

This is Stephen Baxter and Simon Bradshaw's latest entry in a very occasional series about alternate British space programs (the only other story so far is PROSPERO ONE, INTERZONE 112, October 1996). Those who are interested in the BIS Lunar spaceship design used in this story can find it in THE JOURNAL OF THE BRITISH INTERPLANETARY SOCIETY, January and July 1939.

Stephen Baxter's latest books are a collection of science essays, DEEP FUTURE, and the third volume in his series about mammoths, ICEBONES, both from Gollancz.

FIRST TO THE MOON!

STEPHEN BAXTER & SIMON BRADSHAW

I

By the time the spin had ramped up, Gregory Marsh was being swung around the axis above his head once every three and a half seconds, as if by an immense rope wrapped around his chest. Though he was never going to get used to the sideways tug on his innards and head, he could tell that the big space-ship was spinning away with scarcely a wobble, ready to fly as steady and stable as a bullet out of a rifle, and providing its crew with artificial gravity to boot.

It was the second of July 1950 – a Sunday lunchtime, for God's sake – and today Marsh, with Forbes and Selbourne, was going to ride into the sky aboard this unlikely five-thousand-ton firecracker, ride in fact all the way to the bloody moon.

He was on his back, strapped to his heavy form-fitted couch, looking up into the roof of the life-container. The little spam-can-shaped cabin was just ten feet across, and it contained the three of them lying here like Isle of Man legs, heads together at the centre, feet to the wall.

Selbourne couldn't resist yakking. "How's the plumbing, Gregory?"

As the nearest thing to a medico aboard the *Scott*, Francis Selbourne had a right to ask such questions, and for once Marsh was prepared to

forgive his plummy Oxbridge tones. "I wish I hadn't shipped that last helping of steak in butter."

"Doctor's orders."

"More like fattening for the slaughter..."

"Now, now, chaps," Forbes murmured. Captain Bernard Forbes, RN, sounded characteristically sober, and when Marsh glanced up he saw the unlit pipe clamped in the pilot's mouth as Forbes ran through final instrument checks. Marsh felt a sting of irritation to be dismissed like a schoolboy. But he subsided; there were rather more important concerns afoot.

There was a sharp rise in the noise of pumps spinning, of relays clattering. The tempo of events was picking up, and his heart beat harder in response.

He couldn't see out, of course, because of the Boost Protection Cover that enclosed the fragile life-container. It would have been a peculiar pleasure to see the bright blue sky above Ascension Island swivelling over his head, maybe even to glimpse the viewing bunker containing King Edward and Prime Minister Halifax and the Reich Ambassador and the rest of the brass, all of them no doubt gazing open-mouthed at the sight of this huge hexagonal pillar spinning around on its vast turntable like a Glenn Miller platter.

"Thirty seconds, gentlemen," came the voice from the command bunker.

"Roger, thank you," Forbes murmured smoothly. "Firing key to go. Air purging. Steering rockets on idle run. And three, and two, and one—"

There was a distant rumble, like a storm far off in the Atlantic. But this storm was man-made: the ignition of the cells in the lowest Step of rockets a hundred feet below them, aluminium burning in an oxygen-rich binder.

"Full shat, by God," Forbes called. "Blast-off!"

There was no kick in the pants; nothing weighing five thousand tons was going to leap from the ground like a gazelle. Marsh felt oddly deflated. The last few months, as the King's Englishman-on-the-moon deadline had approached, had been a period of unbelievably intense work for him and thousands of others. Now that the rockets were burning at last, he felt somehow as if the job were already over.

But everything was going according to the book. Marsh didn't need instruments to tell him that: he could hear the singing of the rockets,

all one hundred and sixty-eight of them clustered in that first Step, each an exquisite piece of engineering birthed in the factories of Derby and Southampton and each destined for just a few minutes' once-only use. The rocket cells were fired in their elaborate sequence by the electrical control he had laboured over so long – as many relays as a flying telephone exchange, as the *Daily Mail* had put it.

He felt a mounting exhilaration. Forbes might be in the pilot's seat, but *Scott* – as much as it was anybody's – was Marsh's ship.

Soon there came a distant rattle. A new thrust regime cut in, sharper and noisier than the first.

"First Step away," Forbes called. Already the first of the *Scott's* six Steps of clustered rockets had burned out, the cells falling away like snowflakes.

Selbourne laughed tightly, his voice shaking. Perhaps it was just the vibration. "Marsh, let's hope none of those bloody petrol cans of yours end up clouting King Edward on the bonce."

"As long as it demolishes his Nazi buddies I couldn't care less—"

"Ground, this is *Scott*. Going to manual." Forbes could fire individual rocket cells by working a bank of switches on the gantry above his head, a slab of polished wood that always reminded Marsh of the console of a church organ.

More rattles and bangs as the cells of the second and third rocket Steps burned up. The press of acceleration became more intense. But that sharp sideways vibration, with them since blast-off, was getting stronger.

Selbourne called, "What the bloody hell, skipper?"

"Misfires," Forbes snapped briskly, focusing on the banks of switches. "Just one or two cells each Step, but enough to knock us sideways. I'm compensating, but it's a tightrope walk, every inch of the way."

The ride smoothed a little as he worked. The rockets, set in their individual fixings, were supposed to orient themselves to compensate for the atmosphere's savage buffeting. But no electronic gadget yet devised could possibly make assessments and steering corrections as rapidly as a human pilot. And Marsh had to admit that Forbes, for all his smug pomposity, was about as fine a pilot as you could hope to fly with.

But Selbourne said now, "So much for Korolev, Marsh. Eh? Send him back to that Nazi mine in Siberia where he belongs."

Marsh bit back a sharp rejoinder. Not the time or place, he told himself. But the fact was it had been the Russians who had made the design possible.

The *Scott*, the finest fruit of the Imperial Space Programme, was based on outline schemes devised by a bunch of visionary eccentrics called the British Interplanetary Society back in '39. The decision to use small solid rockets, over two thousand of them, as the basis of the design was based on a long British tradition of the use of such rockets for military purposes. But in the later stages much of the detailed work and testing had been done by Sergei Korolev and his handful of rocketry and aeronautical engineers, who had been snatched out of imploding Russia just before German and Japanese troops had met at the Urals in 1944. For all Selbourne's snobbish cracks, without the Russians' genius and sheer doggedness, none of this would have come to fruition.

Another clatter of discarded canisters, another sharp ignition: that had been the fourth Step. Now the fifth and last Step must be lighting up, another one hundred and sixty-eight cells burning furiously. Ironically the acceleration was heavier than ever, the surges more powerful – and the vibration terribly severe. Marsh wondered uneasily if all this rattling around would have any longer-term consequences for the ship's more fragile systems.

And then, without warning, the rockets cut out. Marsh, with a grunt, was thrown sideways against his restraining harness. The vibration quickly damped away.

Forbes said, "Hold on to your hats." Marsh heard valves clatter open, a booming echo like a cannon shot. That was the steam thruster, a small subsidiary system meant for steering and attitude adjustment; Forbes was trying to fix the out-of-kilter rotation.

When the ship at last settled down, the three of them lay back, breathing hard, heads close together. The vibration and noise had gone, but still they were being spun around by the ship's stabilising rotation. With 'down' now pointing outwards to the life-container's circular wall, it was as if Marsh were sitting up in his couch, with Selbourne and Forbes suspended upside down over his head like two meaty chandeliers.

There was a sharp, unexpected crack all around the cabin. Sunlight flooded in through a port. The Boost Protection Cover, its job done, had split into orange-peel segments and fallen away.

Marsh leaned forward in his seat. He could just reach the coelostat, an ingenious gadget of mirrors and lenses that was able to counteract the ship's spin and afford him a steady view. At first he saw only darkness – no stars – and he wondered if the device was faulty. Then a brilliant white-blue slab swam into view. He gasped at its unexpected beauty. But the earth was already folding over on itself and falling away from him.

Forbes snapped on the radio set, and as he waited for the valves to warm he spoke clearly. "This is HMS *Captain Robert Scott* calling Farnborough. *Scott* calling Farnborough..."

There had been much anguished debate about the wisdom of taking even one military officer along on this mission, let alone putting him in command. What if the Reich took it as a provocation? After all there was a great deal of tension at various pressure points around the world between the British Empire and the Axis powers – for instance in India, threatened by the Italian occupation of Afghanistan. But the brass had cut through that; when the chips were down you needed a pilot who had proved himself in the most demanding of situations, physically and mentally. Just as Forbes had proved himself as a Fleet Air Arm pilot over southern England in a Miles M-52, a supersonic jet aircraft that was nothing but a tube of flaming kerosene, flying up against incursions of British air space by the Reich's own rocket-powered Messerschmitt Komets flying out of Calais. And now, in this moment of glamour, here was Forbes rising to the occasion once again.

"We are beyond the pull of earth, and are bound for the moon. All of us are feeling fine, and you can tell the boffins that the kite has performed as per, despite my clumsy handling..." The tone of his voice – and the carefully judged, self-deprecating humour – seemed designed to cement Forbes into English folklore forever, alongside his idol, the Antarctic explorer Scott.

Marsh couldn't blame him for it, even as he lay here ignored in the ship he had built, like a troglodyte in this spinning cave.

Without warning, Selbourne coughed up a ball of vomit. "Oh, Christ."

"And to top it all," Forbes told the listening millions, "I bit through my blessed pipe."

Marsh started to laugh. And once they had all started, it proved impossible to stop.

II

A small alarm clock sounded. Time for another sighting. Marsh leaned back and pressed his eye to the coelostat, and waited for dark adaptation to cut in.

He had rather enjoyed his first few hours outbound.

He felt at home in the life-container. It was a shell of fabric stiffened with resin, and the only light came from small electric bulbs, so that the atmosphere was oddly cosy, like a late-night campsite. But he was surrounded by complexity, by a 'knitting' of pipes and wires taped to the walls and instruments clustered in the gantry behind his head at the axis of the life-container, all laced with the scent of engine oil and ozone. It was an exhilarating, reassuring melange for an old tin-cutter like Marsh.

But of course the flight's one big problem had quickly come to the fore.

It wasn't the continuing Coriolis nausea in this little spinning washtub of a ship. It wasn't the lingering lavatory odours that the carbon dioxide scrubbers resolutely failed to remove from the air. It wasn't the wind-inducing 'high-energy' foods they were consuming – bread and butter, cheese, porridge, chocolate, all eaten off dung-coloured Bakelite crockery. It wasn't even the gagging odour of Forbes' expensive German nicotine-free pipe tobacco, smoked in defiance of all regulations and common decency.

No, the problem was Marsh's crewmates, as simple as that. Only three days into this three-week mission, and Marsh could cheerfully have strangled the pair of them.

He tried to concentrate on what was important: that he was after all *here*, suspended between earth and moon – he, Gregory Marsh.

In 1942, after the dubious conclusion to Britain's European war, the King had made his famous BBC broadcast in which he had called for the 'national genius' for high engineering to be assembled 'to place an Englishman on the moon by the end of this decade'. This great feat would be a monument to the recovery of Britain's spirit. And such a recovery was needed. Even though the European war might have become a disastrous, unwinnable conflict – certainly if the rumours about immense 'atomic bomb' explosions in the depths of Kazakhstan were true – there had been no particular honour in Prime Minister Halifax's compromises with the Reich, made with the grinning Germanophile Edward VIII at his side.

The King's challenge had struck a chord. Maybe it was time to restore a little national pride, and a race to the moon would certainly be a harmless way to beat the Germans – and it had given Gregory Marsh the opportunity of a lifetime.

Marsh could feel the reassuring mass of his slide rule at his belt. That battered old instrument, the slider carefully greased at least once a week, had been with him since his first day in the shipyards of his native North-East as a technical apprentice and every step of his long journey, all the way to the threshold of the moon. In his mid-20s he had been lured down to London to take an engineering degree at Imperial College. Despite his sour relations with the other students – mostly southern-based, fashionably quoting German – he had had little trouble graduating with distinction, and had moved on to the Royal Aircraft Establishment in Farnborough, where he had become an expert in the new field of space engineering.

As the great lunar programme had been assembled, Marsh had battled to become one of the King's 'new Brunels'. He had survived a long and fraught selection process, where his obvious technical superiority had overcome the handicap of his background, his accent and his 'sullen attitude'. And now here he was, on his way to the moon.

He did wonder, though, if Von Braun's mighty rockets required slide rules to guide themselves into space and back.

Pale grey light poured into his eye. He blinked, annoyed with himself. He had let the moon come drifting into his field of view; now his dark adaptation was ruined good and proper.

But still, here was the moon, as big as a dinner plate, swimming towards him out of nothingness. He could recognise the very craters, plains and mountains that he had explored as a boy with a home-made refractor from the tiny yard of his terraced house. He would never walk there – that wasn't his job – but to get so close was good enough for him.

He turned the coelostat away and got down to work.

Marsh's key role during the four-day lunar flight was navigation: to figure out where the ship was and where it was headed. With his small telescopes and sextants he took fixes on stars and on features on the earth – notably flares sent up from the planet's night side, with pinpoint timing and placement, by a small fleet of Royal Navy vessels scattered around the globe.

The observations made, he got on with his analysis, using log tables

and a hand-cranked calculator. His calculations were basically data reduction to convert his sightings into a form compact enough for easy Morse transmission. The big computers at Manchester and Bletchley would do the real number-crunching, factoring his data in with that from the micrometer-measured photographic plates that charted their celestial progress.

It took an hour's intense labour. Marsh finished by cross-checking the result against his rough slide-rule estimate, then summarized it on a message form. In little over two hours, back would come any required course correction. It was satisfying, stretching, absorbing work.

When he was done, Selbourne came sliding his couch around the rails that circled the cabin. He held up a sample bottle. "Time to give for the orphans again."

Marsh groaned. More medico nonsense. With a sigh, he shut his rice-paper almanacs, log tables, maps and charts away inside his big draughtsman's folder. He took the bottle and clambered down below his chair into the storage space at the bottom of the life-container, stumbling a couple of times through Coriolis force, seeking privacy. Down here he could hear the hum of the air-conditioning plant and feel the heat of the steering-jet boiler, mounted with other equipment under the lower deck plate. Close to the machines, he felt rather more at home than with Selbourne and Forbes.

And, as he forced himself to pee in controlled dollops into the ludicrously small bottle, he could see how the light of the moon gleamed out of the eyepiece of his coelostat.

He was unceremoniously kicked in the head.

"Sorry about that." Forbes, tumbling around the cluttered space, was going through his space-suit drill. He had already donned his pressure jerkin. Now, with enviable agility, he had raised up his legs and was sliding them smoothly into the lower half of his thick, multi-layered suit.

Selbourne, peering down from the upper level, smiled. "Rather like getting dressed in the dark in the dorm, don't you think, skipper? – but I do think it would have been better if we could have practised with these bloody things *before* we left England."

Marsh's sanguine mood had evaporated. Selbourne's public-school bilge always infuriated him. And anyhow, his head still hurt. "Yes, Forbes," he grouched. "Exactly *why* was it we weren't allowed to see these damn suits before we left the ground?"

“You know why,” Forbes said neutrally. “Operational security.”

“Ah, yes. We can’t have German spies stealing the secrets of British pressure suits, can we?”

Selbourne eyed Marsh mockingly. “Methinks a touch of envy on the part of our grease monkey.”

“Don’t patronise me, you bugger,” Marsh snapped. “I mean, what bloody sense does it make to exclude your crew from essential details of the mission? What did you think I would do – tell Mr Churchill so he could write it up in the *New Yorker*?”

Selbourne said, “You know, old man, your accent gets stronger when you’re angry. Rather quaint.”

“Selbourne—”

“You should concentrate on your job, Marsh, not faded old has-beens and never-weres like Churchill. Did you hear what they had to say about him at the reception at Buck House? King Edward can’t stand Churchill, not after that dreadful business when Churchill spoke up about the King’s liaison with that American lady, and a King is a good enough judge for me... Ah, but I forget. You weren’t invited to the Palace, were you, Marsh?”

Marsh’s blood boiled. It was just as it had been from the day he had first set foot in London and he had found himself confronting the seamless super-class that linked the higher echelons of society in Britain, Germany and elsewhere. It was a class from which working-class ‘northern chemist’ Marsh, regardless of his ability and achievement, was forever excluded – along with other such unmentionables as Slavs, kikes and coloureds.

So he lashed out. “As for the King, I only wish Cromwell had done a more thorough job. And you know, Francis, you might have given away a few secrets yourself. All those Nazi pen-pals... Careless talk costs lives, you know.”

Selbourne stiffened. It was well known that Selbourne had spent a year pursuing medical research in Berlin during the Empire-Axis détente of the late 1940s. But in polite society it was considered rather tasteless to refer too closely to a person’s contact with the Reich or their Axis partners. Selbourne snapped, “Sometimes, Marsh old man, you go too far. Just too far.”

The spat might have got worse – even physical, as it so often had for Marsh at Imperial and Farnborough. But Forbes, with unexpected managerial skill, distracted them both by showing them how to apply

a simple patch to the space-suit. A score draw, Marsh decided, not unpleased.

That was the two of them for you: Forbes haughty and somehow lacking a soul, and Selbourne clever, edgy, but with a fragility it wasn’t hard to pierce. At least you could respect Forbes for his obvious competence. Selbourne seemed nothing but a dilettante: a jack of all trades, doing this and that, everything from material science to physiology. That, with a little medico training, had apparently been enough to get him through the programme. To Marsh, who had been through such a ferocious selection process, it was infuriating. He could think of a dozen men he’d sooner have at his side than Selbourne.

Or Forbes, come to that.

III

Beyond the windows the mountains of the moon slid past, wrinkled like burnt flesh.

As the flight entered its final hour, the three of them laboriously squeezed themselves into their cumbersome space-suits: sleek surface-exploration models in the case of his crewmates, a rather clumsier design for Marsh.

But before one could land one had to stop: stop dead above the moon’s bony mountains, and fall vertically to the ground.

“Confirm secure for de-spin.” Forbes’ voice came, crackling slightly, through the earphones of Marsh’s helmet. “Thruster valves *open*, tanks *pressurized*, de-spin rockets to *arm*... firing on my mark... three, two, one, *mark*.” The solid-rocket de-spin motors fired with a bang, like someone striking the outer hull with a hammer. There was a sudden twist and lurch, much more pronounced than the turntable spin-up.

And then came the rising-stomach sensation of weightlessness, for the first time in the flight.

No time for queasiness; they all had work to do. The job for Marsh and Selbourne now was to collect the data that would allow Forbes to complete the landing. Marsh pulled the lever by his left thigh. Springs and pneumatics rotated his couch until he was sitting near ‘upright’ in the cabin. He pulled forward the rangefinder sight, like a submarine periscope. He twisted the focus until the grey blur resolved itself into a view of the craters and valleys of the Altai Mountains, a tract of ancient highland.

An adjustment of another control, and a superimposed graticule neatly bracketed two prominent craters. "Sight One," Marsh called, thumbing the stopwatch button. He watched as the craters drifted apart, until their edges slid past a wider set of graticule lines. "Sight Two: thirty-four seconds."

"Roger." Invisible behind Marsh, Selbourne would be consulting his tables frantically. He already knew the *Scott's* speed, so the rate of approach observed by Marsh could be converted into an altitude, and from that the time of retro-firing could be determined.

Marsh waited out the endless seconds until Selbourne reported. At his controls, Forbes was a stolid presence, apparently unconcerned. This was how it must be, all the way to the surface: with no electronic aids, only the hands, eyes and brains of the three men working together could bring them safely down.

Still the moon closed. Suddenly the grey landscape was no longer Marsh's childhood friend: now it was a solid barrier, against which they would smash themselves given the slightest error—

Concentrate, man!

At last Selbourne called, "Burn One at mark plus one hundred – *mark.*"

Marsh slid his couch back to prone.

Forbes murmured, "Five, four, three—"

Suddenly noise erupted beneath them – the final rocket-cell Step was just beneath the life-container's hull plates – and a hammer blow struck Marsh's chest, four gravities that pinned him down. And then, just as suddenly, the noise was gone, and the weight on his chest evaporated.

Couch upright again, panting, Marsh peered through the range-finder. He scanned quickly, looking for one of several pairs of small craters that had been mapped out around the landing site. In training, he had practised site recognition repeatedly with randomly oriented photos. Now all he saw was a random jumble of grey and black...

There. "I've got Pair Delta." He repeated his earlier timings.

Selbourne ruled a quick line across his landing nomogram, calculating both height and rate of descent. He reported promptly, but his voice trembled. "Forty-two thou, eight hundred down."

Forty-two thousand feet: eight miles up, heading down at five hundred miles an hour – and accelerating at five feet per second squared. That was a bit low, but speed was on the button.

Forbes said laconically, "Burn Two in ten on my mark."

This time they remained upright; the second firing was gentler, just under one normal gravity. As Marsh watched his screen, the rate of closure visibly slowed until the landscape was almost static in front of him.

Burnout. Two and a half miles above the lunar plain, the *Scott* hung, briefly motionless. Then, tugged by the moon's gentle, relentless gravity, the ship began to fall again.

"Ignition." Forbes pushed the throttle. The four liquid-propellant engines at the centre of the landing stage chugged into life, like a steam engine starting up.

These cranky creations, intended to support the final landing, were the contribution of the United States, particularly through the loan of their visionary engineer Robert Goddard. Liquid-fuel engines were not as steady or reliable as good old-fashioned solids, but they were controllable, and a lot easier to land on than a bank of fireworks. The thrust was mild – about half a g – but accompanied by a juddering vibration. Marsh listened, fascinated. Cavitation in the fuel lines? Did Von Braun have this problem?

"Numbers, please," Forbes reminded him evenly.

Now the *Scott* was low enough to use the rangefinder in binocular mode, so Marsh could directly measure their height without time-wasting calculations. He twisted a control, keeping his double image of the cratered plain unified, and read off the dials. "Seven thou five... seven thou... six thou five..." The view in Marsh's rangefinder was resolving into boulders, craterlets, even low ridges. What had appeared a featureless plain from only a few miles up was anything but at closer range.

"Seventy-five down," Selbourne said. He was working out their vertical speed from his stopwatch and graphs. "We're getting slow and high."

Forbes responded by throttling down the engine.

Marsh's view expanded as the ship plummeted. My God, he thought, he's pushing it a bit. Then the thrust suddenly surged and he was pushed back in his couch.

Thus they fell to the moon, in stops and starts, moments of hover and stomach-dropping seconds of falls.

"Sorry, chaps," Forbes said. "This isn't much like the trainer."

"A rum do, skipper," Selbourne said, his voice shuddering. "And all courtesy of a bunch of Slav engineers."

Selbourne's brittleness was coming to the surface, Marsh thought. "Forbes can handle it. Take it easy, man."

But now they had a new problem. Smack in the middle of the rangefinder screen, Marsh saw, right where they were heading to land, was a cluster of shallow craters. He felt a burst of thruster fire, and the *Scott* tilted slightly. The craters, growing in the field of view, started to drift to the left, as Forbes headed for a patch of temptingly smooth terrain.

But that leftward drift was too far, too fast. "Bloody vertical stabiliser." That was a shock; Forbes never swore. Forbes squirted his thrusters again. Now they were wallowing back the other way, and drifting forward to boot.

Marsh felt a sense of panic, of a lack of control.

"Four hundred... three fifty... three hundred... radalt coming on line." A low hum intruded on the intercom, rising in pitch as the surface approached.

It was a pity, Marsh thought, not for the first time, that the radar altimeter couldn't work at higher altitudes. But the design engineers had taken one look at the weight of a set that would operate from ten thousand feet and laughed it right off the blueprint.

Now his rangefinder showed nothing but streaks of grey dust. We are already touching the moon, he thought. He sat back, blind, helpless.

Selbourne spoke again. "State Alpha."

That was a low fuel warning. If they got as low as State Bravo before landing, it would be a question of climb for all they were worth and try to reach orbit. Marsh found himself praying that they might reach Bravo without landing. To hell with the moon: get me out of here – just get me out of here...

The whine of the radalt reached a screech. There was a last burp of thrust, and a loud buzzer sounded. Forbes shouted, "Touchdown, by God!"

The thrust died, and the *Scott* sagged down on its pneumatic suspension.

Silence, save for the ticking of clockwork.

IV

It was Forbes who spoke first. "Congratulations, chaps. It appears we did it."

Straps loosened, Marsh raised himself up. He was immediately conscious of the reduced pull. Lunar gravity!

He drifted over to one of the portholes. Outside, a dusty grey plain stretched to the shockingly close horizon, scattered with rocks and boulders. The sky was black, the land empty: no trees, no people.

Selbourne unclipped his helmet and lifted it off. His blond hair was matted with sweat. "Do you think a quick toast might be in order?" He moved over to the medical chest and dug out the medicinal whiskey.

Forbes said, "Ready for the history books, gentlemen?"

Marsh nodded, and warmed up the radio transmitter.

The three of them stood silently, clutching their drinks, suddenly self-conscious. The words they sent now would be picked up by the big radio antenna in Cornwall, rebroadcast straight to Farnborough, and then passed on to Broadcasting House in London, where Richard Dimpleby would intone a helpful commentary with suitably uplifting comments from Olaf Stapledon and some of the less crusty luminaries of the British Interplanetary Society. And thus they would speak to an Empire.

In Marsh's glass the liquor sloshed, dense and languid. He gazed at it, fascinated by its low-gravity motion.

The captain turned to the microphone. "This is HMS *Scott*, broadcasting from the surface of the moon. Forbes speaking. Landing successful, all in good health. I have a few words to say, if I may. The instinct to serve some cause which will outlast us is part of the make-up of normal man, and he seeks to satisfy it in various ways, through religion, art, patriotism, or social reform. We, today, have chosen exploration..."

This crass pomposity repelled Marsh, immediately dissipating the fellowship of the landing. It was all just another step in the glorious progress of soon-to-be Rear Admiral Sir Bernard Buggery Forbes. Even here on the bloody moon, the game went on.

"...This present civilisation of ours may collapse, as several have before it, and as more that may come after it. But sooner or later man will stand astride worlds, and the part our mission, however small, plays in achieving that end will have justified the effort and the bravery of my companions. God save the King."

Selbourne was staring out of the porthole. "Is it me, or are we leaning a bit?"

They abandoned the radio. Marsh hurried to the clinometer, a

gimballed spirit level. “He’s right. We’re leaning four degrees towards number two arm.”

“Must have landed on the edge of one of those infernal craters,” Forbes muttered. He crossed over to the down-slope porthole and peered out. “As I suspected. A golf bunker. Only a few yards deep.”

Marsh said, “Safe limit for take-off is ten degrees, and we can adjust the arm compression to compensate up to fifteen. We’re fine for now—”

There was a muffled pop, and the *Scott* gave a small shudder.

Selbourne drained his whiskey. “Looks like you spoke too soon, Marsh.”

“It can’t be the cabin seal, or we’d feel it,” Marsh said, thinking fast. “Maybe a fuel line, or—”

“Or the landing gear.” Forbes barged past Marsh to the porthole. “*Hell.*”

Marsh saw that a stream of fog obscured the landscape. The ‘fog’ could only be air escaping from the pneumatic shock absorbers of the landing system. By the look of it, it was coming from the landing arm towards which the *Scott* was sloping.

Selbourne watched the clinometer. “Six degrees. And getting worse.”

Forbes demanded, “Can we compensate?”

Marsh said, “We can blow in extra air, or bleed it out of the opposite arm. But that will only slow the leak. We’ll either have to patch it, or clamp the arm in place before it collapses.”

“Or?”

“Or we fall over.”

“We can’t blow air in from in here, can we?”

Marsh shook his head. “The designers wanted to avoid any extra piping into the cabin.”

“Well, that’s turned out to be a bloody sound decision. I’ll just have to do it from outside.” Forbes began unclipping one of the breathing packs from the bulkhead. “Don’t stand there like lemons. Help me.”

They both moved to help, but the whiskey seemed to have hit Selbourne. In the end Marsh pushed him away, none too gently, and checked the pack’s couplings himself.

Forbes locked his helmet in place. Marsh and Selbourne followed suit, then attached in-cabin air lines to their own suits.

“Ready to depress?” At Marsh’s nod, Forbes turned a hand wheel by the hatch. The hiss of escaping air sounded loudly, then rapidly died away.

The hatch opened inwards. Sunlight flared into the cabin, unexpectedly bright. Forbes turned around, knelt, and backed out of the hatch. Then he was gone.

Forbes’ voice, transmitted along the cable he dragged after himself, was thin, scratchy, breathless. “Not craggy the way we thought. Even here up in the mountains. Rather gentle. Like sand dunes, or ski slopes. Like St Moritz before the morning crowd gets on the slope.”

Selbourne muttered, “Windy bugger when he gets going.”

Marsh said, awe-struck, “Yes, but he’s a windy bugger who’s walking on the moon.”

Forbes was panting hard, out in the invisible glare. “Rather harder to walk than I expected. But at least I’m not sinking. The dust crunches, just like snow... Now, the landing arm. It’s retracted like one of your toy telescopes, Marsh.” There was a moment of grunting. “The reserve tank shows no pressure; the gauge is right down to zero. All that rattling when we blasted off – I’ll bet a pound to a penny that’s what’s done the damage.”

“My God,” said Selbourne. “We flew all the way to the moon with a broken wing, and we never knew it.”

Marsh snapped, “Forbes. Use your oxygen pack. Remember the drill.”

“Ahead of you. I’ve found the connector hose, just where it was supposed to be... tick in the box for some horny-handed plumber in Derby.” More hard breathing. Forbes, following standard operating procedure, was trying to repressurise the landing arm’s shock-absorber pneumatic mechanism with the gas from his own oxygen tank.

And, almost immediately, Selbourne shouted. “The clinometer. Skipper, it’s working!” The man seemed semi-hysterical. “Strange that I can’t feel the tilt – can you, Marsh? But then the gravity is so weak. It’s as if one is floating in this dreamlike place—”

“Shut up, Francis.” But Marsh felt a vast relief; maybe they would get through this yet.

Forbes, to Marsh’s bemusement, was whistling tunelessly.

Marsh kept watching the clinometer. “That’s close enough.”

“We aren’t level yet.”

“Clamp off and leave it. Don’t push it, Forbes—”

There was another pop, loud as a gunshot in the repressurised cabin. The floor immediately began to tilt once more, and Marsh watched in dismay as various gauges quickly dropped to zero.

“Such a little thing,” said Forbes quietly. “How infuriating.”

Frantically Marsh sealed up his space-suit.

Selbourne asked, “What’s happening?”

“We lost our pneumatics, all of it. Seal up and brace.”

The ship’s fall was a dream of slow motion. The sun wheeled past the windows like a searchlight. When the cabin floor’s tilt passed forty-five degrees Marsh felt his footing go. As he fell the fragile hull of the life-container began to peel open around him – all the air fled in a single gush of ice crystals, a remarkably beautiful sight – and there was a strip of black sky above him, where earth was cradled, right at the zenith.

Then he clattered against the wall, thumping his head.

Selbourne struggled to his feet and staggered to a port. “Forbes is trapped.” He began to fit broad tennis-racquet-like snowshoes to his feet.

Marsh was lying in a cabin turned topsy-turvy. One of the three big couches had come loose of the rail, and equipment had tumbled to the lowest point of the wall. He probed at his hard ceramic helmet. It had taken a mighty rap, but he could hear no hiss of air, detect no popping in his ears. “My suit isn’t designed for the surface.”

“Well, you’ll just have to improvise. Come on, we’ll use the hatch. We don’t want to risk snagging the space-suits on jagged edges...”

So Gregory Marsh found himself, against all his expectations, standing on the surface of the moon.

V

The sky was black, the ground grey-brown. Everything was covered in a layer of dust that compressed under his feet. The dust was dappled with tiny pits, as if a heavy rainstorm had passed this way. The sun was a harsh searchlight low to his left, casting long, razor-sharp shadows; this was lunar morning, for the mission had been designed to allow them to see out the best part of a two-week day before fleeing from the chill moon night.

The *Scott* lay crumpled on its side.

Selbourne was crouched by the fallen figure of Forbes. Marsh loped that way, drifting in the treacherous gravity. Within his helmet, Forbes’ face looked blue. Selbourne had plugged a supplementary feed line into Forbes’ suit, and was checking the suit for leaks.

Without a cable of the kind Forbes had carried, they couldn’t communicate. Marsh went back to the wreck. It turned out to be easy to push aside huge sections of the crumpled life-container. Marsh was clumsy in his suit, but he was strong as a giant on this little world. The life-container’s lower compartment held equipment for the exploration of the lunar surface: seismographs, magnetometers, spring balances for measuring the moon’s gravity, geology hammers and sample cases, even a couple of cine cameras. None of it a blind bit of use now, of course. He did find his slide rule. But the lubricant had evaporated, and the slider was jammed.

Marsh dragged intercom lines from the radio panel out of their holder, and plugged in himself and Selbourne. They sat side by side over Forbes.

Selbourne said, “What about the radio?”

Marsh shrugged. “Antenna’s smashed, and half the valves too as far as I can tell.”

“Can you repair it?”

Marsh didn’t reply.

“At least Forbes managed to make his speech.” Selbourne laughed hollowly and closed his eyes. “The thing of it is, these suits aren’t designed for an extended stay. We have air, of course, and we can supplement that with the feed from the ship’s tank...”

“The hydrogen peroxide is leaking.”

“Ah. Well, I don’t suppose it matters.”

Suddenly weary – in mild shock, perhaps – Marsh lay back in the dust, which was oddly soft over a firmer layer beneath. The sky was utterly black, save for the earth, which was the most colourful thing he could see.

Nobody had planned for this. The mission engineers had imagined situations in which the *Scott* might crash on landing, killing them all outright – or in which the engines might have failed on the surface, in which case the crew would have had shelter, and perhaps hope of resupply or even an unlikely rescue. Nobody had imagined the bloody kite might just fall over.

Somehow it was impossible to accept that he was here, in this predicament. He was only thirty years old. Life had always been an unbroken thread, stretching off to a future that ought to contain, after this lunar jaunt, a modicum of fame and fortune – enough to found his own company, perhaps – and a few nice little extras, like a wife,

kids, a home somewhere... It was simply impossible to believe that all of that was gone, and because of such a little thing, as Forbes had said.

"I'm sorry," he said.

"Sorry? What in buggery are *you* sorry for?"

"Because all our pneumatics leaked away through a single bloody flaw. Because I'm an engineer, and it happened on my watch."

Selbourne laughed, a cold sound. "Not your fault. Probably some cack-handed Slav who thought he was still working on his tractor back in Mother Russia."

"No," said Marsh, but he was too weary to rise to the bait. "We did our best. We and the Russians. But it wasn't enough. Too much knitting. We should have made the whole thing more robust. We should have scouted out the landing area properly."

"It was just an accident."

"It was bad engineering." Trying to meet the King's deadline, we came here in a rush, he thought. We weren't ready. Perhaps in another twenty, thirty years... But, he thought fiercely, we had to try. We couldn't just let the Nazis win. And we got this far. We were, after all, first.

He sighed. "How's our captain?"

Selbourne peered into Forbes' faceplate. "I think he's sleeping now. I fixed the rips in his suit. But he might have gases in the bloodstream." Marsh heard real fear in Selbourne's voice. "You know, if those patches don't hold – I've seen people die of depressurisation. It's an ugly, angry death."

Marsh didn't ask him where he had seen such things.

Forbes stirred in his sleep. Marsh could see his lips moving, but could hear no words.

VI

He had no idea how long they sat there, he and Selbourne in the crumpled remains of their craft, huddled together over Forbes' inert form. The earth stayed suspended directly above him, where it had rested for millions of years, and the sun's slow climb towards searing lunar noon was too slow for his poor human senses to detect.

In spite of everything, he must have slept, if briefly, and so must Selbourne.

For Forbes had gone.

They made a brief search of the ship and its environs. Marsh found a single trail of footsteps leading off over the close lunar horizon.

Selbourne tapped his shoulder. He had turned up a note from Forbes, scribbled with a pencil on the back of one of Marsh's maps:

AT LEAST THIS TIME

WE BEAT

THE NORWEGIANS

"Incredible," Selbourne said. "He's done a Captain Scott – or rather, an Oates."

"Then he's a fool," Marsh murmured. "His going gives us nothing."

"Ah, but it gives *him* something – something of which he's always dreamed. You never did understand the skipper, did you, Marsh?"

"What, a mere northern chemist like me?" Marsh crumpled the note in disgust. "Come on," he said. He took Selbourne's arm. "We're on the bloody moon. Having paid such a price to get here, we ought to see a little more of it. Let's go for a walk."

Selbourne hesitated. Then, slowly, he nodded. "Why ever not? We've done our job. I'm with you, Marsh. Let's play hooky."

Deliberately they set their direction opposite to that taken by Forbes. Side by side, they walked over the dimpled plain. They were connected by their length of intercom cable, and they carried spare hoses in case one or other of their backpacks should fail. Walking was easy, dreamy. After some experimentation Marsh found that a gentle, rabbit-like hop with both feet was the most energy-efficient way of moving.

"You know," Selbourne said, panting, "we Brits just don't do this sort of thing well, do we? Interplanetary adventure, I mean. We were bound to be tripped up by one detail or another."

"Yes. Not like those Germans, eh?" Marsh said bitterly.

Selbourne said more wistfully, "I heard about their schemes in Berlin, you know. A new type of vessel: not a Guy Fawkes squib like the *Scott*, but a mighty space cruiser housing dozens of men. It would be built on a fat absorbing plate, behind which, in steady succession, the Germans would throw their atomic firecrackers: vast explosions, each one driving the ship remorselessly forward. I'm sure you'd understand it all better than I do, Gregory..."

Marsh had heard of some of this, and now he tried to imagine it. It would be a ship of the inescapable future, he thought, just as the *Scott* was a relic of the past. And Marsh did not need to guess where such mighty vessels would be headed. The Germans had never been

interested in the moon, save as a way station en route to better places. *Mars*: that was the place to go, the most earth-like planet in the solar system, a world to explore and conquer.

Selbourne said, "That Von Braun is a bit of a bugger, isn't he?"

Marsh laughed weakly. "Oh, yes. A bit of a bugger."

"With such a lead, no wonder they were so willing to help."

Marsh slowed to a halt. "Help?"

"Hitler himself is very fond of the English, you know. He says there is a bond between our peoples..."

"How did they help?"

Selbourne snorted, his face barely visible behind his steaming-up faceplate. "Come, Gregory." He pinched the fabric of his space-suit. "Where do you think this stuff came from? Our best designs as late as '47 would have had *rubber* in the outer layers. It was Reich scientists who found out that rubber goes brittle in a vacuum. And a hundred other things... Our whole design was already obsolete before it was even built. We realised back in '46, '47 that we were never going to achieve the King's end-of-decade outline. And so when the Germans offered, discreetly, to assist, we had to agree. Otherwise we might have become laughing stocks."

"And that's how you learned about decompression."

"The Luftwaffe's bank of medical results is remarkable. They gave us comprehensive access—"

"All based on the agonised deaths of inmates of their continent-sized prison."

Selbourne actually laughed. "Oh, Gregory, try to see past that tremendous chip on your shoulder."

"I don't know how a doctor could—"

"Ah, but I never was a doctor, you know. Not really. A dilettante — isn't that how you think of me?" He tilted back in his stiff suit, as if seeking to make out the earth. "I loved my time in Berlin, you know, Marsh. Ah, God, the glamour... A tyke like you, who surrounds himself with moon-faced Slavic peasants, could never understand how it was. But I fit in there."

Marsh grunted sourly. "From the salons of Berlin to an airless desert, stranded with a low-class 'tyke' like me."

"Quite so. Are you a connoisseur of irony, Marsh?" But there was no vigour in the jab, and when Marsh didn't reply Selbourne fell silent, receding into himself once more.

The ground dipped, and then rose. Slowly Marsh perceived that they had walked across a gigantic, eroded crater. After that the ground rose steadily, and the dust thickened, clinging to their legs and feet, and the going got harder.

They came at last to a place where the land plateaued, and they found themselves on the lip of a vast dry valley. It snaked across the plain, emanating from slumped mountains visible beyond the horizon.

Selbourne kicked the dust, which fanned up at his feet then fell back. "I say, Marsh, I feel a little over-heated. Could we take a breather?"

There was a large boulder close to the lip of the valley. Marsh found a way for them to sit so their legs were in the sunlight, their bodies in the shade. Later, he thought, we can move and even up the heat load. Selbourne wedged himself between the rock face and Marsh's shoulder, and seemed to fall asleep.

Marsh sat in the immense still light. Soon, he thought, I am going to join that stillness. But, sitting here with his legs in the sun, that didn't seem so bad.

And then something moved overhead — *moved*, in this place where nothing ever moved. Marsh quailed instinctively. But he forced himself to raise his head.

It was a spark that climbed away from earth, bright and purposeful. But it was not steady: it flared, three or four times a minute.

The Germans, of course. A rescue mission.

And what will you do, Gregory Marsh? Will you refuse a ride home on a vessel built on tainted science? Not bloody likely. But Forbes probably would — and for all the wrong reasons.

Selbourne cried out in his sleep. Marsh wondered what dark European nightmares troubled him. Clumsily, Marsh put a suited arm around his companion's shoulders, and held him until he was still, as the pulsing light slid silently down the black sky. ●