# **Heredity**

Isaac Asimov

Dr. Stefansson fondled the thick sheaf of typewritten papers that lay before him, “It’s all here, Harvey-twenty-five years of work.”

Mild-mannered Professor Harvey puffed idly at his pipe, “Well, your part is over-and Markey’s, too, on Ganymede. It’s up to the twins, themselves, now.”

A short ruminative silence, and then Dr. Stefansson stirred uneasily, “Are you going to break the news to Allen soon?”

The other nodded quietly, “It will have to be done before we get to Mars, and the sooner the better.” He paused, then added in a tightened voice, “I wonder how it feels to find out after twenty-five years that one has a twin brother whom one has never seen. It must be a damned shock.”

“How did George take it?”

“Didn’t believe it at first, and I don’t blame him. Markey had to work like a horse to convince him it wasn’t a hoax. I suppose I’ll have as hard a job with Allen.” He knocked the dottle from his pipe and shook his head.

“I have half a mind to go to Mars just to see those two get together,” remarked Dr. Stefansson wistfully. “You’ll do no such thing, Stef. This experiment’s taken too long and means too much to have you rum it by any such fool move.”

“I know, I know! Heredity versus environment! Perhaps at last the definite answer.” He spoke half to himself, as if repeating an old, familiar formula, “Two identical twins, separated at birth; one brought up on old, civilized Earth, the other on pioneer Ganymede. Then, on their twenty-fifth birthday brought together for the first time on Mars-God! I wish Carter had lived to see the end of it They’re his children.”

“Too bad!-But we’re alive, and the twins. To carry the experiment to its end will be our tribute to him.”

There is no way of telling, at first seeing the Martian branch of Medicinal Products, Inc., that it is surrounded by anything but desert. You can’t see the vast underground caverns where the native fungi of Mars are artificially nurtured into huge blooming fields. The intricate transportation system that connects all parts of the square miles of fields to the central building is invisible. The irrigation system; the air-purifiers; the drainage pipes, are all hidden.

And what one sees is the broad squat red-brick building and Martian desert, rusty and dry, all about

That had been all George Carter had seen upon arriving via rocket-taxi, but him, at least, appearances had not deceived. It would have been strange had it done so, for his life on Ganymede had been oriented in its every phase towards eventual general managership of that very concern. He knew every square inch of the caverns below as well as if he had been born and raised in them himself.

And now he sat in Professor Lemuel Harvey’s small office and allowed just the slightest trace of uneasiness to cross his impassive countenance. His ice-blue eyes sought those of Professor Harvey.

“This-this twin brother o’ mine. He’ll be here soon?”

Professor Harvey nodded, “He’s on his way over right now.”

George Carter uncrossed his knees. His expression was almost wistful, “He looks a lot like me, d’ya rackon?”

“Quite a lot. You’re identical twins, you know.”

“Hmm! Rackon so! Wish I’d known him all the time-on Ganny!” He frowned. “He’s lived on Airth all’s life, huh?”

An expression of interest crossed Professor Harvey’s face. He said briskly, “You dislike Earthmen?”

“No, not exactly,” came the immediate answer. “It’s just the Airthmen are tanderfeet All of ‘m I know are.”

Harvey stifled a grin, and conversation languished.

The door-signal snapped Harvey out of his reverie and George Carter out of his chair at the same instant. The professor pressed the desk-button and the door opened.

The figure on the threshold crossed into the room and then stopped. The twin brothers faced each other.

It was a tense, breathless moment, and Professor Harvey sank into his soft chair, put his finger-tips together and watched keenly.

The two stood stiffly erect, ten feet apart, neither making a move to lessen the distance. They made a curious contrast-a contrast all the more marked because of the vast similarity between the two.

Eyes of frozen blue gazed deep into eyes of frozen blue. Each saw a long, straight nose over full, red lips pressed firmly together. The high cheekbones were as prominent in one as in the other, the jutting, angular chin as square. There was even the same, odd half-cock of one eyebrow in twin expressions of absorbed, part-quizzical interest.

But with the face, all resemblance ended. Allen Carter’s clothes bore the New York stamp on every square inch. From his loose blouse, past his dark purple knee breeches, salmon-colored cellulite stockings, down to the glistening sandals on his feet, he stood a living embodiment of latest Terrestrial fashion.

For a fleeting moment, George Carter was conscious of a feeling of ungainliness as he stood there in his tight-sleeved, close-necked shirt of Ganymedan linen. His unbuttoned vest and his voluminous trousers with their ends tucked into high-laced, heavy-soled boots were clumsy and provincial. Even he felt it-for just a moment

From his sleeve-pocket Allen removed a cigarette case-it was the first move either of the brothers had made-opened it, withdrew a slender cylinder of paper-covered tobacco that spontaneously glowed into life at the first puff.

George hesitated a fraction of a second and his subsequent action was almost one of defiance. His hand plunged into his inner vest pocket and drew therefrom the green, shriveled form of a cigar made of Ganymedan greenleaf. A match flared into .flame upon his thumbnail and for a long moment, he matched, puff for puff, the cigarette of his brother.

And then Allen laughed-a queer, high-pitched laugh, “Your eyes are a little closer together, I think.”

“Rackon ‘tis, maybe. Y’r hair’s fixed sort o’ different.” There was faint disapproval in his voice. Allen’s hand went self-consciously to his long, light-brown hair, carefully curled at the ends, while his eyes flickered over the carelessly-bound queue into which the other’s equally long hair was drawn.

“I suppose we’ll have to get used to each other. -I’m willing to try.” The Earth twin was advancing now, hand outstretched.

George smiled, “Y’ bet. ‘At goes here, too.”

The hands met and gripped.

“Y’r name’s All’n, huh?” said George.

“And yours is George, isn’t it?” answered Allen.

And then for a long while they said nothing more. They just looked-and smiled as they strove to bridge the twenty-five year gap that separated them.

George Carter’s impersonal gaze swept over the carpet of low-growing purple blooms that stretched in plot-path bordered squares into the misty distance of the caverns. The newspapers and feature writers might rhapsodize over the “Fungus Gold” of Mars-about the purified extracts, in yields of ounces to acres of blooms, that had become indispensable to the medical profession of the System. Opiates, purified vitamins, a new vegetable specific against pneumonia-the blooms were worth their weight in gold, almost.

But they were merely blooms to George Carter-blooms to be forced to full growth, harvested, baled, and shipped to the Aresopolis labs hundreds of miles away.

He cut his little ground car to half-speed and leant furiously out the window, “Hi y’ mudcat there. Y’ with the dairty face. Watch what y’r doing-keep the domned water in the channel.”

He drew back and the ground car leapt ahead once more. The Ganymedan muttered viciously to himself, “These domned men about here are wairse than useless. So many machines t’ do their wairk for ‘m they give their brains a pairmenent vacation, I rackon.”

The ground car came to a halt and he clambered out. Picking his way between the fungus plots, he approached the clustered group of men about the spider-armed machine in the plotway ahead.

“Well, here I am. What is ‘t, All’n?”

Allen’s head bobbed up from behind the other side of the machine. He waved at the men about him, “Stop it for a second!” and leaped toward his twin.

“George, it works. It’s slow and clumsy, but it works. We can improve it now that we’ve got the fundamentals down. And in no time at all, we’ll be able to—”

“Now wait a while, All’n. On Ganny, we go slow. Y’ live long, that way. What y’ got there?”

Allen paused and swabbed at his forehead. His face shone with grease, sweat, and excitement. “I’ve been working on this thing ever since I finished college. It’s a modification of something we have on Earth-but it’s no end improved. It’s a mechanical bloom picker.”

He had fished a much-folded square of heavy paper from his pocket and talked steadily as he spread it on the plotway before them, “Up to now, bloom-picking has been the bottleneck of production, to say nothing of the 15 to 20% loss due to picking under- and over-ripe blooms. After all, human eyes are only human eyes, and the blooms-Here, look!”

The paper was spread flat and Allen squatted before it George leaned over his shoulder, with frowning watchfulness.

“You see. It’s a combination of fluoroscope and photoelectric cell. The ripeness of the bloom can be told by the state of the spores within. This machine is adjusted so that the proper circuit is tripped upon the impingement of just that combination of light and dark formed by ripe spores within the bloom. On the other hand, this second circuit-but look, it’s easier to show you.”

He was up again, brimming with enthusiasm. With a jump, he was in the low seat behind the picker and had pulled the lever.

Ponderously, the picker turned towards the blooms and its “eye” travelled sideways six inches above the ground. As it passed each fungus bloom, a long spidery arm shot out, lopping it cleanly half an inch from the ground and depositing it neatly in the downward sloping slide beneath. A pile of blooms formed behind the machine.

“We can hook on a binder, too, later on. Do you notice those blooms it doesn’t touch? Those are unripe. Just wait till it comes to an over-ripe one and see what it does.”

He yelled in triumph a moment later when a bloom was torn out and dropped on the spot.

He stopped the machine, “You see? In a month, perhaps, we can actually start putting it to work in the fields.”

George Carter gazed sourly upon his twin, “Take more ‘n a month, I rackon. It’ll take foraver, more likely.”

“What do you mean, forever. It just has to be sped up—”

“I don’t care if ‘t just has t’ be painted pairple. ‘Tisn’t going t’ appear on my fields.”

“Your fields?”

“Yup, mine,” was the cool response. “I’ve got veto pow’r here same as you have. Y’ can’t do anything ‘thout my say-so-and y’ won’t get it f’r this. In fact, I want y’ t’ clear that thing out o’ here, altogether. Got no use f’r ‘t.”

Allen dismounted and faced his brother, “You agreed to let me have this plot to experiment on, veto-free, and I’m holding you to that agreement.”

“All right, then. But keep y’r domned machine out o’ the rest o’ the fields.”

The Earthman approached the other slowly. There was a dangerous look in his eyes. “Look, George, I don’t like your attitude-and I don’t like the way you’re using your veto power. I don’t know what you’re used to running on Ganymede, but you’re in the big time now, and there are a lot of provincial notions you’ll have to get out of your head.”

“Not unless I want to. And if y’ want t’ have ‘t out with me, we’d better go t’ y’r office. Spatting before the men ‘d be bad for discipline.”

The trip back to Central was made in ominous silence. George whistled softly to himself while Allen folded his arms and stared with ostentatious indifference at the narrow, twisting plotway ahead. The silence persisted as they entered the Earthman’s office. Allen gestured shortly towards a chair and the Ganymedan took it without a word. He brought out his ever-present green-leaf cigar and waited for the other to speak.

Allen hunched forward upon the edge of his seat and leaned both elbows on his desk. He began with a rush.

“There’s lots to this situation, George, that’s a mystery to me. I don’t know why they brought up you on Ganymede and me on Earth, and I don’t know why they never let us know of each other, or made us co-managers now with veto-power over one another-but I do know that the situation is rapidly growing intolerable.

“This corporation needs modernization, and you know that. Yet you’ve been wielding that veto-power over every trifling advance I’ve tried to initiate. I don’t know just what your viewpoint is, but I’ve a suspicion that you think you’re still living on Ganymede. If you’re still in the sticks,-I’m warning you-get out of them fast. I’m from Earth, and this corporation is going to be run with Earth efficiency and Earth organization. Do you understand?”

George puffed odorous tobacco at the ceiling before answering, but when he did, his eyes came down sharply, and there was a cutting edge to his voice.

“Airth, is it? Airth efficiency, no less? Well, All’n, I like ye. I can’t help it Y’r so much like me, that disliking y’ would be like disliking myself, I rackon. I hate t’ say this, but y’r upbringing’s all wrong.”

His voice became sternly accusatory, “Y’r an Airthman. Well, look at y’. Airthman’s but half a man at best, and naturally y’ lean on machines. But d’ y’ suppose I want the corporation to be run by machines-just machines? What’re the men t’ do?”

“The men run the machines,” came the clipped, angry response.

The Ganymedan rose, and a fist slammed down on the desk, “The machines run the men, and y” know it. Fairst, y’ use them; then y’ depend on them; and finally y’r slaves t’ them. Over on y’r pracious Airth, it was machines, machines, machines-and as a result, what are y’? I’ll tell y’. Half a man!”

He drew himself up, “I still like y’. I like y’ weU enough f wish y”d lived on Gannie with me. By Jupe ‘n’ domn, ‘twould have made a man o’ y’.”

“Finished?” said Allen.

“Rackon so!”

“Then I’ll tell you something. There’s nothing wrong with you that a life time on a decent planet wouldn’t have fixed. As it is, however, you belong on Ganymede. I’d advise you to go back there.”

George spoke very softly, “Y’r not thinking o’ taking a punch at me, are y’?”

“No. I couldn’t fight a mirror image of myself, but if your face were only a little different, I would enjoy splashing it about the premises a bit.”

“Think y’ could do it-an Airthman like you? Here, sit down. We’re both getting a bit too excited, I rackon. Nothing’!! be settled this way.”

He sat down once more, puffed vainly at his dead cigar, and tossed it into the incinerator chute in disgust.

“Where’s y’r water?” he grunted.

Allen grinned with sudden delight, “Would you object to having a machine supply it?”

“Machine? What d’ y’ mean?” The Ganymedan gazed about him suspiciously.

“Watch! I had this installed a week ago.” He touched a button on his desk and a low click sounded below. There was the sound of pouring water for a second or so and then a circular metal disk beside the Earthman’s right hand slid aside and a cup of water lifted up from below.

“Take it,” said Allen.

George lifted it gingerly and drank it down. He tossed the empty cup down the incinerator shaft, then stared long and thoughtfully at his brother, “May I see this water feeder o\* y’rs?”

“Surely. It’s just under the desk. Here, I’ll make room for you.”

The Ganymedan crawled underneath while Allen watched uncertainly. A brawny hand was thrust out suddenly and a muffled voice said, “Hand me a screwdriver.”

“Here! What are you going to do?”

“Nothing. Nothing ‘t all. Just want t’ investigate this contraption.”

The screw-driver was handed down and for a few minutes there was no other sound than an occasional soft scraping of metal on metal. Finally, George withdrew a flushed face and adjusted his wrinkled collar with satisfaction.

“Which button do I press for the water?”

Allen gestured and the button was pressed. The gurgling of water sounded. The Earthman stared in mystification from his desk to his brother and back again. And then he became aware of a moistness about his feet.

He jumped, looked downwards, and squawked in dismay, “Why, damn you, what have you done?” A snaky stream of water wriggled blindly out from under the desk and the pouring sound of water still continued.

George made leisurely for the door, “Just short-caircuited it. Here’s y’r screw-driver; fix ‘t up again.” And just before he slammed the door, “So much f’r y’r pracious machines. They go wrong at the wrong times.”

The sounder was buzzily insistent and Allen Carter opened one eye peevishly. It was still dark.

With a sigh, he lifted one arm to the head of his bed and put the Audiomitter into commission.

The treble voice of Amos Wells of the night shift squawked excitedly at him. Allen’s eyes snapped open and he sat up.

“You’re crazy!” But he was plunging into his breeches even as he spoke. In ten seconds, he was careening up the steps three at a time. He shot into the main office just behind the charging figure of his twin brother.

The place was crowded;-its occupants in a jitter.

Allen brushed his long hair out of his eyes, “Turn on the turret searchlight!”

“It’s on,” said someone helplessly.

The Earthman rushed to the window and looked out. The yellow beam reached dimly out a few feet and ended in a muddy murkiness. He pulled at the window and it lifted upwards grittily a few inches. There was a whistle of wind and a tornado of coughing from within the room. Allen slammed it down again and his hands went at once to his tear-filled eyes.

George spoke between sneezes, “We’re not located in the sandstorm zone. This can’t be one.”

“It is,” asserted Wells in a squeak. “It’s the worst I’ve ever seen. Started full blast from scratch just like that. It caught me flat-footed. By the time I closed off all exits to above, it was too late.”

“Too late!” Allen withdrew his attention from his sand-filled eyes and snapped out the words, “Too late for what?”

“Too late for our rolling stock. Our rockets got it worst of all. There isn’t one that hasn’t its propulsives clogged with sand. And that goes for our irrigation pumps and the ventilating system. The generators below are safe but everything else will have to be taken apart and put together again. We’re stalled for a week at least. Maybe more.”

There was a short, pregnant silence, and then Allen said, “Take charge. Wells. Put the men on double shift and tackle the irrigation pumps first. They’ve got to be in working order inside of twenty-four hours, or half the crop will dry up and die on us. Here-wait, I’ll go with you.”

He turned to leave, but his first footstep froze in midair at the sight of Michael Anders, communications officer, rushing up the stairs.

“What’s the matter?”

Anders spoke between gasps, “The damned planet’s gone crazy. There’s been the biggest quake in history with its center not ten miles from Aresopolis.”

There was a chorus of “What?” and a ragged follow-up of blistering imprecations. Men crowded in anxiously;-many had relatives and wives in the Martian metropolis.

Anders went on breathlessly, “It came all of a sudden. Aresopolis is in ruins and fires have started. There aren’t any details but the transmitter at our Aresopolis labs went dead five minutes ago.”

There was a babel of comment The news spread out into the furthest recesses of Central, and excitement waxed to dangerously panicky proportions. Allen raised his voice to a shout.

“Quiet, everyone. There’s nothing we can do about Aresopolis. We’ve got our own troubles. This freak storm is connected with the quake some way-and that’s what we have to take care of. Everyone back to his work now-and work fast. They’ll be needing us at Aresopolis damned soon.” He turned to Anders, “You! Get back to that receiver and don’t knock off until you’ve gotten in touch with Aresopolis again. Coming with me, George?”

“No, rackon not,” was the response. “Y’ tend t’ y’r machines. I’ll go down with Anders.”

Dawn was breaking, a dusky, lightless dawn, when Allen Carter returned to Central. He was weary-weary in mind and body-and looked it. He entered the radio room.

“Things are a mess. If—”

There was a “Shhh” and George waved frantically. Allen fell silent. Anders bent over the receiver, turning tiny dials with nervous fingers.

Anders looked up, “It’s no use, Mr. Carter. Can’t get them.”

“All right. Stay here and keep y’r ears open. Let me know if anything turns up.”

He walked out, hooking an arm underneath his brother’s and dragging the latter out.

“When c’n we get out the next shipment, All’n?”

“Not for at least a week. We haven’t a thing that’ll either roll or fly for days, and it will be even longer before we can start harvesting again.”

“Have we any supplies on hand now?”

“A few tons of assorted blooms-mainly the red-purples. The Earth shipment last Tuesday took off almost everything.”

George fell into a reverie.

His brother waited a moment and said sharply, “Well, what’s on your’ mind? What’s the news from Aresopolis?”

“Domned bad! The quake’s leveled three-fourths o’ Aresopolis and the rest’s pretty much gutted with fire, I rackon. There ‘re fifty thousand that’ll have t’ camp out nights.-That’s no fun in Martian autumn weather with the Airth gravity system broken down.”

Allen whistled, “Pneumonia!”

“And common colds and influenza and any o’ half doz’n diseases t’ say nothing o’ people bairnt. -Old Vincent is raising cain.”

“Wants blooms?”

“He’s only got a two-day supply on hand. He’s got t’ have more.”

Both, were speaking quietly, almost with indifference, with the vast understatement that is all that makes great crises bearable.

There was a pause and then George spoke again, “What’s the best we c’n do?”

“Not under a week-not if we kill ourselves to do it. If they could send over a ship as soon as the storm dies down, we might be able to send what we have as a temporary supply until we can get over with the rest.”

“Silly even t’ think o’ that. The Aresopolis port is just ruins. They haven’t a ship t’ their names.”

Again silence. Then Allen spoke in a low, tense voice. “What are you waiting for? What’s that look on your face for?”

“I’m waiting fr y’ t’ admit y’r domned machines have failed y’ in the fairest emairgency we’ve had t’ meet.”

“Admitted,” snarled the Earthman.

“Good! And now its up t’ me t’ show y’ what human ingenuity can do.” He handed a sheet of paper to his brother, “There’s a copy of the message I sent Vincent.”

Allen looked long at his brother and slowly read the pencilled scribbling.

“Will deliver all we have on hand in thirty-six hours. Hope it will keep you going the few days until we can get a real shipment out. Things are a little rough out here.”

“How are you going to do it?” demanded Allen, upon finishing.

“I’m trying to show y’,” answered George, and Allen realized for the first time that they had left Central and were out in the caverns.

George led the way for five minutes and stopped before an object bulking blackly in the dimness. He turned on the section lights and said, “Sand truck!”

The sand truck was not an imposing object. With the low driving car in front and the three squat, open-topped freightcars behind, it presented a picture of obsolete decrepitude. Fifteen years ago, it had been relegated to the dust-heap by the sand-sleds and rocket-freights.

The Ganymedan was speaking, “Checked it an hour ago, m’self, and ‘tis still in wairking order. It has shielded bearings, air conditioning unit f’r the driving car, and an intairnal combustion engine.”

The other looked up sharply. There was an expression of distaste on his face. “You mean it burns chemical fuel.”

“Yup! Gas’line. That’s why I like it. Reminds me o’ Ganymede. On Gannie, I had a gas engine that—”

“But wait a while. We haven’t any of that gasoline.”

“No, rackon not. But we got lots o’ liquid hydrocarbons round the place. How about Solvent D? That’s mostly octane. We’ve got tanks o’ it.”

Allen said, “That’s so;-but the truck holds only two.”

“I know it. I’m one.”

“And I’m the other.”

George grunted, “I rackond y’d say that-but this isn’t going t’ be a push-button machine job. Rackon y’r up t’ it,- Airthman?”

“I reckon I am-Gannie.”

The sun had been up some two hours before the sandtruck’s engine whirred into life, but outside, the murk had become, if anything, thicker.

The main driveway within the caverns was ahum with activity. Grotesque figures with eyes peering through the thick glass of improvised air-helmets stepped back as the truck’s broad, sand-adapted wheels began their slow turn. The three cars behind had been piled high with purple blooms, canvas covers had been thrown over them and bound down tightly,- and now the signal was given to open the doors.

The lever was jerked downwards and the double doors separated with sand-clogged protests. Through a gray whirl of inblown sand, the truck made its way outwards, and behind it sand-coated figures brushed at their air-helmets and closed the doors again.

George Carter, inured by long Ganymedan custom, met the sudden gravity change as they left the protective Gravitor fields of the caverns, with a single long-drawn breath. His hands held steady upon the wheels. His Terrestrial brother, however, was in far different condition. The hard nauseating knot into which his stomach tied itself loosened only very gradually, and it was a long time before his irregular stertorous breathing approached anything like normality again.

And throughout, the Earthman was conscious of the other’s side-long glance and of just a trace of a smile about the other’s lips.

It was enough to keep the slightest moan from issuing forth, though his abdominal muscles cramped and icy perspiration bathed his face.

The miles clicked off slowly, but the illusion of motionlessness was almost as complete as that in space. The surroundings were gray-uniform, monotonous and unvarying. The noise of the engine was a harsh purr and the clicking of the air-purifier behind like a drowsy tick. Occasionally, there was an especially strong gust of wind, and a patter of sand dashed against the window with a million tiny, separate pings.

George kept his eye strictly upon the compass before him. The silence was almost oppressive.

And then the Ganymedan swivelled his head, and growled, “What’s wrong with the domned vent’lator?”

Allen squeezed upward, head against the low top, and then turned back, pale-faced, “It’s stopped.”

“It’ll be hours ‘fore the storm’s over. Ye’ve got t’ have air till then. Craw] in back there and start it again.” His voice was flat and final.

“Here,” he said, as the other crawled over his shoulder into the back of the car. “Here’s the tool-kit. Y’v got ‘bout twenty minutes ‘fore the air gets too foul t’ breathe. ‘Tis pretty bad now.”

The clouds of sand hemmed in closer and the dim yellow light above George’s head dispelled only partially the darkness within.

There was the sound of scrambling from behind him and then Allen’s voice, “Damn this rope. What’s it doing here?” There was a hammering and then a disgusted curse.

“This thing is choked with rust.”

“Anything else wrong?” called out the Ganymedan.

“Don’t know. Wait till I clear it out.” More hammering and an almost continuous harsh, scraping sound followed.

Allen backed into his seat once more. His face dripped rusty perspiration and a swab with the back of an equally damp, rust-covered hand did it no good.

“The pump is leaking like a punctured kettle, now that the rust’s been knocked loose. I’ve got it going at top speed, but the only thing between it and a total breakdown is a prayer.”

“Start praying,” said George, bruskly. “Pray for a button to push.”

The Earthman frowned, and stared ahead in sullen silence.

At four in the afternoon, the Ganymedan drawled, “Air’s beginning t’ thin out, looks like.”

Allen snapped to alertness. The air was foul and humid within. The ventilator behind swished sibilantly between each click and the clicks were spacing themselves further apart. It wouldn’t hold out much longer now.

“How much ground have we covered?”

“‘Bout a thaird o’ the distance,” was the reply. “How ‘r y\* holding out?”

“Well enough,” Allen snapped back. He retired once more into his shelL

Night came and the first brilliant stars of a Martian night peeped out when with a last futile and long-sustained swi-i-i-s-s-sh, the ventilator died.

“Domn!” said George. “I can’t breathe this soup any longer, anyway. Open the windows.”

The keenly cold Martian wind swept in and with it the last traces of sand. George coughed as he pulled his woolen cap over his ears and turned on the heaters.

“Y’ can still taste the grit.”

Allen looked wistfully up into the skies, “There’s Earth- with the moon hanging right onto her tail.”

“Airth?” repeated George with fine contempt. His finger pointed horizonwards, “There’s good old Jupe for y’.”

And throwing back his head, he sang in a full throated baritone:

“When the golden orb o’ Jove

Shines down from the skies above,

Then my spirit longs to go

To that happy land I know, Back t’ good, old Ganyme-e-e-e-ede.”

The last note quavered and broke, and quavered and broke again and still again in an ever increasing rapidity of tempo until its vibrating ululation pierced the air about ear-shatteringly.

Allen stared at his brother wide-eyed, “How did you do that?”

George grinned, “That’s the Gannie quaver. Didn’t y’ ever hear it before?”

The Earthman shook his head, “I’ve head of it, but that’s all.”

The other became a bit more cordial, “Well, o’ course y’ can only do it in a thin atmosphere. Y’ should hear me on Gannie. I c’d shake y’ right off y’r chair when I’m going good. Here! Wait till I gulp down some coffee, and then I’ll sing y’ vairse twenty-four o’ the ‘Ballad o’ Ganymede.’ “

He took a deep breath:

“There’s a fair-haired maid I love

Standing in the light o’ Jove

And she’s waiting there for me-e-e-e-e.

Then—”

Allen grasped him by the arm and shook him. The Ganymedan choked into silence.

“What’s the matter?” he asked sharply.

“There was a thumping sound on the roof just a second ago. There’s something up there.”

George stared upwards, “Grab the wheel. I’ll go up.”

Allen shook his head, “I’m going myself. I wouldn’t trust myself running this primitive contraption.”

He was out on the running board the next instant.

“Keep her going,” he shouted, and threw one foot up onto the roof.

He froze in that position when he became aware of two yellow slits of eyes staring hard into his. It took not more than a second for him to realize that he was face to face with a keazel, a situation which for discomfort is about on a par with the discovery of a rattlesnake in one’s bed back on Earth.

There was little time for mental comparisons of his position with Earth predicaments, however, for the keazel lunged forward, its poisonous fangs agleam in the starlight.

Allen ducked desperately and lost his grip. He hit the sand with a slow-motion thud and the cold, scaly body of the Martian reptile was upon him.

The Earthman’s reaction was almost instinctive. His hand shot out and clamped down hard upon the creature’s narrow muzzle.

In that position, beast and man stiffened into breathless statuary. The man was trembling and within him his heart pounded away with hard rapidity. He scarcely dared move. In the unaccustomed Martian gravity, he found he could not judge movements of his limbs. Muscles knotted almost of their own accord and legs swung when they ought not to.

He tried to lie still-and think.

The keazel squirmed, and from its lips, clamped shut by Earth muscles, issued a tremulous whine. Allen’s hand grew slick with perspiration and he could feel the beast’s muzzle turn a bit within his palm. He clamped harder, panic-stricken. Physically, the keazel was no match for an Earthman, even a tired, frightened, gravity-unaccustomed Earthman-but one bite, anywhere, was all that was needed.

The keazel jerked suddenly; its back humped and its legs threshed. Allen held on with both hands and could not let go. He had neither gun nor knife. There was no rock on the level desert sands to crack its skull against. The sand-truck had long since disappeared into the Martian night, and he was alone-alone with a keazel.

In desperation, he twisted. The keazel’s head bent. He could hear its breath whistling forth harshly-and again there was that low whine.

Allen writhed above it and clamped knees down upon its cold, scaly abdomen. He twisted the head, further and further. The keazel fought desperately, but Allen’s Earthly biceps maintained their hold. He could almost sense the beast’s agony in the last stages, when he called up all his strength,-something snapped.

And the beast lay still.

He rose to his feet, half-sobbing. The Martian night wind knifed into him and the perspiration froze on his body. He was alone in the desert.

Reaction set in. There was an intense buzzing in his ears. He found it difficult to stand. The wind was biting-but somehow he didn’t feel it any more.

The buzzing in his ears resolved itself into a voice-a voice calling weirdly through the Martian wind.

“All’n, where are y’? Domn y’, y’ tanderfoot, where are y’? All’n! A ll’n!”

New life swept into the Earthman. He tossed the keazel’s carcass onto his shoulders and staggered on towards the voice.

“Here I am, G-Gannie. Right here.”

He stumbled blindly into his brother’s arms.

George began harshly, “Y’ blasted Airthman, can’t y’ even keep y’r footing on a sandtruck moving at ten miles per? Y’ might’ve—”

His voice died away in a semi-gurgle.

Allen said tiredly, “There was a keazel on the roof. He knocked me off. Here, put it somewhere. There’s a hundred dollar bonus for every keazel skin brought in to Aresopolis.”

He had no clear recollection of anything for the next half hour. When things straightened out, he was in the truck again with the taste of warm coffee in his mouth. The engine was rumbling once more and the pleasant warmth of the heaters surrounded him.

George sat next to him silently, eyes fixed on the desert ahead. But once in a while, he cleared his throat and shot a lightning glance at his brother. There was a queer look in his eyes.

Allen said, “Listen, I’ve got to keep awake,-and you look half dead yourself-so how about teaching me that ‘Gannie quaver’ of yours. That’s bound to wake the dead.”

The Ganymedan stared even harder and then said gruffly, “Sure, watch m’ Adam’s apple while I do ‘t again.”

The sun was half-way to zenith when they reached the canal.

An hour before dawn there had come the crackling sound of hoarfrost beneath the heavy wheels and that signified the end of the desert area and the approach of the canal oasis. With the rising of the sun, the crackling disappeared and the softening mud underneath slowed the sand-adapted truck. The pathetic clumps of gray-green scrub that dotted the flat landscape were the first variant to eternal red sand since the two had started on their journey.

And then Allen had leaned forward and grasped his brother by the arm, “Look, there’s the canal itself right ahead.”

The “canal”-a small tributary of the mighty Jefferson Canal-contained a mere trickle of water at this season of the year. A dirty winding line of dampness, it was, and little more. Surrounding it on both sides were the boggy areas of black mud that were to fill up into a rushing ice-cold current an Earth-year hence.

The sand-truck nosed gingerly down the gentle slope, weaving a tortuous path among the sparsely-strewn boulders brought down by the spring’s torrents and left there as the sinking waters receded.

It slopped through the mud and splashed clumsily through the puddles. It jounced noisily over rocks, muddied itself past the hubs as it made its way through the murky mid-stream channel and then settled itself for the upward pull out.

And then, with a suddenness that tossed the two drivers out of their seats, it side-slipped, made one futile effort to proceed onwards, and thereafter refused to budge.

The brothers scrambled out and surveyed the situation. George swore lustily, voice more thickly accented than ever.

“B’ Jupe ‘n’ domn, we’re in a pickled situation f’r fair. Tis wallowing in the mud there like a blasted pig.”

Allen shoved his hair back wearily, “Well, don’t stand there looking at it. We’re still a hundred miles or better from Aresopolis. We’ve got to get it out of there.”

“Sure, but how?” His imprecations dropped to sibilant breathings as he reached into the truck for the coil of rope in the back. He looked at it doubtfully.

“Y’ get in here, All’n, and when I pull, press down with y’r foot on that pedal.”

He was tying the rope to the front axle even as he spoke. He played it out behind him as he slogged out through ankle-deep mud, and stretched it taut.

“All right, now, give!” he yelled. His face turned purple with effort as his back muscles ridged. Allen, within the car, pressed the indicated pedal to the floor, heard a loud roar from the engine and a spinning whir from the back wheels. The truck heaved once, and then sank back.

“‘Tis no use,” George called. “I can’t get a footing. If the ground were dry, I c’d do it.”

“If the ground were dry, we wouldn’t be stuck,” retorted Allen. “Here, give me that rope.”

“D’ y’ think y’ can do it, if I can’t?” came the enraged cry, but the other had already left the car.

Allen had spied the large, deep-bedded boulder from the truck, and it was with relief that he found it to be within reaching distance of the rope. He pulled it taut and tossed its free end about the boulder. Knotting it clumsily, he pulled, and it held.

His brother leaned out of the car window, as he made his way, back, with one lumped Ganymedan fist agitating the air.

“Hi, y’ nitwit. What’re y’ doing? D’ y’ expect that overgrown rock t’ pull us out?”

“Shut up,” yelled back Allen, “and feed her the gas when I pull.”

He paused midway between boulder and truck and seized the rope.

“Give!” he shouted in his turn, and with a sudden jerk pulled the rope towards him with both hands.

The truck moved; its wheels caught hold. For a moment it hesitated with the engine blasting ahead full speed, and George’s hands trembling upon the wheel. And then it went over. And almost simultaneously, the boulder at the other end of the taut rope lifted out of the mud with a liquid smacking sound and went over on its side.

Allen slipped the noose off it and ran for the truck.

“Keep her going,” he shouted, and hopped onto the running board, rope trailing.

“How did y’ do that?” asked George, eyes round with awe.

“I haven’t got the energy to explain it now. When we get to Aresopolis and after we’ve had a good sleep, I’ll draw the triangle of forces for you, and show you what happened. No muscles were involved. Don’t look at me as if I were Hercules.”

George withdrew his gaze with an effort, “Triangle o’ forces, is it? I never heard o’ it, but if that’s what it c’n do, education’s a great thing.”

“Comet-gas! Is any coffee left?” He stared at the last thermos-bottle, shook it near his ear dolefully, and said, “Oh, well, let’s practice the quaver. It’s almost as good and I’ve practically got it perfected.”

He yawned prodigiously, “Will we make it by nightfall?”

“Maybe!”

The canal was behind them now.

The reddening sun was lowering itself slowly behind the Southern Range. The Southern Range is one of the two “mountain chains” left on Mars. It is a region of hills; ancient, time-worn, eroded hills behind which lies Aresopolis.

It possesses the only scenery worth mentioning on all Mars and also the golden attribute of being able, through the updrafts along its sides, to suck an occasional ram out of the desiccated Martian atmosphere.

Ordinarily, perhaps, a pair from Earth and Ganymede might have idled through this picturesque area, but this was definitely not the case with the Carter twins.

Eyes, puffed for lack of sleep, glistened once more at the sight of hills on the horizons. Bodies, almost broken for sheer weariness, tensed once more when they rose against the sky.

And the truck leaped ahead,-for just behind the hills lay Aresopolis. The road they travelled was no longer a rule-edge straight one, guided by the compass, over table-top-flat land. It followed narrow, twisting trails over rocky ground.

They had reached Twin Peaks, then, when there was a sudden sputter from the motor, a few halting coughs and then silence.

Allen sat up and there was weariness and utter disgust in his voice, “What’s wrong with this everlastingly-to-be-damned machine now?”

His brother shrugged, “Nothing that I haven’t been expecting for the last hour. We’re out o’ gas. Doesn’t matter at all. We’re at Twin Peaks-only ten miles fr’m the city. We c’n get there in an hour, and then they c’n send men out here for the blooms.”

“Ten miles in an hour!” protested Allen. “You’re crazy.” His face suddenly twisted at an agonizing thought, “My God! We can’t do it under three hours and it’s almost night. No one can last that long in a Martian night. George, we’re—”

George was pulling him out of the car by main force, “By Jupe ‘n’ domn, All’n, don’t let the tenderfoot show through now. We c’n do it in an hour, I tell y’. Didn’t y’ ever try running under sub-normal gravity? It’s like flying. Look at me.”

He was off, skimming the ground closely, and proceeding in ground-covering leaps that shrank him to a speck up the mountain side in a moment.

He waved, and his voice came thinly, “Come on!”

Allen started,-and sprawled at the third wide stride, arms nailing and legs straddled wide. The Ganymedan’s laughter drifted down in heartless gusts.

Allen rose angrily and dusted himself. At an ordinary walk, he made his way upwards.

“Don’t get sore, All’n,” said George. “It’s just a knack, and I’ve had practice on Gannie. Just pretend y’r running along a feather bed. Run rhythmically-a sort o’ very slow rhythm- and run close t’ the ground; don’t leap high. Like this. Watch me!”

The Earthman tried it, eyes on his brother. His first few uncertain strides became surer and longer. His legs stretched and his arms swung as he matched his brother, step for step.

George shouted encouragement and speeded his pace, “Keep lower t’ the ground, All’n. Don’t leap ‘fore y’r toes hit the ground.”

Allen’s eyes shone and, for the moment, weariness was forgotten, “This is great; It is like flying-or like springs on your shoes.”

“Y’ ought t’ have lived on Gannie with me. We’ve got special fields f’r subgravity races. An expairt racer c’n do forty miles an hour at times-and I c’n do thirty-five myself. -0’ course, the gravity there’s a bit lower than here on Mars.”

Long hair streamed backwards in the wind and skin reddened at the bitter-cold air that blew past. The ruddy patches of sunlight travelled higher and higher up the slopes, lingered briefly upon the very summits and went out altogether. The short Martian twilight started upon its rapidly darkening career. The Evening Star-Earth-was already glimmering brightly, its attendant moon somewhat closer than the night previous.

The passing minutes went unheeded by Allen. He was too absorbed by the wonderful new sensation of sub-gravity running, to do anything more than follow his brother. Even the increasing chilliness scarcely registered upon his consciousness.

It was George, then, upon whose countenance a tiny, puckered uneasiness grew into a vast, panicky frown.

“Hi, All’n, hold up!” he called. Leaning backward, he brought himself to a short, hopping halt full of grace and ease. Allen tried to do likewise, broke his rhythm, and went forward upon his face. He rose with loud reproaches.

The Ganymedan turned a deaf ear to them. His gaze was sombre in the dusk, “D’ y’ know where we are, All’n?”

Allen felt a cold constriction about his windpipe as he stared about him quickly. Things looked different in semidarkness, but they looked more different than they ought. It was impossible for things to be so different.

“We should’ve sighted Old Baldy by now, shouldn’t we have?” he quavered.

“We sh’d’ve sighted him long ago,” came the hard answer. “‘Tis that domned quake. Landslides must’ve changed the trails. The peaks themselves must’ve been screwed up—” His voice was thin-edged, “Allen, ‘tisn’t any use making believe. We’re dead lost.”

For a moment, they stood silently-uncertainly. The sky was purple and the hills retreated into the night. Allen licked bluechilled Ups with a dry tongue.

“We can’t be but a few miles away. We’re bound to stumble on the city if we look.”

“Consider the situation, Airthman,” came. the savage, shouted answer, “ ‘Tis night, Martian night. The temperature’s down past zero and plummeting every minute. We haven’t any time t’ look;-we’ve got t’ go straight there. If we’re not there in half an hour, we’re not going t’ get there at all.”

Allen knew that well, and mention of the cold increased his consciousness of it. He spoke through chattering teeth as he drew his heavy, fur-lined coat closer about him.

“We might build a fire!” The suggestion was a half-hearted one, muttered indistinctly, and fallen upon immediately by the other.

“With what?” George was beside himself with sheer disappointment and frustration. “We’ve pulled through this far, and now we’ll prob’ly freeze t’ death within a mile o’ the city. C’mon keep running. It’s a hundred-t’-one chance.”

But Allen pulled him back. There was a feverish glint in the Earthman’s eye, “Bonfires!” he said irrelevantly. “It’s a possibility. Want to take a chance that might do the trick?”

“Nothin else t’ do,” growled the other. “But hurry. Every minute I—”

“Then run with the wind-and keep going.”

“Why?”

“Never mind why. Do what I say-run with the wind!”

There was no false optimism in Allen as he bounded through the dark, stumbling over loose stones, sliding down declivities,-always with the wind at his back. George ran at his side, a vague, formless blotch in the night.

The cold was growing more bitter, but it was not quite as bitter as the freezing pang of apprehension gnawing at the Earthman’s vitals.

Death is unpleasant!

And then they topped the rise, and from George’s throat came a loud “B’ Jupe ‘n’ domn!” of triumph.

The ground before them, as far as the eye could see, was dotted by bonfires. Shattered Aresopolis lay ahead, its homeless inhabitants making the night bearable by the simple agency of burning wood.

And on the hilly slopes, two weary figures slapped each other on the backs, laughed wildly, and pressed half-frozen, stubbly cheeks together for sheer, unadulterated joy.

They were there at last!

The Aresopolis lab, on the very outskirts of the city, was one of the few structures still standing. Within, by makeshift light, haggard chemists were distilling the last drops of extract. Without, the city’s police-force remnants were clearing desperate way for the precious flasks and vials as they were distributed to the various emergency medical centers set up in various regions of the bonfire-pocked ruins that were once the Martian metropolis.

Old Hal Vincent supervised the process and his faded eyes ever and again peered anxiously into the hills beyond, watching hopefully but doubtfully for the promised cargo of blooms.

And then two figures reeled out of the darkness and collapsed to halt before him.

Chill anxiety clamped down upon him, “The blooms! Where are they? Have you got them?”

“At Twin Peaks,” gasped Allen. “A ton of them and better in a sand-truck. Send for them.”

A group of police ground-cars set off before he had finished, and Vincent exclaimed bewilderedly, “A sand-truck? Why didn’t you send it in a ship? What’s wrong with you out there, anyway? Earthquake—”

He received no direct answer. George had stumbled towards the nearest bonfire with a beatific expression on his worn face.

“Ahhh, ‘tis warm!” Slowly, he folded and dropped, asleep before he hit the ground.

Allen coughed gaspingly, “Huh! The Gannie tenderfoot! Couldn’t-ulp-take it!”

And the ground came up and hit him in the face.

Allen woke with the evening sun in his eyes and the odor of frying bacon in his nostrils. George shoved the frying pan towards him and said between gigantic, wolfing mouthfuls, “Help yourself.”

He pointed to the empty sand-truck outside the labs, “They got the stuff all right.”

Allen fell to, quietly. George wiped his lips with the back of his hand and said, “Say, All’n, how ‘d y’ find the city? I’ve been sitting here trying t’ figure it all out”

“It was the bonfires,” came the muffled answer. “It was the only way they could get heat, and fires over square miles of land create a whole section of heated air, which rises, causing the cold surrounding air of the hills to sweep in.” He suited his words with appropriate gestures. “The wind in the hills was heading for the city to replace warm air and we followed the wind. -Sort of a natural compass, pointing to where we wanted to go.”

George was silent, kicking with embarrassed vigor at the ashes of the bonfire of the night before.

“Lis’n, All’n, I’ve had y’ a’wrong. Y’ were an Airthman tanderfoot t’ me till-’ He paused, drew a deep breath and exploded with, “Well, by Jupe n’ domn, y’r my twin brother and I’m proud o’ it All Airth c’dn’t drown out the Carter blood in y’.”

The Earthman opened his mouth to reply but his brother clamped one palm over it, “Y’ keep quiet, till I’m finished. After we get back, y’ can fix up that mechanical picker or anything else y’ want. I drop my veto. If Airth and machines c’n tairn out y’r kind o’ man, they’re all right. But just the same,” there was a trace of wistfulness in his voice, “y’ got t” admit that everytime the machines broke down-from irrigation-trucks and rocket-ships to ventilators and sand-trucks- t’was men who had t’ pull through in spite o’ all that Mars could do.”

Allen wrenched his face from out behind the restraining palm.

“The machines do their best,” he said, but not too vehemently.

“Sure, but that’s all they can do. When the emairgency comes, a man’s got t’ do a damn lot better than his .best or he’s a goner.”

The other paused, nodded, and gripped the other’s hand with sudden fierceness, “Oh, we’re not so different. Earth and Ganymede are plastered thinly over the outside of us, but inside—”

He caught himself.

“Come on, let’s give out with that old Gannie quaver.”

And from the two fraternal throats tore forth a shrieking eldritch yell such as the thin, cold Martian air had seldom before carried.