

**worlds
of**



SEPTEMBER 1961

*All Stories New
and Complete*

science

fiction

Vol. 11, Number 4

Robert M. Guinn, *Publisher* ● H. L. Gold, *Editor*
Sam Ravidich, *Art Director* ● Frederik Pohl, *Managing Ed.*
Theodore Sturgeon, *Feature Editor*

NOVELETTES

The Frozen Planet by Keith Laumer 6

The Valley of the Masters by Charles Minor Blackford 62

Call Him Nemesis by Donald E. Westlake 105

SHORT STORIES

Mirror Image by Daniel F. Galouye 31

Spawning Ground by Lester del Rey 40

Tolliver's Orbit by H. B. Fyfe 49

The Girls from Fieu Dayol by Robert F. Young 84

Lorelei by Charles V. DeVet 97

SPECIAL FEATURE

Monoliths and Miracles by Theodore Sturgeon 81

DEPARTMENTS

Science Briefs 95

Hue and Cry 130

COVER by Wenzel from Spawning Ground

Next issue (November) on sale September 15th

IF is published bi-monthly by Digest Productions Corporation, Vol. 11, No. 4. Main Office: 421 Hudson Street, New York 14; New York 35c per copy. Subscriptions 12 issues \$3.00 in the United States, Canada, Mexico, South and Central America and U. S. Possessions, elsewhere \$4.00. Second-class postage paid at New York, New York, and at Holyoke, Mass. Copyright 1961 by Digest Productions Corporation. All rights including translations reserved. All material submitted must be accompanied by self-addressed stamped envelopes. The publisher assumes no responsibility for unsolicited material. All stories printed in this magazine are fiction, and any similarity between characters and actual persons is coincidental. Printed in the U. S. A. by the Guinn Company, Inc., New York 14, N. Y.

TOLLIVER'S

ORBIT was slow — but
it wasn't boring. And it would
get you there — as long as you weren't
going anywhere anyhow!

By H. B. FYFE

Illustrated by BERNKLAU

JOHNNY Tolliver scowled across the desk at his superior. His black thatch was ruffled, as if he had been rubbed the wrong way.

"I didn't ask you to cut out your own graft, did I?" he demanded. "Just don't try to sucker me in on the deal. I know you're operating something sneaky all through the colony, but it's not for me."

The big moon-face of Jeffers, manager of the Ganymedan branch of Koslow Spaceways, glowered back at him. Its reddish tinge brightened the office noticeably, for such of Ganymede's surface as could be seen through the transparent dome outside the office window was cold, dim and rugged. The glowing semi-disk of Jupiter was more

than half a million miles distant.

"Try not to be simple—for once!" growled Jeffers. "A little percentage here and there on the cargoes never shows by the time figures get back to Earth. The big jets in the home office don't care. They count it on the estimates."

"You asked any of them lately?" Tolliver prodded.

"Now, *listen!* Maybe they live soft back on Earth since the mines and the Jovian satellite colonies grew; but they were out here in the beginning, most of them. *They* know what it's like. D'ya think they don't expect us to make what we can on the side?"

Tolliver rammed his fists

into the side pockets of his loose blue uniform jacket. He shook his head, grinning resignedly.

"You just don't listen to me," he complained. "You know I took this piloting job just to scrape up money for an advanced engineering degree back on Earth. I only want to finish my year—not get into something I can't quit."

Jeffers fidgeted in his chair, causing it to creak under the bulk of his body. It had been built for Ganymede, but not for Jeffers.

"Aw, it's not like that," the manager muttered. "You can ease out whenever your contract's up. Think we'd bend a good orbit on your account?"

Tolliver stared at him silently, but the other had difficulty meeting his eye.

"All right, then!" Jeffers snapped after a long moment. "If you want it that way, either you get in line with us or you're through right now!"

"You can't fire me," retorted the pilot pityingly. "I came out here on a contract. Five hundred credits a week base pay, five hundred for hazardous duty. How else can you get pilots out to Jupiter?"

"Okay I can't fire you legally—as long as you report for work," grumbled Jeffers, by now a shade more ruddy. "We'll see how long you keep reporting. Because you're off the Callisto run as of now! Sit in your quarters and see

if the company calls that hazardous duty!"

"Doesn't matter," answered Tolliver, grinning amiably. "The hazardous part is just being on the same moon as you for the next six months."

He winked and walked out, deliberately leaving the door open behind him so as to enjoy the incoherent bellowing that followed him.

Looks like a little vacation, he thought, unperturbed. He'll come around. I just want to get back to Earth with a clean rep. Let Jeffers and his gang steal the Great Red Spot off Jupiter if they like! It's their risk.

TOLLIVER began to have his doubts the next day; which was "Tuesday" by the arbitrary calendar constructed to match Ganymede's week-long journey around Jupiter.

His contract guaranteed a pilot's rating, but someone had neglected to specify the type of craft to be piloted.

On the bulletin board, Tolliver's name stood out beside the number of one of the airtight tractors used between the dome city and the spaceport, or for hauling cross-country to one of the mining domes.

He soon found that there was nothing for him to do but hang around the garage in case a spaceship should land. The few runs to other domes seemed to be assigned to drivers with larger vehicles.

The following day was just as boring, and the next more so. He swore when he found the assignment unchanged by "Friday." Even the reflection that it was payday was small consolation.

"Hey, Johnny!" said a voice at his shoulder. "The word is that they're finally gonna trust you to take that creeper outside."

Tolliver turned to see Red Higgins, a regular driver.

"What do you mean?"

"They say some home-office relative is coming in on the *Javelin*."

"What's wrong with that?" asked Tolliver. "Outside of the way they keep handing out soft jobs to nephews, I mean."

"Aah, these young punks just come out for a few months so they can go back to Earth making noises like spacemen. Sometimes there's no reason but them for sending a ship back with a crew instead of in an economy orbit. Wait till you see the baggage you'll have to load!"

Later in the day-period, Tolliver recalled this warning. Under a portable, double-chambered plastic dome blown up outside the ship's airlock, a crewman helped him load two trunks and a collection of bags into the tractor. He was struggling to suppress a feeling of outrage at the waste of fuel involved when the home-office relative emerged.

TOLLIVER'S ORBIT

She was about five feet four and moved as if she walked lightly even in stronger gravity than Ganymede's. Her trim coiffure was a shade too blonde which served to set off both the blue of her eyes and the cap apparently won from one of the pilots. She wore gray slacks and a heavy sweater, like a spacer.

"Sorry to keep you waiting," she said, sliding into the seat beside Tolliver. "By the way, just call me Betty."

"Sure," agreed Tolliver thinking, *Ohmigod! Trying already to be just one of the gang, instead of Lady Betty! Is her old man the treasurer, or does he just know where bodies are buried?*

"They were making dates," said the girl. "Were they ribbing me, or is it true that none of the four of them goes back with the ship?"

"It's true enough," Tolliver assured her. "We need people out here, and it costs a lot to make the trip. They found they could send back loaded ships by 'automatic' flight—that is, a long, slow, economical orbit and automatic signalling equipment. Then they're boarded approaching Earth's orbit and landed by pilots who don't have to waste their time making the entire trip."

HE followed the signals of a spacesuited member of the port staff and maneuvered out of the dome. Then he

headed the tractor across the frozen surface of Ganymede toward the permanent domes of the city.

"How is it here?" asked the girl. "They told me it's pretty rough."

"What did you expect?" asked Tolliver. "Square dances with champagne?"

"Don't be silly. Daddy says I'm supposed to learn traffic routing and the business management of a local branch. They probably won't let me see much else."

"You never can tell," said the pilot, yielding to temptation. "Any square inch of Ganymede is likely to be dangerous."

I'll be sorry later, he reflected, but if Jeffers keeps me jockeying this creeper, I'm entitled to some amusement. And Daddy's little girl is trying too hard to sound like one of the gang.

"Yeah," he went on, "right now, I don't do a thing but drive missions from the city to the spaceport."

"Missions! You call driving a mile or so a *mission*?"

Tolliver pursed his lips and put on a shrewd expression.

"Don't sneer at Ganymede, honey!" he warned portentously. "Many a man who did isn't here today. Take the fellow who used to drive this mission!"

"You can call me Betty. What happened to him?"

"I'll tell you some day," Tolliver promised darkly. "This moon can strike like a vicious animal."

"Oh, they told me there was nothing alive on Ganymede!"

"I was thinking of the mountain slides," said the pilot. "Not to mention volcanic puffballs that pop out through the frozen crust where you'd least expect. That's why I draw such high pay for driving an unarmored tractor."

"You use armored vehicles?" gasped the girl.

She was now sitting bolt upright in the swaying seat. Tolliver deliberately dipped one track into an icy hollow. In the light gravity, the tractor responded with a weird, floating lurch.

"Those slides," he continued. "Ganymede's only about the size of Mercury, something like 3200 miles in diameter, so things get heaped up at steep angles. When the rock and ice are set to sliding, they come at you practically horizontally. It doesn't need much start, and it barrels on for a long way before there's enough friction to stop it. If you're in the way—well, it's just too bad!"

Say, that's pretty good! he told himself. *What a liar you are, Tolliver!*

He enlarged upon other dangers to be encountered on the satellite, taking care to impress the newcomer with the daredeviltry of John Tolliver, driver of "missions"

across the menacing wastes between dome and port.

In the end, he displayed conclusive evidence in the form of the weekly paycheck he had received that morning. It did not, naturally, indicate he was drawing the salary of a space pilot. Betty looked thoughtful.

"I'm retiring in six months if I'm still alive," he said bravely, edging the tractor into the airlock at their destination. "Made my pile. No use pushing your luck too far."

His charge seemed noticeably subdued, but cleared her throat to request that Tolliver guide her to the office of the manager. She trailed along as if with a burden of worry upon her mind, and the pilot's conscience prickled.

I'll get hold of her after Jeffers is through and set her straight, he resolved. *It isn't really funny if the sucker is too ignorant to know better.*

REMEMBERING his grudge against the manager, he took pleasure in walking in without knocking.

"Jeffers," he announced, "this is... just call her Betty."

The manager's jowled features twisted into an expression of welcome as jovial as that of a hungry crocodile.

"Miss Koslow!" he beamed, like a politician the day before the voting. "It certainly is an honor to have you on Gany-mede with us! That's all,

TOLLIVER'S ORBIT

Tolliver, you can go. Yes, indeed! Mr. Koslow—the president, that is: your father—sent a message about you. I repeat, it will be an honor to show you the ropes. Did you want something else, Tolliver?"

"Never mind him, Mr. Jeffers," snapped the girl, in a tone new to Tolliver. "We won't be working together, I'm afraid. You've already had enough rope."

Jeffers seemed to stagger standing still behind his desk. His loose lips twitched uncertainly, and he looked questioningly to Tolliver. The pilot stared at Betty, trying to recall pictures he had seen of the elder Koslow. He was also trying to remember some of the lies he had told enroute from the spaceport.

"Wh-wh-what do you mean, Miss Koslow?" Jeffers stammered.

He darted a suspicious glare at Tolliver.

"Mr. Jeffers," said the girl, "I may look like just another spoiled little blonde, but the best part of this company will be mine someday. I was not allowed to reach twenty-two without learning something about holding on to it."

Tolliver blinked. He had taken her for three or four years older. Jeffers now ignored him, intent upon the girl.

"Daddy gave me the title of tenth vice-president mostly as a joke, when he told me to

find out what was wrong with operations on Ganymede. I have *some* authority, though. And you look like the source of the trouble to me."

"You can't prove anything," declared Jeffers hoarsely.

"Oh, can't I? I've already seen certain evidence, and the rest won't be hard to find. Where are your books, Mr. Jeffers? You're as good as fired!"

The manager dropped heavily to his chair. He stared unbelievably at Betty, and Tolliver thought he muttered something about "just landed." After a moment, the big man came out of his daze enough to stab an intercom button with his finger. He growled at someone on the other end to come in without a countdown.

Tolliver, hardly thinking about it, expected the someone to be a secretary, but it turned out to be three members of Jeffers' headquarters staff. He recognized one as Rawlins, a warehouse chief, and guessed that the other two might be his assistants. They were large enough.

"No stupid questions!" Jeffers ordered. "Lock these two up while I think!"

Tolliver started for the door immediately, but was blocked off.

"Where should we lock—?" the fellow paused to ask.

Tolliver brought up a snappy uppercut to the man's

chin, feeling that it was a poor time to engage Jeffers in fruitless debate.

In the gravity of Ganymede, the man was knocked off balance as much as he was hurt, and sprawled on the floor.

"I *told* you no questions!" bawled Jeffers.

The fallen hero, upon arising, had to content himself with grabbing Betty. The others were swarming over Tolliver. Jeffers came around his desk to assist.

TOLLIVER found himself dumped on the floor of an empty office in the adjoining warehouse building. It seemed to him that a long time had been spent in carrying him there.

He heard an indignant yelp, and realized that the girl had been pitched in with him. The snapping of a lock was followed by the tramp of departing footsteps and then by silence.

After considering the idea a few minutes, Tolliver managed to sit up.

He had his wind back. But when he fingered the swelling lump behind his left ear, a sensation befuddled him momentarily.

"I'm sorry about that," murmured Betty.

Tolliver grunted. Sorrow would not reduce the throbbing, nor was he in a mood to undertake an explanation of why Jeffers did not like him anyway.

"I think perhaps you're going to have a shiner," remarked the girl.

"Thanks for letting me know in time," said Tolliver.

The skin under his right eye did feel a trifle tight, but he could see well enough. The abandoned and empty look of the office worried him.

"What can we use to get out of here?" he mused.

"Why should we try?" asked the girl. "What can he do?"

"You'd be surprised. How did you catch on to him so soon?"

"Your paycheck," said Betty. "As soon as I saw that ridiculous amount, it was obvious that there was gross mismanagement here. It had to be Jeffers."

Tolliver groaned.

"Then, on the way over here, he as good as admitted everything. You didn't hear him, I guess. Well, he seemed to be caught all unaware, and seemed to blame you for it."

"Sure!" grumbled the pilot. "He thinks I told you he was grafting or smuggling, or whatever he has going for him here. That's why I want to get out of here—before I find myself involved in some kind of fatal accident!"

"What do you know about the crooked goings-on here?" asked Betty after a startled pause.

"Nothing," retorted Tolliver. "Except that there are some. There are rumors, and I
TOLLIVER'S ORBIT

had a halfway invitation to join in. I think he sells things to the mining colonies and makes a double profit for himself by claiming the stuff lost in transit. You didn't think you scared him that bad over a little slack managing?"

The picture of Jeffers huddled with his partners in the headquarters building, plotting the next move, brought Tolliver to his feet.

There was nothing in the unused office but an old table and half a dozen plastic crates. He saw that the latter contained a mess of discarded records.

"Better than nothing at all," he muttered.

He ripped out a double handful of the forms, crumpled them into a pile at the doorway, and pulled out his cigarette lighter.

"What do you think you're up to?" asked Betty with some concern.

"This plastic is tough," said Tolliver, "but it will bend with enough heat. If I can kick loose a hinge, maybe we can fool them yet!"

He got a little fire going, and fed it judiciously with more papers.

"You know," he reflected, "it might be better for you to stay here. He can't do much about you, and you don't have any real proof just by yourself."

"I'll come along with you, Tolliver," said the girl.

"No, I don't think you'd better."

"Why not?"

"Well ... after all, what would he dare do? Arranging an accident to the daughter of the boss isn't something that he can pull off without a lot of investigation. He'd be better off just running for it."

"Let's not argue about it," said Betty, a trifle pale but looking determined. "I'm coming with you. Is that stuff getting soft yet?"

Tolliver kicked at the edge of the door experimentally. It seemed to give slightly, so he knocked the burning papers aside and drove his heel hard at the corner below the hinge.

The plastic yielded.

"That's enough already, Tolliver," whispered the girl. "We can crawl through!"

HARDLY sixty seconds later, he led her into a maze of stacked crates in the warehouse proper. The building was not much longer than wide, for each of the structures in the colony had its own hemispherical emergency dome of transparent plastic. They soon reached the other end.

"I think there's a storeroom for spacesuits around here," muttered Tolliver.

"Why do you want them?"

"Honey, I just don't think it will be so easy to lay hands on a tractor. I bet Jeffers already phoned the garage and

all the airlocks with some good lie that will keep me from getting through."

After a brief search, he located the spacesuits. Many, evidently intended for replacements, had never been unpacked, but there were a dozen or so serviced and standing ready for emergencies. He showed Betty how to climb into one, and checked her seals and valves after donning a suit himself.

"That switch under your chin," he said, touching helmets so she could hear him. "Leave it turned off. *Anybody* might be listening!"

He led the way out a rear door of the warehouse. With the heavy knife that was standard suit equipment, he deliberately slashed a four-foot square section out of the dome. He motioned to Betty to step through, then trailed along with the plastic under his arm.

He caught up and touched helmets again.

"Just act as if you're on business," he told her. "For all anyone can see, we might be inspecting the dome."

"Where are you going?" asked Betty.

"Right through the wall, and then head for the nearest mine. Jeffers can't be running *everything!*"

"Is there any way to get to a TV?" asked the girl. "I ... uh ... Daddy gave me a good number to call if I needed help."

"How good?"

"Pretty official, as a matter of fact."

"All right," Tolliver decided. "We'll try the ship you just came in on. They might have finished refueling and left her empty."

They had to cross one open lane between buildings, and Tolliver was very conscious of moving figures in the distance; but no one seemed to look their way.

Reaching the foot of the main dome over the establishment, he glanced furtively about, then plunged his knife into the transparent material.

From the corner of his eye, he thought he saw Betty make a startled gesture, but he had his work cut out for him. This was tougher than the interior dome.

Finally, he managed to saw a ragged slit through which they could squeeze. There was room to walk between the inner and outer layer, so he moved along a few yards. A little dust began to blow about where they had gone through. He touched helmets once more.

"This time," he said, "the air will really start to blow, so get through as fast as you can. If I can slap this piece of plastic over the rip, it may slow down the loss of pressure enough to give us quite a lead before the alarms go off."

Through the faceplates, he saw the girl nod, wide-eyed.

TOLLIVER'S ORBIT

As soon as he plunged the knife into the outer layer, he could see dusty, moist air puffing out into the near-vacuum of Ganymede's surface. Fumbling, he cut as fast as he could and shoved Betty through the small opening.

Squeezing through in his turn, he left one arm inside to spread the plastic sheet as best he could. The internal air pressure slapped it against the inside of the dome as if glued, although it immediately showed an alarming tendency to balloon through the ruptured spot.

They'll find it, all right, Tolliver reminded himself. *Don't be here when they do!*

He grabbed Betty by the wrist of her spacesuit and headed for the nearest outcropping of rock.

It promptly developed that she had something to learn about running on ice in such low gravity. Until they were out of direct line of sight from the settlement, Tolliver simply dragged her.

Then, when he decided that it was safe enough to pause and tell her how to manage better, the sight of her outraged scowl through the faceplate made him think better of it.

By the time we reach the ship, she'll have learned, he consoled himself.

IT was a long mile, even at the pace human muscles could achieve on Ganymede.



They took one short rest, during which Tolliver was forced to explain away the dangers of slides and volcanic puff-balls. He admitted to having exaggerated slightly. In the end, they reached the spaceship.

There seemed to be no one about. The landing dome had been collapsed and stored, and the ship's airlock port was closed.

"That's all right," Tolliver told the girl. "We can get in with no trouble."

It was when he looked about to make sure that they were unobserved that he caught a glimpse of motion back toward the city. He peered at the spot through the dim light. After a moment, he definitely recognized the outline of a tractor breasting a rise in the ground and tilting downward again.

"In fact, we *have* to get in to stay out of trouble," he said to Betty.

He located the switch-cover in the hull, opened it and activated the mechanism that swung open the airlock and extended the ladder.

It took him considerable scrambling to boost the girl up the ladder and inside, but he managed. They passed through the airlock, fretting at the time required to seal, pump air and open the inner hatch; and then Tolliver led the way up another ladder to the control room. It was a clumsy trip in their space-

TOLLIVER'S ORBIT

suits, but he wanted to save time.

In the control room, he shoved the girl into an acceleration seat, glanced at the gauges and showed her how to open her helmet.

"Leave the suit on," he ordered, getting in the first word while she was still shaking her head. "It will help a little on the takeoff."

"Takeoff!" shrilled Betty. "What do you think you're going to do? I just want to use the radio or TV!"

"That tractor will get here in a minute or two. They might cut your conversation kind of short. Now shut up and let me look over these dials!"

He ran a practiced eye over the board, reading the condition of the ship. It pleased him. Everything was ready for a takeoff into an economy orbit for Earth. He busied himself making a few adjustments, doing his best to ignore the protests from his partner in crime. He warned her the trip might be long.

"I told you not to come," he said at last. "Now sit back!"

He sat down and pushed a button to start the igniting process.

In a moment, he could feel the rumble of the rockets through the deck, and then it was out of his hands for several minutes.

"That wasn't so bad," Betty admitted some time later.

"Did you go in the right direction?"

"Who knows?" retorted Tolliver. "There wasn't time to check *everything*. We'll worry about that after we make your call."

"Oh!" Betty looked helpless. "It's in my pocket."

Tolliver sighed. In their weightless state, it was no easy task to pry her out of the spacesuit. He thought of inquiring if she needed any further help, but reminded himself that this was the boss's daughter. When Betty produced a memo giving frequency and call sign, he set about making contact.

It took only a few minutes, as if the channel had been monitored expectantly, and the man who flickered into life on the screen wore a uniform.

"Space Patrol?" whispered Tolliver incredulously.

"That's right," said Betty. "Uh . . . Daddy made arrangements for me."

Tolliver held her in front of the screen so she would not float out of range of the scanner and microphone. As she spoke, he stared exasperatedly at a bulkhead, marveling at the influence of a man who could arrange for a cruiser to escort his daughter to Ganymede and wondering what was behind it all.

When he heard Betty requesting assistance in arresting Jeffers and reporting the manager as the head of a ring

of crooks, he began to suspect. He also noticed certain peculiarities about the remarks of the Patrolman.

FOR one thing, though the officer seemed well acquainted with Betty, he never addressed her by the name of Koslow. For another, he accepted the request as if he had been hanging in orbit merely until learning who to go down after.

They really sent her out to nail someone, Tolliver realized. Of course, she stumbled onto Jeffers by plain dumb luck. But she had an idea of what to look for. How do I get into these things? She might have got me killed!

"We do have one trouble," he heard Betty saying. "This tractor driver, Tolliver, saved my neck by making the ship take off somehow, but he says it's set for a six-month orbit, or economy flight. Whatever they call it. I don't think he has any idea where we're headed."

Tolliver pulled her back, holding her in mid-air by the slack of her sweater.

"Actually, I have a fine idea," he informed the officer coldly. "I happen to be a qualified space pilot. Everything here is under control. If Miss Koslow thinks you should arrest Jeffers, you can call us later on this channel."

"Miss Koslow?" repeated the spacer. "Did she tell you—well, no matter! If you'll

be okay, we'll attend to the other affair immediately."

He signed off promptly. The pilot faced Betty, who looked more offended than reassured at discovering his status.

"This 'Miss Koslow' business," he said suspiciously. "He sounded funny about that."

The girl grinned.

"Relax, Tolliver," she told him. "Did you really believe Daddy would send his own little girl way out here to Ganymede to look for whoever was gypping him?"

"You ... you ...?"

"Sure. The name's Betty Hanlon. I work for a private investigating firm. If old Koslow had a son to impersonate—"

"I'd be stuck for six months in this orbit with some brash young man," Tolliver finished for her. "I guess it's better this way," he said meditatively a moment later.

"Oh, come on! Can't they get us back? How can you tell where we're going?"

"I know enough to check takeoff time. It was practically due anyhow, so we'll float into the vicinity of Earth at about the right time to be picked up."

He went on to explain something of the tremendous cost in fuel necessary to make more than minor corrections to their course. Even though the Patrol ship could easily catch the slow freighter,

bringing along enough fuel to head back would be something else again.

"We'll just have to ride it out," he said sympathetically. "The ship is provisioned according to law, and you were probably going back anyhow."

"I didn't expect to so soon."

"Yeah, you were pretty lucky. They'll think you're a marvel to crack the case in about three hours on Ganymede."

"Great!" muttered Betty. "What a lucky girl I am!"

"Yes," admitted Tolliver, "there are problems. If you like, we might get the captain of that Patrol ship to legalize the situation by TV."

"I can see you're used to sweeping girls off their feet," she commented sourly.

"The main problem is whether you can cook."

Betty frowned at him.

"I'm pretty good with a pistol," she offered, "or going over crooked books. But cook? Sorry."

"Well, one of us had better learn, and I'll have other things to do."

"I'll think about it," promised the girl, staring thoughtfully at the deck.

Tolliver anchored himself in a seat and grinned as he thought about it too.

After a while, he promised himself, I'll explain how I cut the fuel flow and see if she's detective enough to suspect that we're just orbiting Ganymede!

END