Dust Rag

"CHECKING OUT."

"Checked, Ridge. See you soon."

Ridging glanced over his shoulder at Beacon Peak, as the point where the relay station had been mounted was known. The gleaming dome of its leaden meteor shield was visible as a spark; most of the lower peaks of Har-palus were already below the horizon, and with them the last territory with which Ridging or Shandara could claim familiarity. The humming turbine tractor that car-ried them was the only sign of humanity except each others' faces—the thin crescent of their home world was too close to the sun to be seen easily, and Earth doesn't look very "human" from outside in any case.

The prospect ahead was not exactly strange, of course. Shandara had remarked several times in the last four weeks that a man who had seen any of the Moon had seen all of it. A good many others had agreed with him. Even Ridging, whose temperament kept him nor-mally expecting something new to happen, was begin-ning to get a trifle bored with the place. It wasn't even dangerous; he knew perfectly well what exposure to vac-uum would mean, but checking spacesuit and airlock valves had become a matter of habit long before.

Cosmic rays went through plastic suits and living bodies like glass, for the most part ineffective because unabsorbed; meteors blew microscopic holes through thin metal, but scarcely marked spacesuits or hulls, as far as current experiences went; the "dust-hidden cre-vasses" which they had expected to catch unwary men or vehicles simply didn't exist—the dust was too dry to cover any sort of hole, except by filling it completely. The closest approach to a casualty suffered so far had occurred when a man had missed his footing on the lad-der outside the Albireo's airlock and narrowly avoided a hundred-and-fifty-foot fall.

Still, Shandara was being cautious. His eyes swept the ground ahead of their tracks, and his gauntleted hands rested lightly on brake and steering controls as the trac-tor glided ahead.

Harpalus and the relay station were out of sight now. Another glance behind assured Ridging of that. For the first time in weeks he was out of touch with the rest of the group, and for the first time he wondered whether it was such a good idea. Orders had been strict, the radius of exploration settled on long before was not to be ex-ceeded. Ridging had been completely in favor of this; but it was his own instruments which had triggered the change of schedule.

One question about the Moon to which no one could more than guess an answer in advance was that of its magnetic field. Once the group was on the surface it had immediately become evident that there was one, and comparative readings had indicated that the south magnetic pole—or a south magnetic pole—lay a few hundred miles away. It had been decided to modify the program to check the region, since the last forlorn chance of finding any trace of a gaseous envelope around the Moon seemed to lie in auroral investigation. Ridging found himself, to his intense astonishment, wondering why he had volunteered for the trip and then wondering how such thoughts could cross his mind. He had never considered himself a coward, and certainly had no one but himself to blame for being in the trac-tor. No one had made him volunteer, and any techni-cian could have set up and operated the equipment.

"Come out of it, Ridge. Anyone would think you were worried." Shandara's careless tones cut into his thoughts. "How about running this buggy for a while? I've had her for a hundred kilos."

"Right." Ridging slipped into the driver's seat as his companion left it without slowing the tractor. He did not need to find their location on the photographic map clipped beside the panel; he had been keeping a running check almost unconsciously between the features it showed and the landmarks appearing over the horizon. A course had been marked on it, and navigation was not expected to be a problem even without a magnetic com-pass.

The course was far from straight, though it led over what passed for fairly smooth territory on the Moon. Even back on Sinus Roris the tractor had had to weave its way around numerous obstacles; now well onto the Mare Frigoris, the situation was no better, and accord-ing to the map it was nearly time to turn south through the mountains, which would be infinitely worse. Ac-cording to the photos taken during

the original landing approach the journey would be possible, however, and would lead through the range at its narrowest part out onto Mare Imbrium. From that point to the vicinity of Plato, where the region to be investigated lay, there should be no trouble at all.

Oddly enough, there wasn't. Ridging was moderately surprised; Shandara seemed to take it as a matter of course. The cartographer had eaten, slept, and taken his turn at driving with only an occasional remark. Ridging was beginning to believe by the time they reached their goal that his companion was actually as bored with the Moon as he claimed to be. The thought, however, was fleeting; there was work to be done.

About six hundred pounds of assorted instruments were attached to the trailer which had been improvised from discarded fuel tanks. The tractor itself could not carry them; its entire cargo space was occupied by an-other improvisation—an auxiliary fuel tank which had been needed to make the present journey possible. The instruments had to be removed, set up in various spots, and permitted to make their records for the next thirty hours. This would have been a minor task, and possibly even justified a little boredom, had it not been for the fact that some of the "spots" were supposed to be as high as possible. Both men had climbed Lunar moun-tains in the last four weeks, and neither was worried about the task; but there was some question as to which mountain would best suit their needs.

They had stopped on fairly level ground south and somewhat west of Plato—"sunset" west, that is, not as-tronomical. There were a number of fairly prominent elevations in sight. None seemed more than a thousand meters or so in height, however, and the men knew that Plato in one direction and the Teneriffe Mountains in the other had peaks fully twice as high. The problem was which to choose.

"We can't take the tractor either way," pointed out Shandara. "We're cutting things pretty fine on the fuel question as it is. We are going to have to pack the in-struments ourselves, and it's fifty or sixty kilometers to Teneriffe before we even start climbing. Plato's a lot closer."

"The near side of Plato's a lot closer," admitted Ridging, "but the measured peaks in its rim must be on the east and west sides, where they can cast shadows across the crater floor. We might have to go as far for a really good peak as we would if we headed south."

"That's not quite right. Look at the map. The near rim of the crater is fairly straight, and doesn't run straight east and west; it must cast shadows that they could measure from Earth. Why can't it contain some of those two-thousand-meter humps mentioned in the atlas?"

"No reason why it can't; but we don't know that it does. This map doesn't show."

"It doesn't show for Teneriffe, either."

"That's true, but there isn't much choice there, and we know that there's at least one high peak in a fairly small area. Plato is well over three hundred kilometers around."

"It's still a closer walk, and I don't see why, if there are high peaks at any part of the rim, they shouldn't be fairly common all around the circumference."

"I don't see why either," retorted Ridging, "but I've seen several craters for which that wasn't true. So have you." Shandara had no immediate answer to this, but he had no intention of exposing himself to an unnecessarily long walk if he could help it. The instruments to be car-ried were admittedly light, at least on the Moon; but there would be no chance of opening spacesuits until the men got back to the tractor, and spacesuits got quite uncomfortable after a while.

It was the magnetometer that won Shandara's point for him. This pleased him greatly at the time, though he was heard to express a different opinion later. The me-ter itself did not attract attention until the men were about ready to start, and he had resigned himself to the long walk after a good deal more argument; but a final check of the recorders already operating made Ridging stop and think.

"Say, Shan, have you noticed any sunspots lately?"

"Haven't looked at the sun, and don't plan to."

"I know. I mean, have any of the astronomers mentioned anything of the sort?"

"I didn't hear them, and we'll never be able to ask until we get back. Why?"

"I'd say there was a magnetic storm of some sort going on. The intensity, dip, and azimuth readings have all changed quite a bit in the last hour."

"I thought dip was near vertical anyway."

"It is, but that doesn't keep it from changing. You know, Shan, maybe it would be better if we went to Plato, instead."

"That's what I've been saying all along. What's changed your mind?"

"This magnetic business. On Earth, such storms are caused by charged particles from the sun, deflected by the planet's magnetic field and forming what amounts to tremendous electric currents which naturally produce fields of their own. If that's what is happening here, it would be nice to get even closer to the local magnetic vertical, if we can; and that seems to be in, or at least near, Plato."

"That suits me. I've been arguing that way all along. I'm with you."

"There's one other thing—"

"What?"

"This magnetometer ought to go along with us, as well as the stuff we were taking anyway. Do you mind helping with the extra weight?" Shandara had not con-sidered this aspect of the matter, but since his argu-ments had been founded on the question of time rather than effort he agreed readily to the additional labor.

"All right. Just a few minutes while I dismount and repack this gadget, and we'll be on our way." Ridging set to work, and was ready in the specified time, since the apparatus had been designed to be handled by space-suited men. The carrying racks that took the place of regular packs made the travelers look top-heavy, but they had long since learned to keep their balance under such loads. They turned until the nearly motionless sun was behind them and to their right, and set out for the hills ahead.

These elevations were not the peaks they expected to use; the Moon's near horizon made those still invisible. They did, however, represent the outer reaches of the area which had been disturbed by whatever monstrous explosion had blown the ring of Plato in the Moon's crust. As far as the men were concerned, these hills sim-ply meant that very little of their journey would be across level ground, which pleased them just as well. Level ground was sometimes an inch or two deep in dust; and while dust could not hide deep cracks it could and sometimes did fill broader hollows and cover irreg-ularities where one could trip. For a top-heavy man, this could be a serious nuisance. Relatively little dust had been encountered by any of the expedition up to this point, since most of their work had involved slopes or peaks; but a few annoying lessons had been learned.

Shandara and Ridging stuck to the relatively dust-free slopes, therefore. The going was easy enough for experienced men, and they traveled at pretty fair speed—some ten or twelve miles an hour, they judged. The tractor soon disappeared, and compasses were use-less, but both men had a good eye for country, and were used enough to the Lunar landscape to have no particu-lar difficulty in finding distinctive features. They said little, except to call each other's attention to particularly good landmarks.

The general ground level was going up after the first hour and a half, though there was still plenty of down-hill travel. A relatively near line of peaks ahead was presumably the crater rim; there was little difficulty in deciding on the most suitable one and heading for it. Naturally the footing became worse and the slopes steep-er as they approached, but nothing was dangerous even yet. Such crevasses as existed were easy both to see and to jump, and there are few loose rocks on the Moon.

It was only about three and a half hours after leaving the tractor, therefore, that the two men reached the peak they had selected, and looked out over the great walled plain of Plato. They couldn't see all of it, of course; Plato is a hundred kilometers across, and even from a height of two thousand meters the farther side of the floor lies below the horizon. The opposite rim could be seen, of course, but there was no easy way to tell whether any of the peaks visible there were as high as the one from which the men saw them. It didn't really matter; this one was high enough for their purposes.

The instruments were unloaded and set up in half an hour. Ridging did most of the work, with a professional single-mindedness which Shandara made no attempt to emulate. The geophysicist scarcely glanced at the crater floor after his first look around upon their arrival, while Shandara did little else. Ridging was not sur-prised; he had been reasonably sure that his friend had had ulterior reasons for wanting to come this way.

"All right," he said, as he straightened up after clos-ing the last switch, "when do we go down, and how long do we take?"

"Go down where?" asked Shandara innocently.

"Down to the crater floor, I suppose. I'm sure you don't see enough to satisfy you from here. It's just an ordinary crater, of course, but it's three times the diam-eter of Harpalus even if the walls are less than half as high, and you'll surely want to see every square meter of the floor."

"I'll want to see some of the floor, anyway." Shan-dara's tone carried feeling even through the suit radios. It's nice of you to realize that we have to go down. I wish you realized why."

"You mean . . . you mean you really expect to climb down there?" Ridging, in spite of his knowledge of the other's interests, was startled. "I didn't really mean—"

"I didn't think you did. You haven't looked over the edge once."

Ridging repaired the omission, letting his gaze sweep carefully over the grayish plain at the foot of the slope. He knew that the floor of Plato was one of the darker areas on the Moon, but had never supposed that this fact constituted a major problem.

"I don't get it," he said at last. "I don't see anything. The floor is smoother than that of Harpalus, I'd say, but I'm not really sure even of that, from this distance. It's a couple of kilos down and I don't know how far over."

"You brought the map." It was not a question.

"Of course."

"Look at it. It's a good one." Ridging obeyed, bewil-dered. The map was good, as Shandara had said; its scale was sufficient to show Plato some fifteen centime-ters across, with plenty of detail. It was basically an en-largement of a map published on Earth, from telescopic observations; but a good deal of detail had been added from photographs taken during the approach and land-ing of the expedition. Shandara knew that; it was largely his own work.

As a result, Ridging was not long in seeing what his companion meant. The map showed five fairly large craterlets within Plato, and nearly a hundred smaller features.

Ridging could see none of them from where he stood. He looked thoughtfully down the slope, then at the other man.

"I begin to see what you mean. Did you expect some-thing like this? Is that why you wanted to come here? Why didn't you tell me?"

"I didn't expect it, though I had a vague hope. A good many times in the past, observers have reported that the features on the floor of this crater were ob-scured. Dr. Pickering, at the beginning of the century, thought of it as an active volcanic area; others have blamed the business on clouds—and others, of course, have assumed the observers themselves were at fault, though that is pretty hard to justify. I didn't really ex-pect to get a chance to check up on the phenomenon, but I'm sure you don't expect me to stay up here now."

"I suppose not." Ridging spoke in a tone of mock resignation. The problem did not seem to concern his field directly, but he judged rightly that the present situ-ation affected Shandara the way an offer of a genuine fragment of Terrestrial core material would influence Ridging himself. "What do you plan to take down? I suppose you want to get measures of some sort."

"Well, there isn't too much here that will apply, I'm afraid. I have my own camera and some filters, which may do some good. I can't see that the magnetic stuff will be any use down there. We don't have any pressure-measuring or gas-collecting gadgetry; I sup-pose if we'd brought a spare water container from the tractor we could dump it, but we didn't and I'd bet that nothing would be found in it but water vapor if we did. We'll just have to go down and see what our eyes will tell us, and record anything that seems recordable on film. Are you ready?"

"Ready as I ever will be." Ridging knew the remark was neither original nor brilliant, but nothing else seemed to fit.

The inner wall of the crater was a good deal steeper than the one they had climbed, but still did not present a serious obstacle. The principal trouble was that much of the way led through clefts where the sun did not shine, and the only light was reflected from distant slopes. There wasn't much of it, and the men had to be careful of their footings—there was an occasional loose fragment here, and a thousand-meter fall is no joke even on the Moon. The way did not lead directly to-ward the crater floor;

the serrated rim offered better ways between its peaks, hairpinning back and forth so that sometimes the central plain was not visible at all. No floor details appeared as they descended, but what-ever covered them was still below; the stars, whenever the mountains cut off enough sidelight, were clear as ever. Time and again Shandara stopped to look over the great plain, which seemed limitless now that the peaks on the farther side had dropped below the horizon, but nothing in the way of information rewarded the effort.

It was the last few hundred meters of descent that began to furnish something of interest. Shandara was picking his way down an unusually uninviting bit of slope when Ridging, who had already negotiated it, spoke up sharply.

"Shan! Look at the stars over the northern horizon! Isn't there some sort of haze? The sky around them looks a bit lighter." The other paused and looked.

"You're right. But how could that be? There couldn't suddenly be enough air at this level—gases don't be-have that way. Van Maanen's star might have an atmo-sphere twenty meters deep, but the Moon doesn't and never could have."

"There's something between us and the sky."

"That I admit; but I still say it isn't gas. Maybe dust—"

"What would hold it up? Dust is just as impossible as air."

"I don't know. The floor's only a few yards down—let's not stand here guessing." They resumed their de-scent.

The crater floor was fairly level, and sharply distin-guished from the inner slope of the crater wall. Some-thing had certainly filled, partly at least, the vast pit after the original explosion; but neither man was dis-posed to renew the argument about the origin of Lunar craters just then. They scrambled down the remaining few yards of the journey and stopped where they were, silently.

There was something blocking vision; the horizon was no longer visible, nor could the stars be seen for a few degrees above where it should have been. Neither man would have had the slightest doubt about the na-ture of the obscuring matter had he been on Earth; it bore every resemblance to dust. It had to be dust.

But it couldn't be. Granted that dust can be fine enough to remain suspended for weeks or months in Earth's atmosphere when a volcano like Krakatoa hurls a few cubic miles of it aloft, the Moon had not enough gas molecules around it to interfere with the trajectory of a healthy virus particle—and no seismometer in the last four weeks had registered crustal activity even ap-proaching the scale of vulcanism. There was nothing on the Moon to throw the dust up, and even less to keep it there.

"Meteor splash?" Shandara made the suggestion hesi-tantly, fully aware that while a meteor might raise dust it could never keep it aloft. Ridging did not bother to answer, and his friend did not repeat the suggestion.

The sky straight overhead seemed clear as ever; whatever the absorbing material was, it apparently took more than the few feet above them to show much effect. That could not be right, though, Ridging reflected, if this stuff was responsible for hiding the features which should have been visible from the crater rim. Maybe it was thicker farther in. If so, they'd better go on—there might be some chance of collecting samples after all.

He put this to Shandara, who agreed; and the two started out across the hundred-kilometer plain.

The surface was fairly smooth, though a pattern of minute cracks suggestive of the joints formed in cooling basalt covered it almost completely. These were not wide enough even to constitute a tripping danger, and the men ignored them for the time being, though Ridg-ing made a mental note to get a sample of the rock if he could detach one.

The obscuration did thicken as they progressed, and by the time they had gone half a dozen kilometers it was difficult to see the crater wall behind them. Look-ing up, they saw that all but the brighter stars had faded from view even when the men shaded their eyes from the sunlit rock around them.

"Maybe gas is coming from these cracks, carrying dust up with it?" Shandara was no geologist, but had an imagination. He had also read most of the serious arti-cles which had ever been published about the Moon.

"We could check. If that were the case, it should be possible to see currents coming from them; the dust would be thicker just above a crack than a few centime-ters away. If we had something light, like a piece of paper, it might be picked up."

"Worth trying. We have the map," Shandara pointed out. "That should do for paper; the plastic is thin enough." Ridging agreed. With some difficulty—space-suit gloves were not designed for that purpose—he tore a tiny corner off the sheet on which the map was printed, knelt down, and held the fragment over one of the numerous cracks. It showed no tendency to flutter in his grasp, and when he let go it dropped as rapidly as anything ever did on the Moon, to lie quietly directly across the crack he had been testing. He tried to pick it up, but could not get a grip on it with his stiff gloves.

"That one didn't seem to pan out," he remarked, standing up once more.

"Maybe the paper was too heavy—this stuff must be awfully fine—or else it's coming from only a few of the cracks."

"Possibly; but I don't think it's practical to try them all. It would be smarter to figure some way to get a sample of this stuff, and let people with better lab facili-ties figure out what it is and what holds it off the sur-face."

"I've been trying to think of a way to do that. If we laid the map out on the ground, some of the material might settle on it."

"Worth trying. If it does, though, we'll have another question—why does it settle there and yet remain sus-pended long enough to do what is being done? We've been more than an hour coming down the slope, and I'll bet your astronomical friends of the past have reported obscurations longer lasting even than that."

"They have. Well, even if it does raise more prob-lems it's worth trying. Spread out the map, and we'll wait a few minutes." Ridging obeyed; then, to keep the score even, came up with an idea of his own.

"Why don't you lay your camera on the ground pointing up and make a couple of time exposures of the stars? You could repeat them after we get back in the clear, and maybe get some data on the obscuring power of this material."

"Good enough." Shandara removed the camera from its case, clipped a sunshade over its lens, and looked up to find a section of sky with a good selection of stars. As usual, he had to shield his eyes both from sun-light and from the glare of the nearby hills; but even then he did not seem satisfied.

"This stuff is getting thicker, I think," he said. "It's scattering enough light so that it's hard to see any stars at all—harder than it was a few minutes ago, I'd say." Ridging imitated his maneuver, and agreed.

"That's worth recording, too," he pointed out. "Bet-ter stay here a while and get several shots at different times." He looked down again. "It certainly is getting thicker. I'm having trouble seeing you, now."

Human instincts being what they are, the solution to the mystery followed automatically and immediately. A man who fails, for any reason, to see as clearly as he expects usually rubs his eyes—if he can get at them. A man wearing goggles or a space helmet may just possi-bly control this impulse, but he follows the practically identical one of wiping the panes through which he looks. Ridging did not have a handkerchief within reach, of course, and the gauntlet of a spacesuit is not one of the best windshield wipers imaginable; but with-out giving a single thought to the action, he wiped his faceplate with his gauntlet.

Had there been no results he would not have been surprised; he had no reason to expect any. He would probably have dismissed the matter, perhaps with a faint hope that his companion might not have noticed the futile gesture. However, there were results. Very marked ones.

The points where the plastic of the gauntlet actually touched the faceplate were few; but they left trails all the way across—opaque trails. Surprised and still not thinking, Ridging repeated the gesture in an automatic effort to wipe the smears of whatever it was from his helmet; he only made matters worse. He did not quite cover the supposedly transparent area with glove trails—but in the few seconds after he got control of his hand the streaks spread and merged until nothing what-ever was visible. He was not quite in darkness; sunlight penetrated the obscuring layer, but he could not see any details.

"Shan!" The cry contained almost a note of panic. "I can't see at all. Something's covering my helmet!"

The cartographer straightened up from his camera and turned toward his friend.

"How come? You look all right from here. I can't see too clearly, though—"

Reflexes are wonderful. It took about five seconds to blind Shandara as thoroughly as Ridging. He couldn't even find his camera to close the shutter.

"You know," said Ridging thoughtfully after two or three minutes of heavy silence, "we should have been able to figure all this out without coming down here."

"Why?"

"Oh, it's plain as anything—"

"Nothing, and I mean nothing, is plain right now."

"I suppose a mapmaker would joke while he was sur-veying Gehenna. Look, Shan, we have reason to believe there's a magnetic storm going on, which strongly sug-gests charged particles from the Sun. We are standing, for practical purposes, on the Moon's south magnetic pole. Most level parts of the Moon are covered with dust—but we walked over bare rock from the foot of the rim to here. Don't those items add up to some-thing?"

"Not to me."

"Well, then, add the fact that electrical attraction and repulsion are inverse square forces like gravity, but in-volve a vastly bigger proportionality constant."

"If you're talking about scale I know all about it, but you still don't paint me a picture."

"All right. There are, at a guess, protons coming from the sun. They are reaching the Moon's surface here—virtually all of them, since the Moon has a mag-netic field but no atmosphere. The surface material is one of the lousiest imaginable electrical conductors, so the dust normally on the surface picks up and keeps charge. And what, dear student, happens to particles carrying like electrical charges?"

"They are repelled from each other."

"Head of the class. And if a hundred-kilometer circle with a rim a couple of kilos high is charged all over, what happens to the dust lying on it?"

Shandara did not answer; the question was too ob-viously rhetorical. He thought for a moment or two, in-stead, then asked, "How about our faceplates?"

Ridging shrugged—a rather useless gesture, but the time for fighting bad habits had passed some minutes before.

"Bad luck. Whenever two materials rub against each other, electrons come loose. Remember your rubber--and-cat-fur demonstrations in grade school. Unless the materials are of identical electronic makeup, which for practical purposes means unless they are the same substance, one of them will hang onto the electrons a little—or a lot—better than the other, so one will have a negative net charge and the other a positive one. It's our misfortune that the difference between the plastic in our faceplates and that in the rest of the suits is the wrong way; when we rubbed the two, the faceplates picked up a charge opposite to that of the surrounding dust—probably negative, since I suppose the dust is positive and a transparent material should have a good grip on its electrons."

"Then the rest of our suits, and the gloves we wiped with in particular, ought to be clean."

"Ought to be. I'd like nothing better than a chance to check the point."

"Well, the old cat's fur didn't stay charged very long, as I remember. How long will it take this to leak off, do you think?"

"Why should it leak off at all?"

"What? Why, I should think—hm-m-m." Shandara was silent for a moment. "Water is pretty wonderful stuff, isn't it?"

"Yep. And air has its uses, too."

"Then we're . . . Ridge, we've got to do something. Our air will last indefinitely, but you still can't stay in a spacesuit too long."

"I agree that we should do something; I just haven't figured out what. Incidentally, just how sure are you that our air will last? The windows of the regenerators are made, as far as I know, of the same plastic our face-plates are. What'll you bet you're not using emergency oxygen right now?"

"I don't know—I haven't checked the gauges."

"I'll say you haven't. You won't, either; they're out-side your helmet."

"But if we're on emergency now, we could hardly get back to the tractor starting this minute. We've got to get going."

"Which way?"

"Toward the rim!"

"Be specific, son. Just which way is that? And please don't point; it's rude, and I can't see you anyway."

"All right, don't rub it in. But Ridge, what can we do?"

"While this stuff is on our helmets, and possibly our air windows, nothing. We couldn't climb even if we knew which way the hills were. The only thing which will do us the least good is to get this dust off us; and that will do the trick. As my mathematical friends would say, it is necessary and sufficient."

"All right, I'll go along with that. We know that the material the suits are made of is worse than useless for wiping, but wiping and electrical discharge seem to be the only methods possible. What do we have which by any stretch of the imagination might do either job?"

"What is your camera case made of?" asked Ridging.

"As far as I know, same as the suits. It's a regular clip-on carrier, the sort that came with the suits—remember Tazewell's remarks about the dividends Air-Tight must have paid when they sold the suits to the Project? It reminded me of the old days when you had to buy a lot of accessories with your automobile whether you wanted them or not—"

"All right, you've made your point. The case is the same plastic. It would be a pretty poor wiper anyway; it's a box rather than a bag, as I remember. What else is there?"

The silence following this question was rather lengthy. The sad fact is that spacesuits don't have out-side pockets for handkerchiefs. It did occur to Ridging after a time that he was carrying a set of geological specimen bags; but when he finally did think of these and took one out to use as a wiper, the unfortunate fact developed that it, too, left the wrong charge on the face-plate of his helmet. He could see the clear, smooth plas-tic of the bag as it passed across the plate, but the dust collected so fast behind it that he saw nothing of his surroundings. He reflected ruefully that the charge to be removed was now greater than ever. He also thought of using the map, until he remembered that he had put it on the ground and could never find it by touch.

"I never thought," Shandara remarked after another lengthy silence, "that I'd ever miss a damp rag so badly. Blast it, Ridge, there must be something."

"Why? We've both been thinking without any result that I can see. Don't tell me you're one of those fellows who think there's an answer to every problem."

"I am. It may not be the answer we want, but there is one. Come on, Ridge, you're the physicist; I'm just a high-priced picture-copier. Whatever answer there is, you're going to have to furnish it; all my ideas deal with maps, and we've done about all we can with those at the moment."

"Hm-m-m. The more I think, the more I remember that there isn't enough fuel on the Moon to get a rescue tractor out here, even if anyone knew we were in trou-ble and could make the trip in time. Still—wait a min-ute; you said something just then. What was it?"

"I said all my ideas dealt with maps, but—"

"No; before that."

"I don't recall, unless it was that crack about damp rags, which we don't have."

"That was it. That's it, Shan; we don't have any rags, but we do have water."

"Yes—inside our spacesuits. Which of us opens up to save the other?"

"Neither one. Be sensible. You know as well as I do that the amount of water in a closed system containing a living person is constantly increasing; we produce it, ox-idizing hydrogen in the food we eat. The suits have driers in the air cycler or we couldn't last two hours in them."

"That's right; but how do you get the water out? You can't open your air system."

"You can shut it off, and the check valve will keep air in your suit—remember, there's always the chance someone will have to change emergency tanks. It'll be a job, because we won't be able to see what we're doing, and working by touch through spacesuit gauntlets will he awkward as anything I've

ever done. Still, I don't see anything else."

"That means you'll have to work on my suit, then, since I don't know what to do after the line is discon-nected. How long can I last before you reconnect? And what do you do, anyway? You don't mean there's a re-servoir of liquid water there, do you?"

"No, it's a calcium chloride drier; and it should be fairly moist by now—you've been in the suit for several hours. It's in several sections, and I can take out one and leave you the others, so you won't suffer from its lack. The air in your suit should do you for four or five minutes, and if I can't make the disconnection and dis-assembly in that time I can't do it at all. Still, it's your suit, and if I do make a mistake it's your life; do you want to take the chance?"

"What have I to lose? Besides, you always were a pretty good mechanic—or if you weren't, please don't tell me. Get to work."

"All right."

As it happened, the job was not started right away, for there was the minor problem of finding Shandara to be solved first. The two men had been perhaps five yards apart when their faceplates were first blanked out, but neither could now be sure that he hadn't moved in the meantime, or at least shifted around to face a new direction. After some discussion of the problem, it was agreed that Shandara should stand still, while Ridg-ing walked in what he hoped was the right direction for what he hoped was five yards, and then start from wherever he found himself to quarter the area as well as he could by length of stride. He would have to guess at his turns, since even the sun no longer could penetrate the layer of dust on the helmets.

It took a full ten minutes to bump into his compan-ion, and even then he felt undeservedly lucky.

Shandara lay down, so as to use the minimum of en-ergy while the work was being done. Ridging felt over the connection several times until he was sure he had them right—they were, of course, designed to be han-dled by spacesuit gauntlets, though not by a blindfolded operator. Then he warned the cartographer, closed the main cutoffs at helmet and emergency tanks to isolate the renewer mechanism, and opened the latter. It was a simple device, designed in throwaway units like a piece of electronic gear, with each unit automatically sealing as it was removed—a fortunate fact if the alga culture on which Shandara's life for the next few hours de-pended was to survive the operation.

The calcium chloride cells were easy to locate; Ridg-ing removed two of the half-dozen to be on the safe side, replaced and reassembled the renewer, tightened the connections, and reopened the valves.

Ridging now had two cans of calcium chloride. He could not tell whether it had yet absorbed enough water actually to go into solution, though he doubted it; but he took no chances. Holding one of the little containers carefully right side up, he opened its perforated top, took a specimen bag and pushed it into the contents. The plastic was not, of course, absorptive—it was not the first time in the past hour he had regretted the change from cloth bags—but the damp crystals should adhere, and the solution if there was any would wet it. He pulled out the material and applied it to his face-plate.

It was not until much later that he became sure whether there was any liquid. For the moment it worked, and he found that he could see; he asked no more. Hastily he repeated the process on Shandara's helmet, and the two set out rapidly for the rim. They did not stop to pick up camera or map.

Travel is fast on the Moon, but they made less than four hundred meters. Then the faceplates were covered again. With a feeling of annoyance they stopped, and Ridging repeated the treatment.

This time it didn't work.

"I supposed you emptied the can while you were jumping," Shandara remarked in an annoyed tone. "Try the other one."

"I didn't empty anything; but I'll try." The contents of the other container proved equally useless, and the cartographer's morale took another slump.

"What happened?" he asked. "And please don't tell me it's obvious, because you certainly didn't foresee it."

"I didn't, but it is. The chloride dried out again."

"I thought it held onto water."

"It does, under certain conditions. Unfortunately its equilibrium vapor pressure at this temperature is

higher than the local barometer reading. I don't suppose that every last molecule of water has gone, but what's left isn't sufficient to make a conductor. Our faceplates are holding charge again—maybe better than before; there must be some calcium chloride dust on them now, though I don't know offhand what effect it would have."

"There are more chloride cartridges in the cyclers."

"You have four left, which would get us maybe two kilos at the present rate. We can't use mine, since you can't get them out; and if we use all yours you'd never get up the rim. Drying your air isn't just a matter of comfort, you know; that suit has no temperature con-trols—it depends on radiation balance and insulation. If your perspiration stops evaporating, your inner insula-tion is done; and in any case, the cartridges won't get us to the rim."

"In other words you think we're done—again."

"I certainly don't have any more ideas."

"Then I suppose I'll have to do some more pointless chattering. If it gave you the last idea, maybe it will work again."

"Go ahead. It won't bother me. I'm going to spend my last hours cursing the character who used a differ-ent plastic for the faceplate than he did for the rest of these suits."

"All right," Tazewell snapped as the geophysicist paused. "I'm supposed to ask you what you did then. You've just told me that that handkerchief of yours is a good windshield wiper; I'll admit I don't see how. I'll even admit I'm curious, if it'll make you happy."

"It's not a handkerchief, as I said. It's a specimen bag."

"I thought you tried those and found they didn't work—left a charge on your faceplate like the glove."

"It did. But a remark I made myself about different kinds of plastic in the suits gave me another idea. It occurred to me that if the dust was, say, positively charged—"

"Probably was. Protons from the sun."

"All right. Then my faceplate picked up a negative, and my suit glove a positive, so the dust was attracted to the plate.

"Then when we first tried the specimen bag, it also charged positively and left negative on the faceplate.

"Then it occurred to me that the specimen bag rubbed by the suit might go negative; and since it was fairly transparent, I could—"

"I get it! You could tie it over your faceplate and have a windshield you could see through which would repel the dust."

"That was the idea. Of course, I had nothing to tie it with; I had to hold it."

"Good enough. So you got a good idea out of an idle remark."

"Two of them. The moisture one came from Shan the same way."

"But yours worked." Ridging grinned.

"Sorry. It didn't. The specimen bag still came out negative when rubbed on the suit plastic—at least it didn't do the faceplate any good."

Tazewell stared blankly, then looked as though he were about to use violence.

"All right! Let's have it, once and for all."

"Oh, it was simple enough. I worked the specimen bag—I tore it open so it would cover more area—across my faceplate, pressing tight so there wouldn't be any dust under it."

"What good would that do? You must have collected more over it right away."

"Sure. Then I rubbed my faceplate, dust rag and all, against Shandara's. We couldn't lose; one of them was bound to go positive. I won, and led him up the rim until the ground charge dropped enough to let the dust stick to the surface instead of us. I'm glad no one was there to take pictures, though; I'd hate to have a photo around which could be interpreted as my kissing Shan-dara's ugly face even through a space helmet."