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space doctor's orders

by . . . F. B. Bryning

It wasn't the first time Dr. Gale had won glowing space laurels for her skill as a surgeon. But never before had she worn a siren suit.

No. 64 (I) *In view of the extreme mass-ratios involved, and the consequent excessive expenditures of fuel in transporting personnel, provisions, air, equipment, cargo, et cetera, against the gravitational influence of the earth, no surplus articles or personnel may be carried in any rocket vessel or satellite space station.*

(II) *In view of the urgent and continuing necessity to conserve consumable materials, provisions, air, et cetera, once transported into space, in the event of personnel having become surplus, said personnel may not be permitted to remain in any rocket vessel or satellite space station longer than the minimum time required for return to Earth by the earliest and most economical route.*

OPERATION AND CONTROL
OF SPACE-GOING VEHICLES:
Regulations.

"YOU ARE supposed to be in bed!"

Astronomer-Commander Allison glared as Surgeon-Biologist Ken-

Science fiction readers do not as a rule stay on the sidelines when a new writer of great brilliance scores repeated triumphs. They conspire with the editor to rush out upon the field, shouting their satisfaction with considerable gusto. From the letters we have received we're convinced that F. B. Bryning has acquired a most vocal following, and though he lives in Australia and may now be in bed—as the Commander of this fine yarn was supposed to be—we're sure he'll welcome our daytime homage.

nedy, in pajamas, floated into his office in Satellite Space Station Commonwealth Three. "And why this sitting down attitude?" he added at sight of the curiously rigid, "knees-up" posture Kennedy maintained in mid-air, and of the harness which evidently made it possible.

"Invention of Dr. Gale's and mine," grinned Kennedy. "Prevents any leg movement. Provided I use my arms carefully, I can get about with no strain on my wound."

Closing the door behind him he pushed off from the hand rail. Touching the ceiling half-way across, he took a quick sight downwards and pushed again. Head first, hands outstretched, he caught the edge of the desk and maneuvered himself, wincing a little, into the belted chair opposite Allison. Unbuttoning his pocket he plucked out a pink radiogram.

"What are we going to do about this?"

"What else can we do?" replied Allison. "I've applied to have Dr. Gale attached temporarily to the Station as Relieving Surgeon, or alternatively as a privileged visitor on the grounds of meritorious service already performed, and her tonic effect upon morale. I have secured her extended leave from Woomera Base Hospital." He shrugged. "But they've ruled out any official attachment because she cannot qualify as space-borne service personnel."

"But as a technical specialist?"

"Tried that too. By definition a surgeon is not a technical specialist in this service, but a ranking officer. Dr. Gale is not a rank—"

"What a damn quibble! If they'd argued that a few days ago when she volunteered to come out here I might have been a dead man by now!"

"I told them as much. They maintain that the emergency is now over, and that regulations still apply. Moreover, they say that with all those riggers coming out here from 'Two' with our new hydroponics section, a service doctor with space experience must be in charge. So Dr. Bond, recalled from leave, is coming out with the main gang tomorrow, and Dr. Gale is to return to Earth the same day by the weekly supply rocket—as we were first instructed."

"What's their objection?"

"'In view of the extreme mass-ratios invol—'"

"Ar-r-h-h!" snarled Kennedy in disgust. "Regulation sixty-four...!"

"I did propose, because of the number of extra men soon to be working in and about the station, and because of your being out of action and still in need of medical attention, that Dr. Gale might remain as assistant to Bond."

"What did they say?"

"No reply yet."

"How many riggers coming?"

"Glover and four men are outside now—about half a mile away. They have brought the new air lock to connect Air Conditioning

with Hydroponics, and the big junction collar which they have to weld on before the main section arrives. Ted Hudson has gone out to the ferry rocket to co-ordinate his work with Glover's. There'll be twelve more men with the section itself in twenty hours."

"Well, I'm hoping for a favorable reply. I won't know how to tell her, otherwise . . ."

While Senior Engineer Ted Hudson of SSSC3 conferred with Captain Space Rigger Glover inside the ferry rocket, Foreman Space Rigger Jim McCloskey, outside, worked his small crew of three. He was fussing somewhat, he knew, but two of the men were rather raw, and there was a ticklish job before them.

"You *must* work slowly," he warned them through their two-way space-suit radios as they stood around one half of the new air lock, lashed to the hull. "These things may *weigh* nothing out here in free orbit, but there's still a three-hundredweight *mass* in each of them. If they are moved too fast they'll gain momentum capable of damaging anything they may hit—including any careless space riggers! Besides, moving things too fast out here means wasteful use of your reaction motors to accelerate or stop them."

A few feet aft of where the swept-back gliding fins began to angle out from the hull, the ship was girdled by the junction collar. Like a narrow-brimmed hat without

a crown, the flanged steel hoop was heavily padded where it was lashed against the fins. Like SSSC3 itself, it had been fabricated in space alongside the interplanetary space ship construction and maintenance workshops which occupied several units of Satellite Space Station Commonwealth Two.

Five hundred miles above sea level, outside the most tenuous fringes of Earth's atmosphere, "Two" circled the earth in a fast, free orbit. No single structure like SSSC3, it was a virtual flotilla of "space-going vehicles." They comprised meteorological and astronomical observatories, research laboratories, space ship terminals for the Moon, Mars, and Venus runs, and workshop, living, medical, amenities, and recreational units for personnel.

And with them, now almost a museum piece, rode SSSC1—the fifty-year-old Satellite Space Station Commonwealth One, built, honeycomb fashion, of several rocket ships clustered about the first Australian unmanned instrument-carrying missile projected into a permanent orbit about the earth.

From Woomera to SSSC2 the many short-distance, glider-finned ferry rockets brought their small payloads up the hard pull against the drag of atmosphere friction and gravity combined. They burned fuel "excessively" coming out, but returning through the atmosphere, could land as gliders, using practically none. From the small items

they ferried to SSSC2, units too massive ever to be lifted in one piece from sea level were assembled.

Constructed in the free orbit of "Two," however, such units became relatively easy to maneuver in space. The tussle with gravity still remained, but it was now a diminishing factor. There could be no air resistance. And every unit had a "flying start"—the very useful orbital velocity with which it was born.

So space ships which could never have lifted themselves from the surface of the earth were taking off from SSSC2 as daintily as skiffs on a pond. By smooth and gradual acceleration they built up their interplanetary velocities. So, also, by merely applying acceleration, the fabricated additions to SSSC3 were driven outwards, circling the earth in an ever-widening spiral until they reached "Three's" 24-hour orbit, 22,300 miles above sea level . . .

Having transferred the two halves of the air lock to the station, half a mile away, Jim McCloskey was conning his men as they handled the junction collar. He floated fifty yards out beyond the tip of the ferry's nose to see better all round between collar and ship. The three stood on magnetic soles at equal distances around the hull, and out of sight of each other. Across the waist of each arched a segment of the two-ton collar.

Together the three pushed for-

ward, and the collar began slowly to move, clearing the hull at waist height on all sides.

"Slowly . . ." growled John Parry, most seasoned of the three. "If she goes aslant she'll take some holding!"

"Left—right—left—right—" intoned McCloskey's voice in their earphones. Thus he kept time until just before the hull began tapering under them towards the nose.

"Now walk 'downhill' while I count 'hands off,'" said McCloskey. "Three—two—one—OFF!"

In front of each man the flange had come up from waist to eye level by the time they released it. Like a silver smoke ring it floated ahead of them towards the pointed nose.

Yet there had been some lack of co-ordination.

"She's going askew!" cried Parry as he observed the collar veering to his left. "She'll hit the ship!"

Clumping hastily around to his right he caught up with the collar and got his hands under it where, at chest height, it was nearing the ship. Hefting upwards he struggled to hold this segment off the ship and hurry it over the last twenty feet.

Partly he succeeded, while it fought his upward-straining hands down to his waist . . . then lower . . .

"Let go, Parry!" yelled McCloskey. "Get clear!"

Parry tried to obey. But, just before he could let go, his magnetic foothold slipped on the narrowly

tapered surface. He fell almost astride the very tip of the ferry's nose as the collar scraped across it, jamming his leg as it did so.

McCloskey was blasting towards the accident before it happened. On the way he barked into his microphone for the others to radio the station to prepare for a casualty and open an air lock. Then they were to retrieve the collar.

Within seconds he was upon Parry, whose space suit, ripped open above the knee, had loosed its air. Blood was spurting after it into the vacuum of space, to freeze instantly where it splattered the ship. Parry was unconscious and suffocating.

Pouncing like a cat on her kitten McCloskey swept him off the ship, scissored him with his legs about the waist, and whipped several feet of Parry's own lifeline from the reel at his back.

Passing the line twice about the injured leg above the laceration, he made a running knot and hauled it cruelly tight. Having thus partially resealed the suit and restricted the bleeding, he released his scissors and swung Parry about to reach and turn up the oxygen supply. Then, taking the limp rigger under his arm, he blasted towards the lights of the station . . .

Dressed in the regulation siren suit, Dr. Vivienne Gale clumped into the biology laboratory in response to an intercom. summons. The lab was already partially prepared as a makeshift operating

theater. Assistant Biologist Phelan, nuclear physicist Hough, and Assistant Radio-Radar Officer Reeves were sterilizing the instruments, laying them out beneath anchoring tapes, and preparing her surgeon's overalls.

"Where is the patient?" she asked.

"Coming through the air lock," said Phelan. "Dr. Kennedy is there. He asks that you go ahead to wash up."

Vivienne Gale was in overalls, mask beneath her chin, and was squeezing the sponges in the sterilizer bags when they brought the patient in. He was already belted down on the linen-covered laboratory table, which two men steered along, several inches above the floor. Dr. Kennedy floated about them in his rather ludicrous seated posture.

Space rigger Parry, still unconscious, was now in the single, lightweight, neck-to-ankle garment worn by riggers when working in space suits. The right leg of the garment had been cut away. A tourniquet on the thigh, restricting the femoral artery, replaced McCloskey's crude but effective lashing. Above the knee was a ragged, gaping cavity the size of a man's fist, encrusted with brittle, frozen blood. And there was an ominous, unnatural angle to the leg.

Slipping one powdered arm into a rubber glove held by Hough, Dr. Gale listened while Dr. Kennedy assessed Parry's general condition.

"Severe shock and partial asphyxia," he recited. "Usual shock symptoms . . . short, rapid breathing . . . dilated eye-pupils . . . extreme pallor . . . profuse sweating yet temperature low—about ninety-five . . . extremities cold . . . pulse too rapid—and weak . . ."

"Loss of blood?"

"More than he can spare. You realize he was bleeding into a vacuum . . ."

"No sign of the bends?"

"No. He's an oxy-helium breather, like all of us out here—and you, too, by now. No nitrogen in the blood, to bubble out on sudden decompression."

"Blood pressure?" Dr. Gale was now at the patient's side, both gloves in place, and flexing her fingers.

"Maintained so far—by contraction of the arteries, no doubt."

"Heart?"

Kennedy put his stethoscope to her ears. As Vivienne Gale listened she signalled Phelan to raise Parry's eyelids. After a glance at the dilated pupils she waved away the stethoscope.

"A local anaesthetic, I should think, Dr. Kennedy? With that heartbeat, and the loss of blood, I'd rather not use a total—"

"Agreed," said Kennedy, who nodded to Phelan and Reeves to prepare the patient for injection.

"And a large shot of plasma at once," she added. "Can you look after that while I start work?"

Kennedy smiled wryly. "We

have barely enough plasma for one meager shot. We bring it here for research only. Can't afford the power expenditure to ferry fresh supplies out regularly and maintain a bank. Our blood bank for emergencies like this consists of the living men who man the station. We have all our blood types on record."

"Then we'll need two or three donors for transfusion to follow the plasma," said Dr. Vivienne Gale.

After the plasma injection Kennedy was removing from Parry's waistband the identification disk on which, with other information, his blood type was recorded, when Phelan announced:

"Blood pressure dropping rather rapidly!"

Kennedy glared at the gauge. "We'll have to hurry the transfusion. Reeves—please stand by the intercom. to call in the officers I name."

Taking Parry's disk Kennedy returned to his work bench and ran rapidly through the pages of his register.

"Here's a real difficulty," he reported a few moments later. "Patient's blood is type 'O.' As you know, his type can donate blood that is compatible with any other type, but can accept only their own type. And none of our three 'O' type men are in the station at this moment!"

"How does that happen?" Dr. Gale, tying an artery, spoke without looking up.

"Middleton's on Earth furlough. Dr. Bond is with the main gang of riggers on his way here, but won't reach us for nearly twenty hours. And Senior Engineer Ted Hudson is outside, working with the advance riggers. He is the only one available . . . Reeves—please ask Radio to contact Senior Engineer Hudson urgently!"

"How long before he can get here?" asked Dr. Gale.

"Best part of fifteen minutes—assuming he can be reached at once. Somewhat longer if he's inside the ferry and has to get into his space suit and through their air lock."

"Not soon enough, I'm afraid. And if Mr. Hudson donates all the blood this patient needs he is going to be unable to work for a few days. That will mean delay of preparatory work, and then a lot of idle men waiting around on the main job, won't it?"

"And wasting 'consumable materials,'" added Kennedy. "But it can't be helped. There's no alternative."

"I am thinking of one alternative," Vivienne Gale replied. "My blood type is 'O.' I'll be the donor."

"But Dr. Gale . . . You can't afford to give as much as—"

"I can give enough—and at once—which is what counts. Please take samples now for agglutination check."

"But you'll be prostrated—weak for days . . ."

"I shall have the wound tidied up in a few moments, Dr. Ken-

nedy. You can set the leg while Mr. Phelan does the transfusion. There is really no other way . . ."

Time was short so she lay, weightless, on the edge of the operating table, held in position by Hough, while Phelan operated the pneumatic bandage and the two-way syringe. By the time Kennedy had set and bandaged the leg, color had returned to the patient's cheeks. Taking charge of transfusion, Kennedy eyed Dr. Gale critically.

"Now *you* have the pallor! It is very becoming, but I think you've given all you should. How do you feel?"

"Rather lazy—and a bit thirsty," she admitted, unable to hide her increasing languor.

"I'm still getting Hudson in," he said as he began checking Parry's reactions. "We can top off with some from him, which he won't miss. He'll lose no working time. Meanwhile you have saved the situation."

A few minutes later, even as he was checking her condition, she fainted . . .

Vivienne Gale revived in her bunk, strapped snugly between the sheets. Her forearm was bandaged, and Dr. Kennedy had his stethoscope over her heart. He grinned as she felt beneath the bed-clothes.

"Still in your siren suit. It's good sleeping attire—and warm. You can change when you feel stronger . . . Now what are you smirking at?"

"As my medical adviser, Dr.

Kennedy, would you recommend travel by rocket ship for me in the next few days?"

"Certainly not!" he exclaimed fervently. "Rough accelerations are out of—" He broke off, to laugh aloud as he saw the point of her

question. "I forbid it for at least a fortnight . . . Satisfied?"

Tongue in cheek, eyebrows arched, she shrugged in mock resignation.

"What choice have I? . . . Doctor's orders!"