock of copper sulphate and arsenate of lead which was stored at the river mouth port, for use the following spring. The idea left his mind as quickly as it had entered; for such materials did not, so far as Kirk knew, form any kind of gas. The job recalled his other occupation, which was still that of acquiring an education. The imminent opening of college presented itself as an additional reason for immediate departure; it was doubtful even now whether he could return to the States in time for registration—unless, he thought with a flicker of amusement, the aliens performed the necessary transportation. And so the trail of thought led itself in a circle, and he was once again considering the matter of the requirements of those on the spaceship.

And then another thought struck him. Let it be granted that the herald had adhered strictly to the truth at all times. He might, then, be a likable individual; he might be a shepherd trying to save the lives of his flock; he might be an officer worthy of respect for his ability and devotion to duty—no matter what he might be in his character, the simple and undeniable fact remained that, by his own admission of past activities and by his declaration of the uses to which he intended to put the weapons he hoped to acquire, he was neither more nor less than a pirate. He had stated plainly that Boss had revolted against the authority of his original ruler; he had tacitly admitted that he himself had concurred in the expression of independence; and he had used the term "outlaw" in describing the ship and its crew.

If Earth were to have any dealings with the herald's people, they would normally be with the law-abiding section of society. Kirk had no moral right to give assistance to that crew, no matter what his personal feelings might be. For a while, the Earthman pondered the matter, seeking flaws in the argument—seeking them solely because of the friendship he had commenced to feel for Talker, for any sort of decision would be a boon to his tortured mind.

But the fact stood; and eventually Kirk ceased attempt-ing to argue it away, and accepted the simple idea that aiding the strangers would be, legally and morally, an offense against justice. Owing to the natural contrariness of human nature, he now found himself wishing he could help the alien with whom he had conversed so long; but the attainment of a decision had eased the tension in his mind, and at long last the man succeeded in falling asleep. He might have slept even more peacefully had he known a single fact—one of which not even Talker and Boss had dreamed.

Their interstellar voyage had consumed, not four hun-dred days, but more nearly forty years. The greater part of the flight had been made at a speed near that of light; hours of ship's time had been

days outside. A similar period was certain to elapse on the return; and the ruler who had been defied would certainly have been succeeded by another. Talker and Boss could easily have passed themselves off as returning members of a legitimate interstellar expedition; even had they failed to do so, it is unlikely that they would have been punished for defying a ruler whose place their judge, as likely as not, would have inherited either by private assassination or conquest in war.

Unfortunately, Talker's race had no inkling of rela-tivity, as their science was of the type which develops better guns and faster ships, without bothering too much with theory; and Kirk's only acquaintance with the concept had been made through the pages of a classic novel on time travel —the only such work he had ever read, and one which had emphasized the fourth dimen-sion rather than velocity-mass ratios.

When Kirk awoke, therefore, it was with a distinctly uncomfortable feeling connected with the day's probable events. He rose, shivering in the biting cold of early morning, washed and ate, and broke camp. Whatever happened, he intended to head south that day, and he carefully made tent, blankets, and the other gear into a single large pack. This he cached near the camp site; then he picked up his rifle and took the trail over the hill into the next valley. He was fairly sure that the aliens could not harm him, except by landing their vessel on top of him, since they were without weapons and far inferior to him in physical strength.

But why, he suddenly thought, should there be any trouble? He need not refuse to help; it was simple truth that he had not been able to solve the problem—he still had no idea of the identity of the substance they desired. He could keep to himself his opinion of their occupation. Kirk was sure that the words describing that opinion had not been used in any of his conversation with Talker, and the herald must by this time be accustomed to receiving untranslatable waves from the Earthman's mind.

Thus determined, Kirk now emerged from the forest to the bank of the arroyo where the interstellar flier lay. As usual at this time of day, none of the crew was visible; also as usual, Kirk attracted attention to the fact of his presence by sending a stone clattering against the outer hull.

Talker, in spite of the ever-mounting fatigue that was threatening the lives of his party as much as any other single trouble, had also spent a portion of the night in thought. He had seen more and more clearly in the last few days that the chances of Kirk's learning the name of the poison were microscopic. A practical chemist, given a sample of the substance, could have identified it without difficulty; but without even a milligram sample on board, it seemed doubtful whether anyone could tell what was needed. The natives of this planet had, and used, poison gases; Kirk had told him that much. In their case, however, it was necessary in general to use them outdoors, and special characteristics of density and effective-ness were thus required. Talker knew that his gas was about twice as dense as the air of this world, under the same conditions of temperature and pressure; but he had no idea of the extent of its toxic qualities on terrestrial life.

The only chance, it seemed, if Kirk failed in his task, was to have him direct the voyagers to a place where someone skilled in chemistry, or warfare, or both, might be found. The herald had

learned to communicate; the rest should not be difficult.

So it came about that Talker answered the bell-like clang on the hull with his mind set to expect the worst, and prepared to do something about it. He noticed at once that the human being was carrying his rifle, which he had not done since the first day, and the alien partially interpreted the reason for the act. He flew to the bank and squatted in front of Kirk, antennae alertly spread. The Earthling, his mind made up, wasted no time.

"I have not solved the problem," he stated flatly.

"I am not surprised," wrote Talker, "nor am I angered. There was no need to bring the weapon—you cannot be blamed for failure at a task where one better trained than you could probably have done no more. It would be childishly stupid to hold animosity against you, in spite of our disappointment.

"But you can still help us, There must be, somewhere on this planet, individuals who are trained in such matters. You have mentioned your own need of getting out of this region before the onset of winter. We could easily transport you to your own place, and you in return can direct us to such a person as I have described. Are you willing?"

The herald's attitude at his failure had taken Kirk completely by surprise, and had added much to his opinion of the creature. The new suggestion found him unprepared, for his intended refusal seemed now even more unpleasant than before. Some inner guardian made him say simply, "I have left my equipment at the camp," and then he turned and strode, as rapidly as he dared, into the forest and away from the danger of betraying the thoughts whirling about in his mind.

A mile from the ship, Kirk stopped and tried to settle the recent happenings into his picture of the alien's personality. He had felt friendship of a sort for Talker, even after deciding he was a pirate and unworthy of such feeling; the attitude the herald had shown, in the face of what must have been a bitter disappointment, had strengthened Kirk's respect. Refusing to help was going more and more against the grain.

He tried to argue down his feelings. It was evident, from Talker's conversation, that the human admired characteristics of altruism and sympathy were foreign to his make-up. He was perfectly selfish, and Kirk had no doubt that he would have seized any chance of saving his own neck, whether or not that chance also included the necks of his fellows. He looked on those others with tolerance, since they made life easier for him, but there was certainly no trace of fellowship in his feelings toward them. Kirk had repeatedly sensed the amusement in Talker's mind as he spoke of Boss and others of the crew, and was reminded of the interested contempt with which he himself had sometimes watched a child building sand castles at the seashore.

No, Talker was not an ideal character from a human point of view; but Kirk still felt attracted to him. Could he go back and tell the alien that it was useless to ask him for further aid? The man shrank from the thought; and yet what else could he do? Nothing. Slowly the human being finished the walk to his former camp site, shouldered the heavy pack, and turned back toward the ship. He walked sturdily, but the morning sunlight filtered through the leaves onto a face that looked far older than Kirk's twenty years would demand.

Talker was still waiting on the bank, both his great yellow eyes fixed upon the opening of the

trail. He saw Kirk coming with his burden, and at once turned and flew to the air lock, disappearing within. Kirk saw him go, and called; the herald's head and antennae reappeared at the portal. The man dropped his pack to the ground, and stood motionless and silent, looking at the mothman and trying to find words in which to express the thing he had to make clear. He couldn't do it.

The thoughts were enough. Talker spread his wings and, concealing the frightful effort the act cost him, returned to the place where Kirk was standing. He still carried the writing materials, and, as the Earthling commenced to realize the extent to which he had been analyzed, he began writing.

"What is it that we have done to offend your cus-toms?" asked the herald. "What possible interest can you have in those of my kind whom you have never seen, of whom you would never have heard except for me?"

Kirk tried to explain his attitude on the subject of piracy, but failed signally. To the alien, raiding and looting were the natural means of making a living; his ideas of right and wrong simply did not match those of human civilization, any more than could be expected. It was Talker who finally decided that further effort in that direction was useless.

"When I first discovered you," he said, "it took some time for me to realize that the waves you radiated represented a pattern of intelligence. Your behavior eventually showed the truth, and with much effort I learned to interpret, to a certain extent, those thought waves. I fear that we are up against the same problem here. Just as it took me some time to comprehend that my thoughts were not the only possible kind, I am just beginning to understand that my behavior pattern is not the only possible one. With time, perhaps I may understand yours; I must, if to do so lies within the powers of intelligence. Therefore, I invite you to come with us, anyway, to the southern regions from which you say you have come. On the way, you will tell me more about your people, as I have told you of mine. Perhaps, with that background, I shall begin to appreciate your point of view and find a means of persuading you to help us. In any case, the knowledge will be of great interest for its own sake.

"Until I do have some understanding of your reasons for refusal, I shall not repeat our request; nor shall I inform the commander of what has occurred. The less he knows, the better for both of us, as well as himself. He could never appreciate what I am now trying to do, and he has no understanding of how a mind can seek pure knowledge without some immediate use for it—curiosity and imagination are unknown to him.

"Come, then; we will travel southward slowly, and converse as we fly. Some time at least will be saved; and we do not dare spend more than a few more days on this planet. We would not have enough of the crew left to man the engines—there are few enough of us now who remain able."

Kirk accepted, though never thereafter could he account for his reasons for doing so. Unconsciously, he wanted to give the creature a chance to justify itself; more and more the idea was winning ground that a being so generally reasonable and so utterly imperturbable in the face of telling disappointment could not be a criminal on any code. Such a belief, of course, is unreasonable and unjustifiable even when considered with respect to a single culture. Applied by

a member of one civilization to a creature of another, such an emotional attitude is sheer lunacy. Logic alone stands a chance, and even that is likely to be badly crippled for lack of data.
Earthman and alien entered the air lock, and closed both doors—for nearly the last time on Earth, the herald hoped. Talker relaxed for a moment in the corridor, fervently vowing never again to spread his wings on a world where he couldn't fly without stimulants; then he crawled forward and up the ramp to the control room, Kirk following.
They found themselves alone in the control chamber, for it was still early morning. Talker sounded the signal intended to let Boss know he was wanted, and the oddly assorted pair waited in silence. Several repetitions of the call were necessary before Boss finally appeared from below. His attitude was even more domineering than usual, partly because he had just been awakened by the signal, and partly because he never missed an opportunity to try to impress the native with his importance; he never fully appreciated the fact that the human being could neither "hear" his speech nor interpret his bodily attitude.
Talker told him to get the ship into the air, and cruise slowly toward the equator of the planet until ocean was reached. Boss promptly began asking questions about the state of progress in locating the object of their search; and the herald replied that at the moment no progress was being made because the individual who should be working was talking instead. That silenced the captain, and he moved to the control board to call the engineers to their stations. Talker took his place at the command-er's side, ready to transmit more detailed instructions if and when necessary. The signal board was a sufficiently versatile affair to transmit the relatively simple commands involved in raising the ship, however; as a matter of fact, the actual take-off, as would be expected, was handled from the control room, and orders were given merely to start the proper generators below.
Kirk laid his pack on the floor beside the captain and sat on it, thus bringing his head down to within about two feet of the other's. The glass ports, larger than any others in the ship, permitted him to see in all directions forward, while a periscope, which he quickly noticed, gave a partial view backward, leaving the lower rear the vessel's only blind spot. The periscope eyepiece was made to accommodate the huge optics of the ship's owners, and transmitted a decidedly distorted image to Kirk's eyes, as he found by experiment. The field of view could not be shifted, and its lower half was occupied by the hull. The man turned his attention to the great port which gave a clear view of what lay below and in front.
He settled himself more solidly as the ground slid smoothly away from him. There was no take-off run; the vessel rose straight for two thousand feet, turned the streamlined bow southward, and followed its nose. Boss relaxed at his post as soon as they were on course, and merely kept his eyes on a row of dials supposed to indicate the behavior of the generators. An engineer was watching a duplicate set below, and it made little differ-ence whether or not Boss stuck to his job —though he would not have admitted that fact to Kirk had he been able to speak to him.

The human being and the herald watched and com-mented upon the terrain below, as it drifted sternward. Talker drew attention to the deserted appearance of the forest, and compared it to the

similar vast, uninhabited regions of his own planet. This, as intended, drew from Kirk a description of the more densely populated coun-tries, of the different peoples who inhabited them, and the various relationships existing between them. On this last point he was a fair lecturer, for he had spent a good deal of time on sociology. The herald kept him talking, asking questions whenever the man seemed to be running down, and in general doing everything which was likely to result in the production of any information that might be of use.

Their pace was only moderately rapid. The sound of the ship's passage through the air could not have been heard on the ground, and was inaudible through the double hulls; whatever power drove and supported them was efficient enough to be soundless, as well.

They came in sight of the sea and a small settlement at almost the same instant. The town was not large, but possessed several docks and a fair-sized fleet of fishing boats. Kirk recognized it—it was the town where he had landed upon his arrival at the beginning of the summer, and where he had recently turned in his report of the season's progress. It was now late afternoon, and a glance at his watch and a moment's calculation informed Kirk that the ship could not have been traveling more than thirty miles an hour, for they had left the base of his operations only slightly after noon. Five hours in the low control chamber had left the man rather cramped; he flung a query at Talker, and was informed that the main corridor was probably the only room on the ship spacious enough to permit him to stretch, even lying down. Kirk's memory of the gun rooms suggested that the herald was right, so he sent his pack sliding down the ramp, followed it, detached a blanket and stretched out on the corridor floor, to the no small astonishment of a pair of soldiers who emerged from their rooms at that moment. He had brought no food, but did not feel particularly hungry. After a few minutes, he propped himself up with the pack as a pillow, and stared off down the hallway. The door at the far end was now open, and faint sounds came from below. Kirk considered investigating, but thought better of it and relaxed on his blanket.

A very faint trembling of the floor roused him a few minutes later. He stood up—too suddenly, for his head impinged sharply on the metal ceiling—and turned to-ward the control-room ramp once more. Something ap-peared to be happening. He started up the incline, but did not reach the top, for as his head attained the level of the floor above he saw Talker starting down, and retreated before him.

Boss followed the herald into the main corridor, and Kirk walked behind the pair to the air lock. Evidently the ship had landed. The man brushed Talker's wing tip with a finger to get his attention, and asked, "What is the matter? Why have you come down so soon? I know of none around here who could give you help."

"Your words do not agree with your thoughts of a few moments ago," returned Talker, who still carried the paper and pencil. "I hoped, when I asked you aboard after your avowal of enmity toward us, that your mind would betray some knowledge of value. It has done that; you are not accustomed to having your thoughts read, and have surprisingly little control over them. Had I not been delayed through having to learn your system of mental symbology, we would have had long ago the information we needed, without the necessity of asking your consent. When the settlement near which we are now landed came into view, your mind gave out word patterns of

all sorts—the name of the place, which means nothing to us, the fact that the individual who directs your work resides therein, and—the fact that there is stored somewhere in that town a supply of a chemical to be used for poisoning insects. Your master is an expert on such matters; he must be, to hold the position. It is possible that the chemical will prove to be what we require; if not, I have learned to read human minds from you, and I can pry the knowledge from the one who directs you."

"Then you asked me aboard solely in the hope of tricking me?" asked Kirk. "There was no friendship, as I had believed? No sincere attempt to understand my point of view, as you claimed?"

"It would indeed be interesting to understand your peculiar ways of thought," replied the herald, "but I have spent all too much time in satisfying idle curiosity; and I see no practical value to be derived from the understand-ing you mentioned. You are like the others on this ship—easily swayed by stereotyped patterns of thought; I can see no other possible reason for your refusal to aid us. I bear you no enmity, since I have almost achieved my goal in spite of you; but it would be truly idiotic to expect me to feel friendly toward you. None the less, it would be interesting to know—" the strangely shaped hand abruptly ceased writing, and its owner turned toward the air lock, where Boss was waiting impatiently.

That last, unfinished sentence did much to check the cold anger that was starting to rise in Kirk. In silence, he watched the air-lock doors swing open. Through a screen of tangled deadwood, a few 'houses were visible; but no people appeared to be interested in the ship. How Boss had been able to bring the vessel down unseen so near the town will forever remain unknown.

The two aliens flew over the brush, choosing a moment when no human beings were in sight, and concealed themselves behind bushes fairly close to the nearest houses. Kirk, sitting on the sill of the outer door, could imagine the herald's sensitive antennae picking up the thought waves of one after another of the unsuspecting townspeople. He would have trouble with some of them, thought Kirk with a grin, as he recalled the three-quarters Indian population of the place and the illiteracy of a large percentage of this group, but how would it be possible to prevent the alien's looting the minds of Faxon, the poison specialist, or old MacArthur, the storekeeper? Warning them would be easy enough, but useless; the more they tried not to think of what was wanted, the more certain most of them were to do so. If they tried to attack and drive away the aliens, the latter could simply retreat into the ship and study the attackers at will. It looked as though Talker would win after all; or did it?

A thought struck the man, hazy and ill-defined at first. It had something to do with Indians and illiterates; something he couldn't quite place, dimly remembered from his psychology study—and then he had it. A grin spread over his face; he leaned back against his pack, and watched the herald as men, women, and children, both white and red, passed within a hundred yards of his hiding place. Once again Kirk pictured the mind-reading "danger"; but it was markedly different from the former picture. He tried to control his thoughts, to make the joke last as long as possible—he wasn't sure that the herald could read his mind at this range, but why take chances? He tried to think about the subject in French, since he had to think about it; the results were not exactly

what he had intended, but the mental pictures were undoubtedly tangled enough to baffle any mind reader. And then the mothmen were winging their way back to the ship.
Kirk moved aside to let them enter, and watched as the pair settled to the air-lock floor. Talker made no attempt to write; he simply stood and looked at the Earthman with an expression of hopeless resignation in his very carriage that sent a stab of pity through Kirk's heart.

The man stared back for a few moments, and then began speaking softly.
"You know, now. I did not think of it until you had gone—but I should have, from what you told me; and you should long since have known from your own observations. When we first learned to communicate with each other, you told me that my thought-wave pattern was different from that of your race, which was natural enough, as you finally realized. You did not carry that reasoning, which told you it was natural, to its logical conclusion; nor did I. Your people all `think' alike—so far as either of us is able to tell what thought is. The patterns you broadcast are mutually intelligible to mem-bers of your race, but not to me, because you have received those wares from others of your kind from earliest childhood, and I am a stranger. But my people do not communicate in that fashion; as you have learned, we have organs capable of impressing fine modulations on sound waves, and of detecting these modulations. The activity that occurs in our brains is never directly trans-mitted to other brains—it is first `coded' and then broadcast.
"The waves you `hear' arise from chemical activity in your nervous systems, activity that accompanies thought.
They are—must be—controlled to a vast extent by the structure of the nerve pattern in your brains; a structure which is itself controlled during your growth by the impressed waves from outside, in conjunction with whatever strange process accompanies learning."
Kirk held out a hand to the herald.
"Look closely at the ends of my fingers. In the skin you will see a complex pattern of ridges and hollows. That pattern, stranger, is unique in me; every one of my people has a similar, but individual, pattern—no two have identical fingerprints. They form the most positive means of identification we possess, although there are more than two billion beings on this planet.
"And yet, friend, I think I am safe in saying that there are many times as many chances that two of us should bear identical fingerprints as there be chances that two human brains should be exactly alike, nerve for nerve. From birth, each brain is isolated, can be reached only through the means of communication natural to us; there is no reason that all should develop alike.
"On that assumption, the tiny currents that pass from nerve to nerve and give rise to the waves that you can sense cannot possibly be the same for any two of us; and so no two sets of 'thought waves' could be identical. You learned some of my pattern, and thought that you had the key to communicate with all my kind; but I tell you sincerely that you will have to learn afresh the 'thought language' of every new human being with whom you wish to converse. You have just discovered that for yourself.
"These cerebral radiations are not entirely unknown to us. Certain devices, in the nature of extremely sensitive electric detectors, have been able to measure and record them; but the only

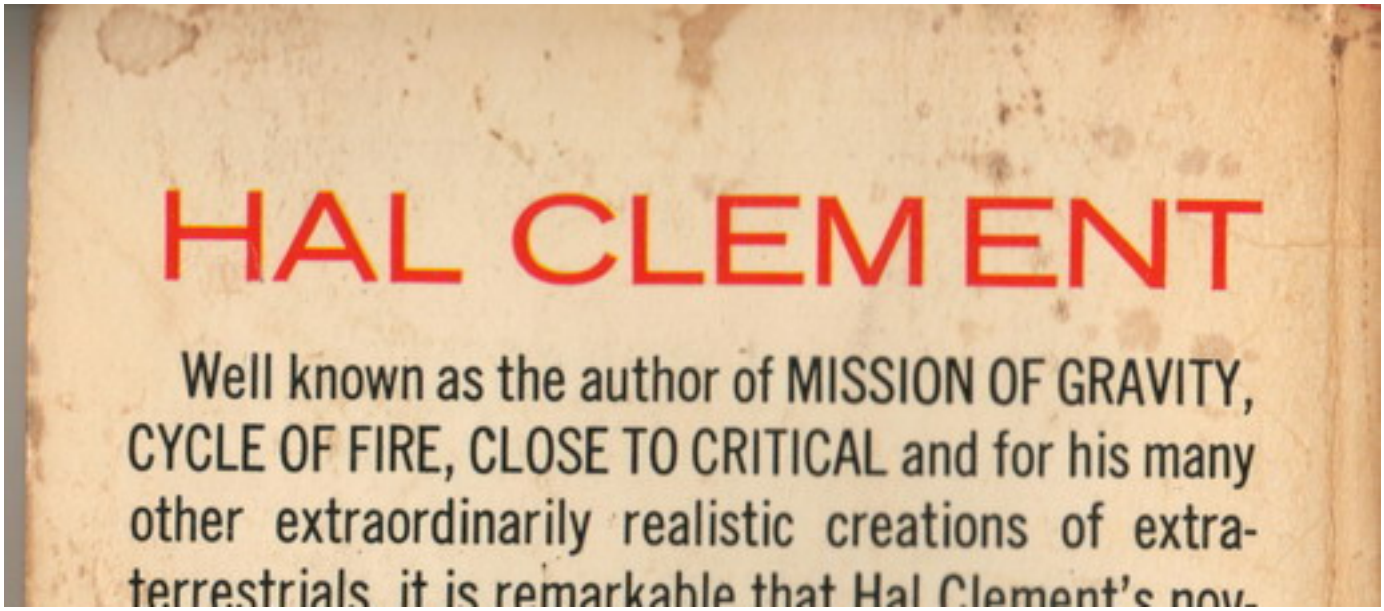
pattern shared by any significant number of human minds is that characterizing sleep—mental inactivity. The instant the subject wakes, or even has a dream, the 'alpha pattern' breaks up into a seem-ingly disorganized jumble.

"We also know a little concerning direct thought exchange. Some of our scientists have experimented for many years, in the attempt to determine its nature and cause. Many people—not the scientists—assume that it is due to radiations like those recorded by the devices I mentioned; they imagine the possibility of perfecting those machines and using them for communication. They have heard of the experiments in telepathy, but have not bothered to investigate their details.

"The experimenters themselves have pointed out that the phenomena of telepathy and clairvoyance, which seem to be closely connected, are quite inconsistent with the known laws of radiation, such as the inverse square law. I don't remember all the details, and, anyway, I'm not a physicist; but the best known of those scientists claims that our present science of physics does not contain the explanation of the experimental results.

"Whatever the true state of affairs may be, I am sure you will never get anything from any human mind but my own. I hate to tantalize you, but if you had not made this attempt to deceive me, my emotions would probably have overcome my common sense sufficiently to force me to help you; even now I am tempted to do so, because I can't help feeling that your mind contains the roots of curiosity, with which I sympathize—I wouldn't have pursued my studies this far, otherwise. But I could never trust you, now. My intelligence, such as it is, gave one estimate of your character, and my feelings gave another; and unfortunately for you, your actions showed the intelligence to be at least partially correct. Your character probably isn't your fault, but I can do nothing about that. My advice to you is to take on supplies and get away from here while some of you are still alive; the fact that you found an inhabited planetary system at the first try suggests that others may not be too hard to locate. I wish you luck, so far as good luck for you doesn't mean bad for us."

Allen Kirk turned, swung the pack to his shoulder, and walked away from the spaceship. He was acutely aware, as he went, of the two pairs of yellow eyes gazing after him; but he didn't dare to look back.



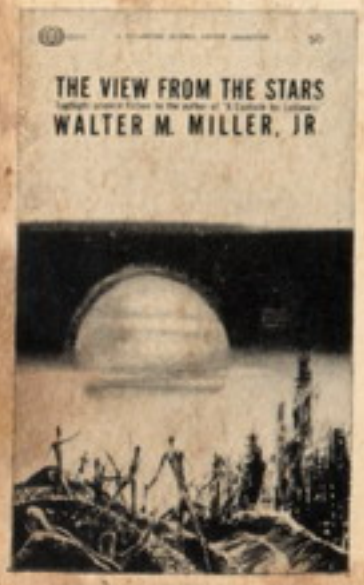
terrestrials, it is remarkable that Hal Clement's novelettes have never appeared in book form before.

Here are three of the best—each dealing with a different aspect of communication with creatures so alien to mankind that the first thing to do is throw speech out the window!

What happens next is strictly up to the ingenuity of writers like Mr. Clement, who visualizes a lively time for mankind among his counterparts from other planets.

AND DON'T MISS

Walter M. Miller, Jr.



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