

G2

APRIL '64

THIS MONTH'S issue is dedicated to all those who hadn't known anyone named Walter Henry Breen, and can think of no reason they should particularly have wanted to know any Walter Henry Breen.

* *****
* We fully endorse every statement and opinion as
* it stands in the recent "REPORT FROM THE PACIFICON *
* II COMMITTEE ON THE CANCELLATION OF THE MEMBERSHIP
* OF WALTER BREEN!" If anyone hasn't seen it, it's *
* free; simply write to: PACIFICON-II
* P O BOX 261 *
* Fairmont Station
* El Cerrito, California *
* *****

And since there's simply no room left for it inside anywhere...

This is g2 Vol. 3 No. 7 from Joe & Robbie Gibson
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Sorry, no
trades.

Sample copy free on
request.

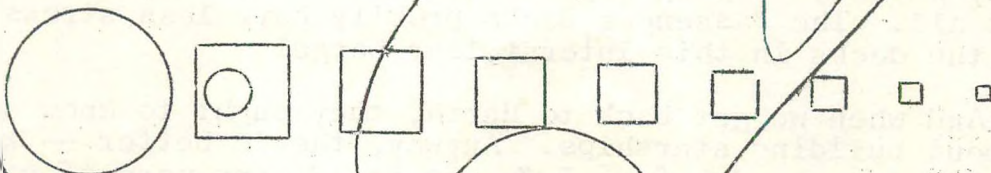
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(No back issues available.)



Herewith: one more small idea which has never got into stf...

NOISE

For a while, now, I've been mentioning at intervals the problem we're having on our starship with "metal fatigue" and air leaks in the hull and weakening steel

framework and having to tear out Supply Decks to lighten ship. But I haven't explained why. This month, with "Time, Gentlemen..." in this issue, I feel that I can risk an attempt to explain this disquieting situation. The fact is, we've been finding out what can happen to a ship travelling at very close to the speed of light.

As I hope I've made clear, this month, the mass-energy of a ship going that fast simply has almost no time left to do anything else but move itself from here to there. All other business is "suspended for the duration" to an increasing extent, the closer we get to lightspeed. So 1,000 tons of mass ejected by our drive-field per second can give its 1,000-ton push to the ship for only a hundredth of a second, ship time. (I'm sure that's all perfectly clear to you, now?) But before I get too darned ponderous here, let's have the punchline!

Fellas, any application of power results in feedback resonance. In short, vibrations. The kind of vibrations that can cause "metal fatigue" -- tiny shocks sent through the crystalline structure of metal until it crumbles. Only we've got this problem in spades.

The strength of such vibrations is no problem. Where we can't get the full "push" of a 1,000-ton thrust, we simply have to pour on more power -- one hundred times as much power, then five hundred times as much, then a thousand times as much -- just to get that 1,000-ton thrust, the closer we get to lightspeed. It's like needing sixty horsepower to move 33,000 lbs. one foot in one second, tho one horsepower can move it a foot per minute. But here, the strength of "feedback" vibrations we get is still no stronger than a 1,000-ton thrust would give us. If there's no time for "push" there's no time for tiny shocks.

But it isn't the tremendous strength of shocks that causes steel to crumble, it's the resonance -- the frequency of those shocks, the number of shocks per second sent through the metal. Apply a thousand times as much power and you'll get a whole, new pattern of frequency waves. It's the old bit about soldiers having to "break step" to march across a bridge, or else the bridge falls down, in heavy armor or not.

No material outside the core of a large planet has had to withstand the frequency of "feedback" resonance we've been applying to our ship's framework. The result shouldn't come as a surprise.

Gentlemen, this starship is coming to pieces around us.

That's why I've had our liftboats "mothballed" in cocoons of hardened plastic foam, down on the Hanger Deck -- when that stuff crumbles, we can squirt on more of it. Bets should always be covered. From the first, I've been betting that "Beginner's Luck" would get us through this trip. But I'm not overlooking the possibility that we'll have to "bail out" of this tub in those little liftboats and take our separate chances in getting back to Earth.

Now you didn't think interstellar scouting was without its small bit of risk, did you???

We'll rebuild the starship as much as we can -- and as fast, if possible, as she comes apart. So far, the living quarters amidships haven't been dangerously affected yet -- but as I told you last month, strictly un-dng, dumping any of our personnel wouldn't lighten the ship much at all. The Passenger Decks prob'ly have less stress on 'em of any of the decks in this interstellar barge!

And when we get back to Earth, they ought to know one hellova lot more about building starships. Anyway, they'd better -- we're going to need a new one. And before I forget it, do any more of you guys want to be Captain, now?

Just thought I'd ask.

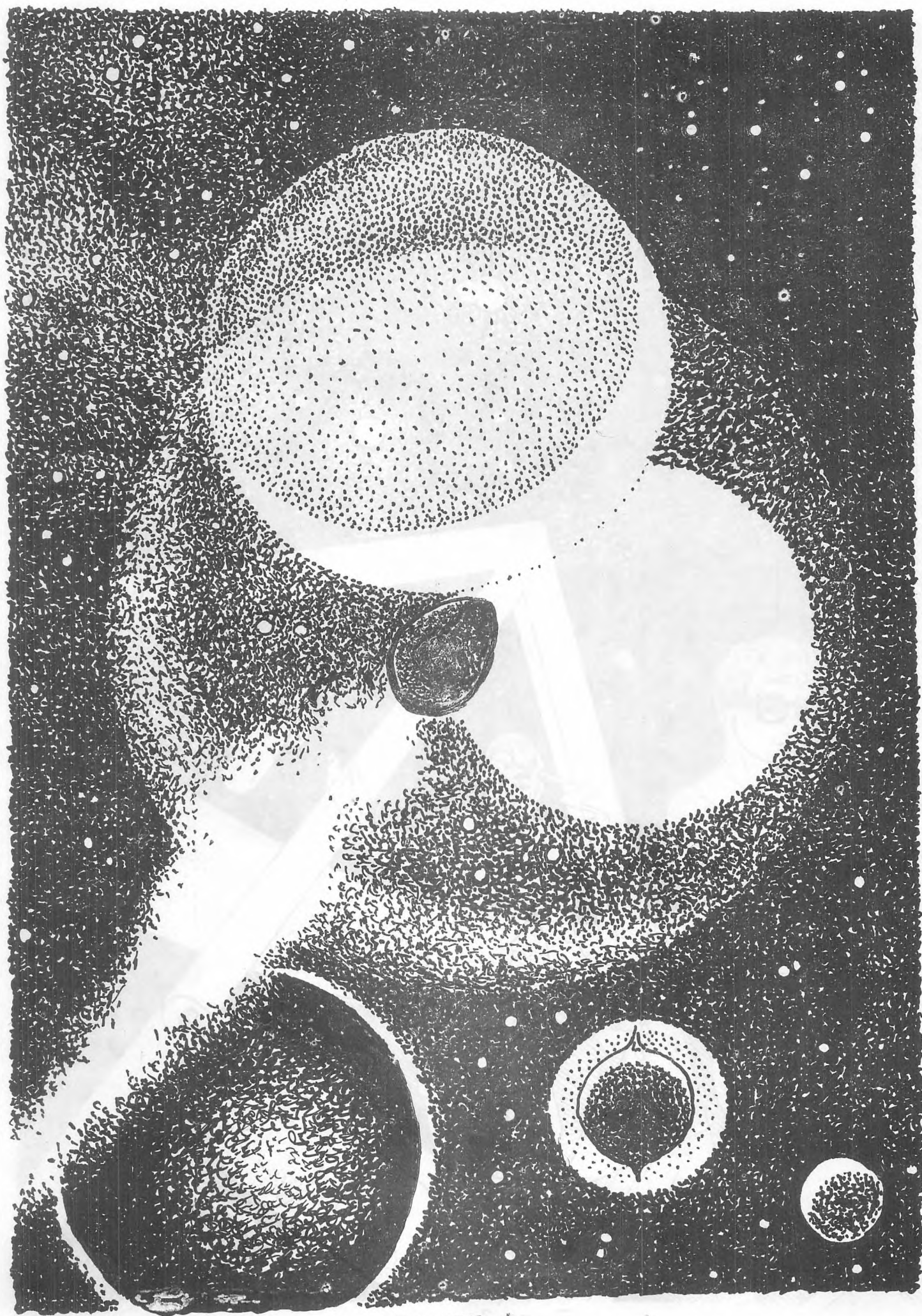


PLATE 1.

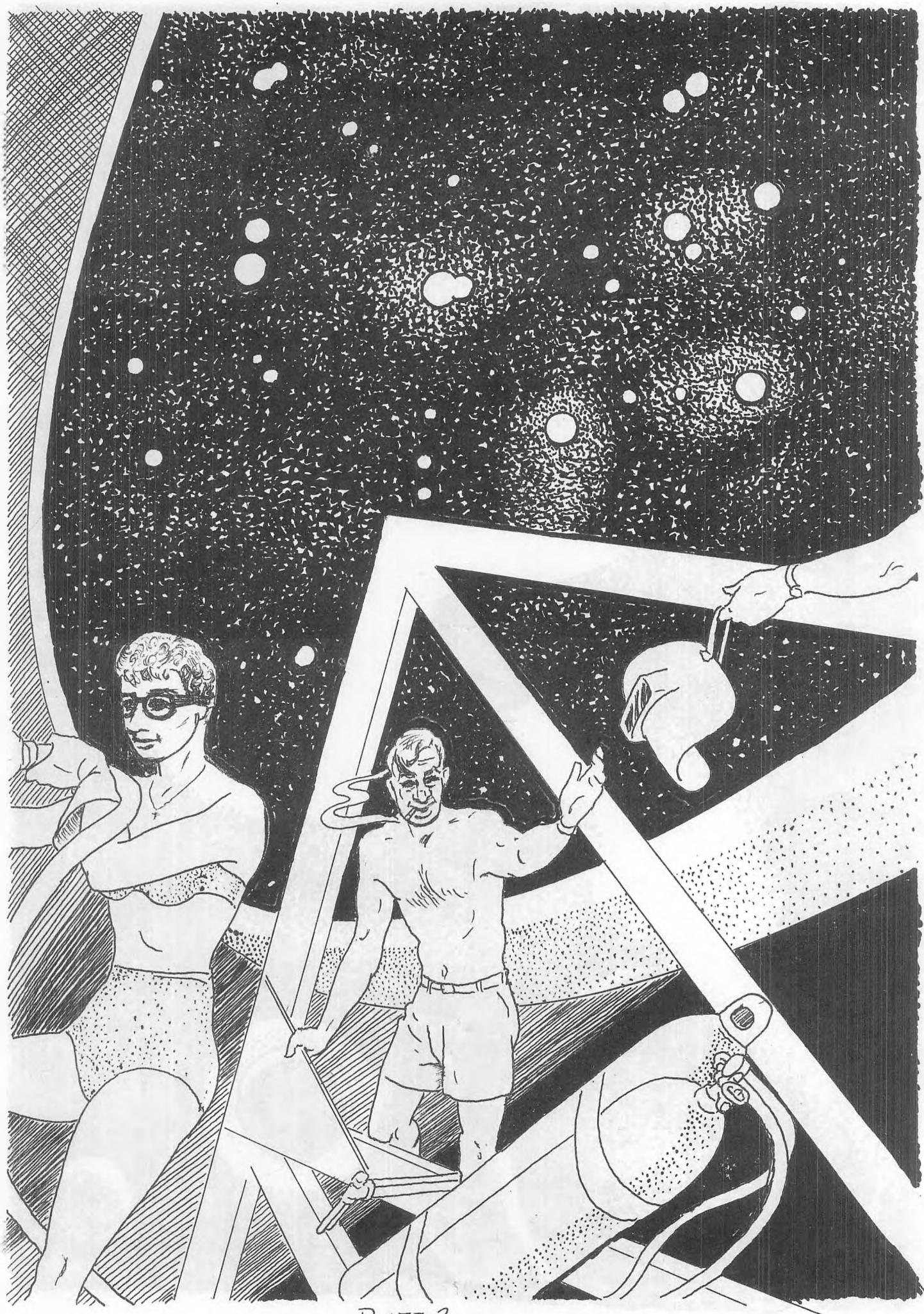


PLATE 20

PLATE 1: O1' Indebuggable departs -- overshooting Devil Star, with a close pass at the Devil's Horns (see Poul Anderson's comments in *IOX*) to slam a bit of extra mass through the starship's drive-field, boosting us to near-light-speed (well, okay -- it isn't quite that simple). Small Xmas tree bauble is moon we've terraformed (with Leinster towers) and the nearby scattering of suns is the edge of the Hyades Cluster. That batch in the upper righthand corner, off there in the deep black where we're heading, is our next stop: the Pleiades Cluster.

PLATE 2: Repairs enroute -- the forward observation deck having been completely dismantled, its supporting framework is now being patched up and reinforced (see "Noise" this month). Anyone who knows them might possibly recognize Rog Phillips and Honey on the Ship's Maintenance Crew; the Grahams have had a pretty rough time, this past month or so. . . and of course, there's the Pleiades on the giant viewplate -- we're about halfway out to it, travelling at almost the speed of light where even the maximum thrust our drive-field's capable of gives us only about 0.1-g acceleration. (That steel plate Rog's holding in place would weigh about 70 lbs. in one gravity!) Fuzziness around those giant suns is our first indication of the huge cloud of nebulous dust&gas that exists in the Pleiades Cluster.

PLATE 3: Approaching the Pleiades at 1-g deceleration, slowing down to sublight speeds so we can maneuver toward a Sol-type sun ... the observation deck has obviously been rebuilt by now, and I'm just assembling some of the gear we're going to need. The Pleiades' huge dust-cloud is quite obvious, now, where the blazing light of giant suns illuminate it. (These illos were adapted, inch by inch, from astronomical photos on pages 184, 233 and 234 of *PICTORIAL ASTRONOMY*.) And tho the Pleiades have been one sector of Earth's sky that's been investigated more often and more carefully by astronomers than any other, the total number of suns in this cluster is still anybody's guess. Robert Hooke counted 78 stars in 1664, using a 2-inch telescope. In 1876, Wolf noted 625 stars. With 4-hour exposures, Paul and Prosper Henry made a photo chart in 1887 showing 2326 stars. Since then, many more have been noted -- but of the several thousand stars in this area, only about 250 are known to be in this cluster; the rest are out beyond it. Also, the very faint stars are undetectable at this cluster's 500-lightyear distance; and there could be scores of them (with perhaps even a giant sun or two) hidden behind that huge dust-cloud. Where it is, we see only the stars on this side of it. But even with all this, the Pleiades Cluster isn't conceivably anywhere near as large as our own home-cluster.

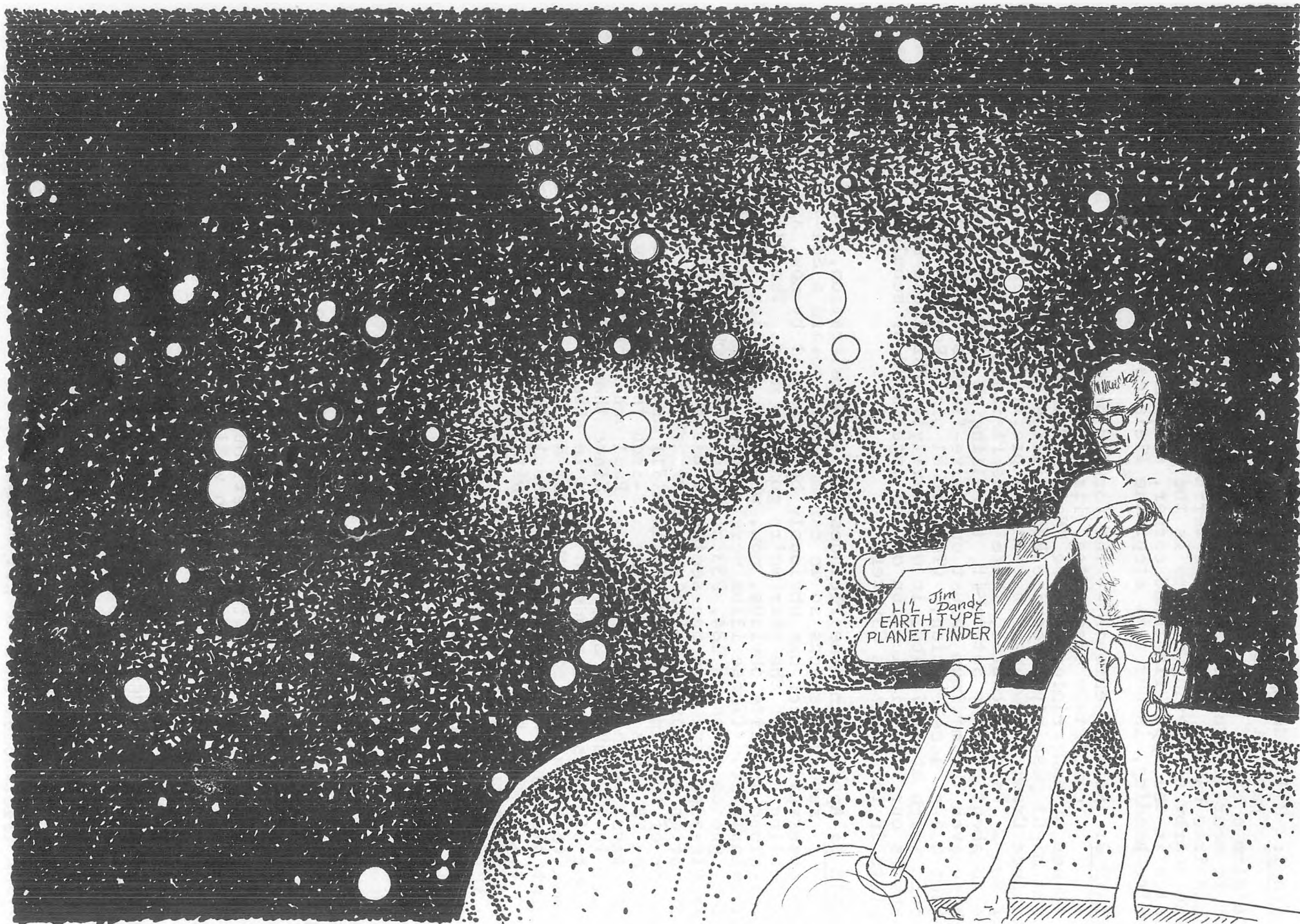
It would be too great a stretch of coincidence for us to expect to find a Sol-type sun, with the Earth-type world we're looking for circling around it, out on this edge of the Pleiades Cluster precisely where we happen to be approaching it. We may certainly spot some likely-looking Sol-type suns from here, but their positions would more than likely require us to penetrate part-way into the Cluster to reach them ... and this is one thing I do not wish to do! I'm not much concerned about the possibility of meeting someone; I just don't want our presence to even be detected, and there'll be much less chance of it if we stay out of there. This search for an Earth-type planet could be too much of a tip-off on the kind of place we came from. So we'll keep scouting along the fringes of this Cluster until we find something we like out here.

And in next month's issue, of course, we'll explore it. There are certain little things about interstellar scouts exploring an Earth-type planet that you just don't find in science-fiction

And the month after next, we'll be taking the Long Jump back to Earth. ...Earth more than a thousand years in the future, that is. Remember how we began this trip, blasting out past Saturn and someone said, "This'll all be tract-homes when we get back!"???

* * * *

PLATE 3.



Time, GENTLEMEN . . .

For a long time, now, it's been obvious to me that science-fiction fans have a rather incredible advantage over the common herd of citizenry -- which would include not a few competent scientists, surprisingly enough -- when it comes to being able to grasp the basic concept of Einsteinian Relativity.

And fantasy fans may have even more advantage than that!

But here's why: fans are quite familiar with the old stf plot where Time Stands Still. They know the whole bit about the character who suddenly finds everybody and everything frozen, motionless, except of course himself ... and he goes wandering around in this scene petting the pretty girls and helping himself to the groceries in the old Amazing Stories versions, or getting a rather bad windburn and other horrible tortures in the GALAXY versions.

However, stf fans do have one terrible disadvantage which is shared by all common citizenry -- all except, in this case, the aforementioned scientists! Stf fans do not have anything in their experience at all similar to the crazily unreal world of mathematics, the Alice In Wonderland world where nothing is real and all is reality.

Fantasy fans may indeed have the edge, there.

Now, let me show you what I mean -- because I have to "show" this; it can't be told to you.

Here's the scene: we're on a planet circling a sun we'll call Bigstar. Ten lightyears off is another sun with planets circling it; we'll call it Hotstar.

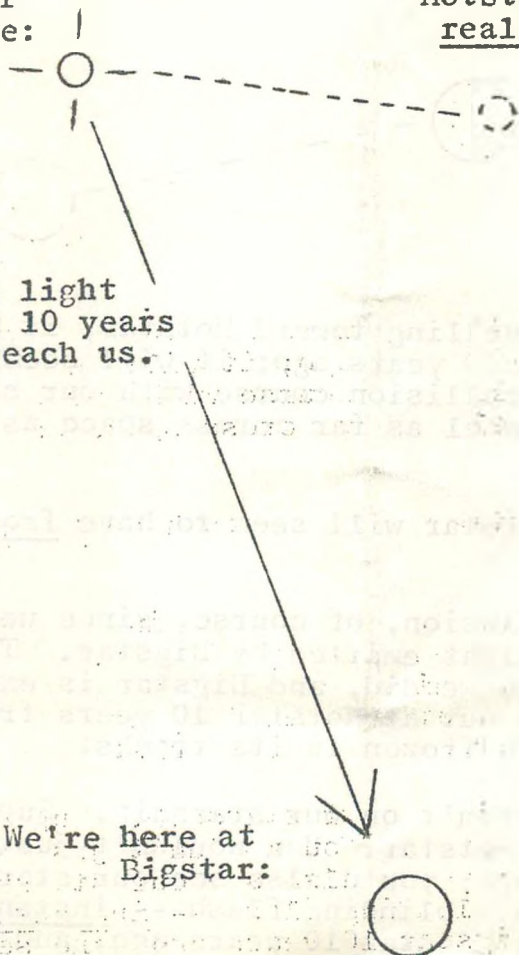
Now, astronomers here at Bigstar have all the data on both stars such as the velocity each star moves through space, what their positions were, and are now, and will be -- jazz like that. All we need is the picture:

We see Hotstar
here:

Hotstar is
really here!

Its light
took 10 years
to reach us.

We're here at
Bigstar:



Since what we actually see is the light coming from Hotstar, we "see it" where it was 10 years ago, when that light was emitted by it. (And out there, of course, they're just now seeing the light emitted by our sun, Digstar, from where its position was 10 years ago.)

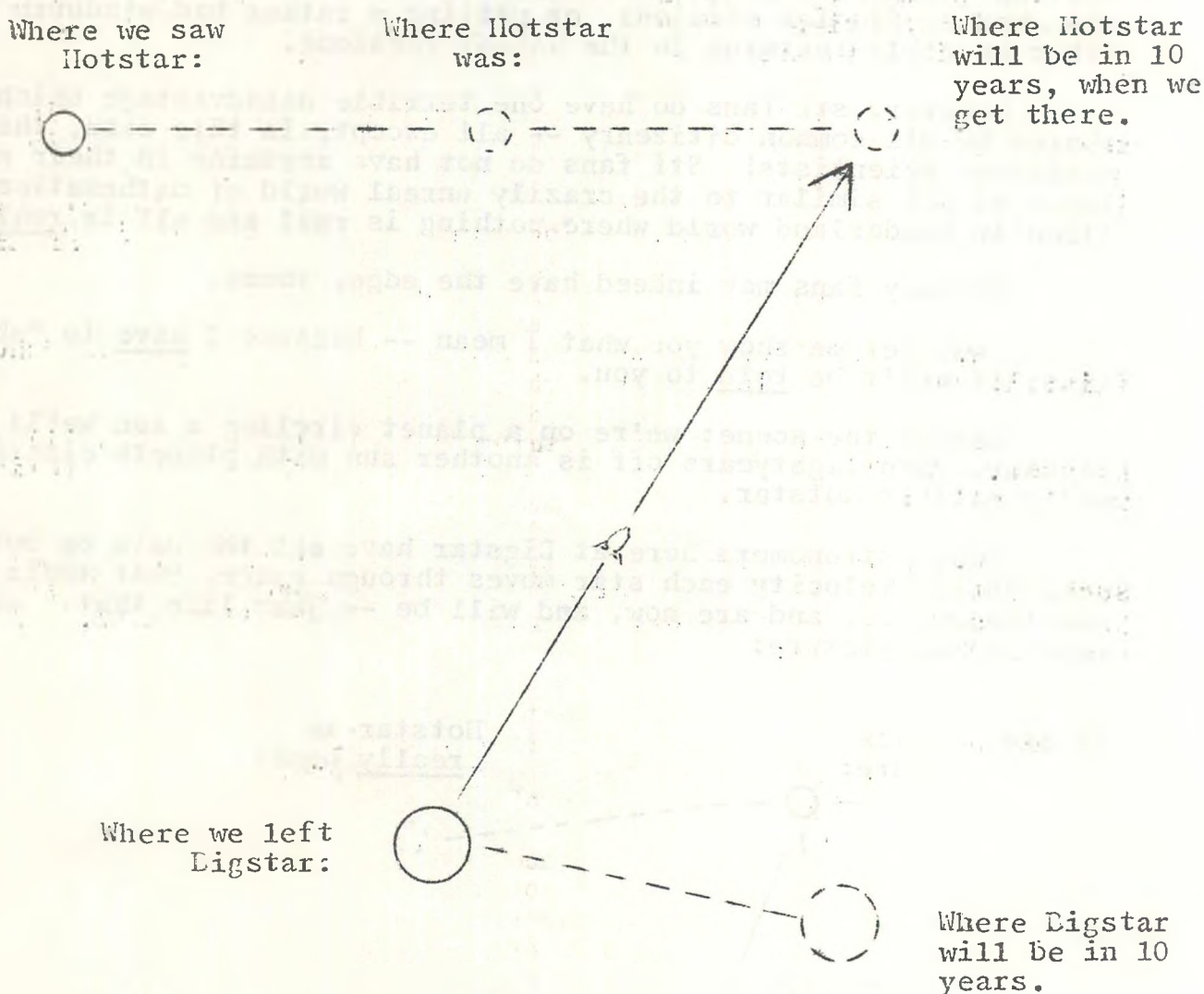
Now, what would happen if we took a trip to Hotstar at the speed of light?

Why, we'd simply have to aim for where it will be 10 years from now, that's all. The trip would take us ten years. Obviously. So what?

Are you sure it would take us ten years?

Suppose I showed you that we'd see Time Stand Still?

Take a good look:



Now, as we're travelling toward Hotstar, it will no longer be seen by us where it was 10 years ago; it will seem to move across space ahead of us on a collision course with our starship. In fact, Hotstar will seem to travel as far across space as it would normally travel in twenty years.

But behind us, Digstar will seem to have frozen completely still in space!

That's just an illusion, of course, since we're travelling at the same speed as the light emitted by Digstar. The light we see left there the same time we did, and Digstar is exactly where it will appear to us when we're out at Hotstar 10 years from now. So naturally Digstar seems to have frozen in its tracks!

But suppose you aren't on our starship. Suppose you're some other cat out there at Hotstar. You wouldn't just see Digstar off where it was 10 years ago; you'd also see our starship jump across that entire distance in a blinding flash -- instantaneously! You'd see us where we were at Digstar 10 years ago, and see us arriving at your world circling Hotstar at precisely one and the same flick of time!

But it's still just illusion, eh?

(Of course, I'm ignoring some things -- like accelerating up to the speed of light, then slowing down again when we get there -- and it's because this is just hypothetical classroom stuff. Let's keep it simple.)

There's one other thing we can visualize from that last diagram, before we're finished with it.

Suppose you stay back at Bigstar and don't make the trip. So there you'll be, ten years later, at Bigstar's 2nd position on that chart. Now, let's also suppose you had the equipment to keep the starship in sight all during its trip out to Hotstar. After ten years where would you see that starship?

Why, it would appear to be only halfway out to Hotstar!

In fact, the whole trip across 10 lightyears, as viewed from back at Bigstar, would seem to take 20 years! But you can see why that is: the ship takes 10 years to reach Hotstar, but any light reflected from it needs another 10 years to get back to Bigstar.

And while an observer at Bigstar might think the trip out took us 20 years, if we turn around and come right back -- why, he'll see us make that return trip in the blink of an eye, same as Hotstar's observer first saw it.

Now, there's just one thing wrong with all this. It's like the stories about When Time Stood Still. If you've read much of the old-time stf, maybe you saw how it finally occurred to some writers that their heroes couldn't be moving around in that "frozen-still" world unless they were fireproof -- the heat of air friction would burn hell out of 'em -- and furthermore, they'd need tremendous strength to be able to move anything. If they didn't burn up, they'd starve. Or die of thirst. Anyway, it was something horrible like that.

For this, we're going to need another diagram. And since I'll have to put it on the back of this page, I'll discuss it back there where you can glance to it easily.

There are some things I can tell you beforehand. In fact, it might be best if I did.

You'll have to realize that the speed of light is a limiting factor -- meaning nothing moves faster than that (and you'll know why, perhaps, before we're done here) -- for more things than just starlight. It applies to all forms of energy.

If Bigstar suddenly exploded into a supernova, the radiant blast wouldn't sear all the life off Hotstar's planets until 10 years later. Or consider the gravity-pull the two suns have on each other; if somehow, Bigstar suddenly ceased to exist (like, maybe it jumped into some Alternate Universe or kicked over to some Alternate Time-Track) then the sudden loss of its gravity-pull wouldn't be felt at Hotstar until 10 years afterward.

In short, anything that happens to Bigstar which can have any kind of "side-effect" out at Hotstar, no matter what it is, it's going to take 10 years to get there.

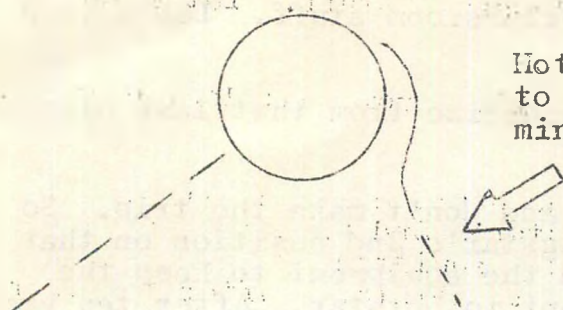
That's at least 10 years. It may take a lot longer to get there -- a wandering meteorite might take billions of years for the trip -- but absolutely nothing can do it in less than 10 years.

(But what about Faster Than Light travel? What about Hyperspace and things like that? All in good time, fella, all in good time!)

Another thing, tho it may seem absurdly simple at first: you'll want to know the definition of one horsepower. Now, one horsepower is the amount of energy you need to move 33,000 pounds one foot in one minute. If you want to take maybe 4 days to move that load a foot, of course you can expend a lot less energy per minute than one horsepower. If you want it moved a foot in one second, tho, you'd better have something a lot like sixty horsepower to move it with!

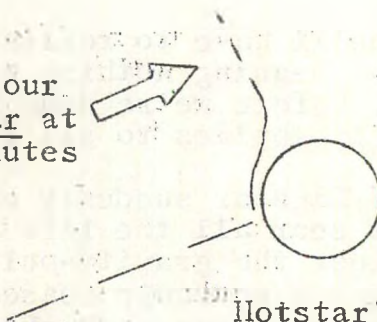
Now let's get to that third diagram -- and that halfwit they've got for an observer out at Hotstar!!!

Bigstar reached this position at precisely 10:25 p.m. on May 2nd, 3000 A.D.; it was seen in this position by Hotstar's observer exactly 10 years later -- May 2nd, 3010 A.D.



Hotstar's observer saw our starship jump out to lightspeed, here, at precisely 25.000003 minutes past 10 p.m. on May 2nd, 3010 A.D.

Hotstar's observer saw our ship arriving at Hotstar at precisely 25.000004 minutes after 10 p.m., May 2nd, 3010 A.D.



Hotstar's position, 10:25 p.m., May 2nd 3010 A.D.

Hotstar's observer reports: a spacecraft of some unknown type has just been observed to leave our celestial neighbor, Bigstar, and cross the intervening distance of 10 lightyears in less than one-millionth of a minute! (He couldn't tell how much less because his instruments wouldn't record any time-interval smaller than a millionth of a minute!)

Okay, we actually left Bigstar at the time specified, but it was in 3000 A.D.

Hotstar's observer simply couldn't see us leaving until ten years later. . . just a split-instant before he sees us arriving at his homeworld. Shook 'im up a bit, we did.

From our viewpoint, tho, the instant that observer saw us leaving Bigstar he was frozen in time for 10 years while we made the trip. He didn't "unfreeze" until we were arriving at Hotstar!

Now remember, behind us Bigstar was also frozen-still in its tracks

Now, just suppose our starship was so big, with such tremendous mass, that we'd have pulled Bigstar clear out of her path, after us, as we left ... and on approaching Hotstar, we'd have pulled it part-way toward us as we arrived.

Chillun, it couldn't happen!

Y'see, mass attraction or gravity-pull is just exactly like horsepower -- so many pounds getting moved such-and-sunh a distance during a certain period of time -- the only difference being that gravity doesn't quit, it keeps pulling, so we say it accelerates.

But the thing that matters here is that "period of time" business.

If we're leaving Bigstar at the speed of light, then no matter how much mass our ship has, it cannot pull Bigstar after us.

We see Bigstar frozen still in space behind us because we're moving at the same speed as the light it emitted when we left, the light that is now travelling along with us. But what we see is also true of Bigstar's gravity-pull on us, or our ship's pull on her -- the pull we feel comes from exactly where we left her!

So even though we're crossing 10 lightyears of space, every effect we can possibly get from Bigstar will be as if she were frozen still back there in her path. As if the effect, too, were frozen.

As if Time had stopped. Like Bigstar's light, one instant of time is travelling along with us. The ship, everything, is locked in it! As if Time was zero!!!

And you just can't move anything any distance at all if you have absolutely no time to do it! Our ship can't pull at Bigstar.

Approaching Hotstar, it's the same deal. Any effect we could have on Hotstar, even clear back at the start of our trip, could not reach Hotstar until 10 years later -- and that's the very same instant we arrived there. Our ship couldn't start pulling at Hotstar when we were still a lightyear or so out; there's no time! We're already there before the "pull" even gets started!

Time is zero.

Well-1-1-1111, now -- what's that mean to us?

Protons need time to swing around neutrons inside atoms. Atoms need time to exert pull on other atoms, to maintain the structure of molecules. Thoughts need time to travel along the neuron passages of the human brain. Things even need time to fall apart!

Behind us, time is zero. In front of us, time is zero.

Even on the ship itself -- all along its flightpath -- where it was and where it will be, time is zero!

We crossed a distance of 10 lightyears of interstellar space. Ten years of time passed in the Universe around us.

But for us -- the mere blink of an eye!

That Hotstar observer maybe wasn't so dumb, after all. He simply believed what he saw with his own six eyes.

Now, this "time effect" is what gives us the devil of a problem with our ship's fuel. Y'see, the ship hasn't got a great deal of mass -- a few thousand tons -- but just applying power to make her move takes time! At low speeds, that's no problem; you need exactly so much power to move so much mass to a given velocity.

But get up to 90% of lightspeed, and the rate of power you're applying per second only has nine-tenths of a second to do any work! It's just as if your ship's mass had shot up! Then you get really close to lightspeed and your power only has a split-microsecond to do any good, and ... well, every tiny bit faster you go just multiplies the power you need!

It's just like the damned ship's mass had shot clear up to infinity, the power you need!

It's funny as hell, too; because of course, you don't notice any time-shrinking. It's just that when you start out, a certain rate of power will move the ship to a certain speed; then you begin to notice that exactly the same rate of power doesn't give the boost it should, anymore -- and it keeps right on going down, the more power you pour on!

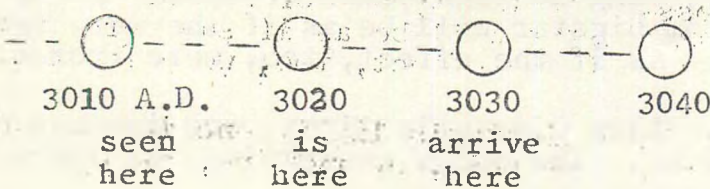
You never can reach the speed of light, of course. You just can't find that much power lying around.

And if you want, just for argument's sake, you can say maybe the ship's mass is approaching Infinity. What difference does it make? It still doesn't have any time to spend bothering anything else in the Universe! Ghod couldn't care less!

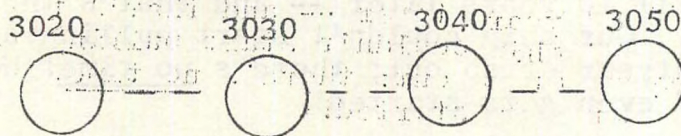
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So now, let's consider what it'd be like to travel Faster Than Light. (Next slide, please.)

Hotstar's path thru space:



10 lightyears



Bigstar's path thru space.

Let's say we're at Bigstar again, planning another trip out to Hotstar only we've just got this new, super Faster Than Light drive. The above chart shows how we'd do it if we were making the trip at the speed of light, again; we'd arrive at Hotstar 10 years later, in 3030 A.D., and everything we've covered thus far would hold true.

Now, look: if we did it at twice the speed of light, we could reach Hotstar five years sooner -- in 3025 A.D., to be exact. That observer at Hotstar would see Bigstar where she was in 3015, five years before we left there. Imagine his consternation, then, when we not only appear suddenly over his homeworld -- but when he spends the next five years watching our ship travel backward across space to Bigstar at her 3020 A.D. position! Imagine our own consternation -- we'd be there to watch it with him!

If we do it at 10 times the speed of light (across 10 lightyears' distance in one year) we'd reach Hotstar in 3021 A.D.; but we'd have to do nearly 100 times lightspeed to cut that one year down to a month.

When you start playing with things like that, it's just not my sort of game anymore.

So what about Hyperspace? Well, really, fellas -- that'd take a whole, new article to cover properly! Y'see, the Space/Time Continuum is curved, and

Remind me to tell you about it, sometime!

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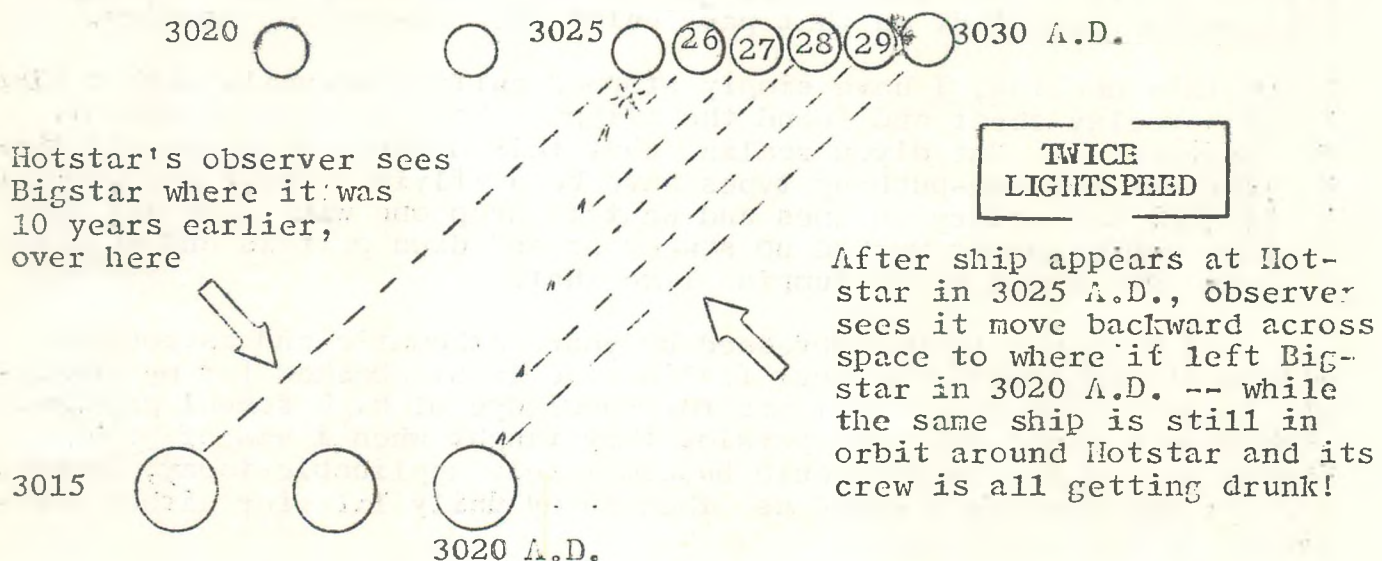
Robbie read through this month's article and a very small frown appeared on her brow. "But what does that do," she asked pensively, "To the old bit about people all growing old back home while the ship's crew doesn't age at all?"

I confess I forgot to mention that bit; but of course, that's how it would be -- and that suggests another way of saying the thing. Consider it like this: the fastest any form of energy can move in this Universe -- the fastest it can reach and affect anything or be detected by anything in this Universe -- is the speed of light. (If it moved faster, we'd end up seeing it in two places at once!) And with our ship travelling at the speed of light, then every bit of energy within that ship must be totally expended on just one job: moving across 10 lightyears' distance in just 10 years' time!

That leaves no time for anything else. Travelling at lightspeed is all any of it can do -- anything in that ship! So what you have, in effect, is "suspended animation"; but this is a complete suspension of everything, even to the workings within atoms.

And even as you approach the speed of light, you begin to get that Total Suspension -- of everything except just moving that ship across interstellar space. It's just as if time started shrinking, so far as any other work the ship's energy has to do. Which includes not only the crew's aging processes, but even their senses and mental processes. They'd feel no difference at all.

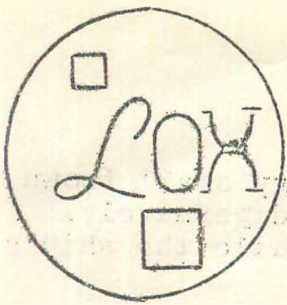
(Robbie sees it, now; she sees that crewman's hand moving back from the button ... for - ten - long - years ...!)



NOW, SOME OF YOU may want to play around with this a bit more. You conceive that a starship one mile long, travelling at lightspeed, would pass its entire length through any given point of its journey in slightly over $1/136,000$ th of a second. That's the fastest any nuclear particle can move from one atom to another...or is it? If you caught a particle travelling Faster Than Light, what would you see? The track of a third particle moving backward across a bubble-tank to where two particles then collide to emit it!? And then, that whole megavolt bustout of energy just going pffft!???

Or maybe you'd like to plot it out for just half the speed of light, where things have at least half their normal time for doing other work. Then you get phenomena like clocks running half as fast in space. Remember, I said you needed one of the greatest minds on Earth to figure out all the possible ramifications of this.

But the basic idea is simple enough -- isn't it?



PRIVATE MESSAGES to both Houses of Messers James Caughran and Colin Freeman: the pair of you queried about that "star halo" effect awhile back. I'll show it again in our June ish, making the Long Jump back to Earth; and I'll reply to your questions then, too, telling where I first ran across mention of the idea...(hope I haven't lost my reference source, now!) ...to Len Zettel:

I believe you simply didn't see the approach to Relativity I'd have to use here -- it couldn't be untechnical if it were yours!

HARRY WARNER, JR. - 423 Summit Ave., Hagerstown, Md. 21740

It's probably rank ingratitude for me to say this, but I feel more comfortable and at home in the mimeographed part of g2. I know that you have spent all kinds of money to get the fine reproduction through the more expensive publication medium, and I have said fine things about the result to you in previous letters. But I still feel somewhat easier at mind when I'm reading a fanzine that was produced through a fannish device. ((+I didn't blink an eye -- that one's too easy!+)) Maybe it's the result of an insecurity complex that causes me to assume that the multilith publication will suddenly disappear into the world of prodom much as Panic Button has done. If you continue to find the stencil slipping, you might as well stop fighting it and surrender to the typewriter by using the knob of the platen to return the carriage and to move to the next line. On some machines, the customary method of fast line-changing causes the slipping, even if the machine is in apparently perfect order. Decades of stencil-cutting had caused the rollers on this one to disintegrate, and I had them replaced, joyous in the thought that now at last I could cut stencils without breaking the thought at the end of each line. But the new rollers had no effect on that particular stencil-cutting problem.

+ On this machine, I have simply stopped cutting stencils with a plastic overlay sheet and found the slippage has, to a large extent, disappeared. But d'you realize what this means? It means all this time you fanzine-pubbing types have been 'flying' these machines as if they had rotary engines and want to drop one wing, and all this time you've never worked up squadrons and dawn patrols and suchlike. + Tsk. Why don't we do sumpin' like that?

I continue to be impressed by your mathematic and astronomic wisdom. ((+Hhhah!+)) without feeling the least abashed for my inability to meet your qualifications for knowledge of high school physics. (Somehow, I doubt that the physics they taught when I was of high school age in the 1930's would be completely applicable today, anyway.) I can't imagine how I would use them in my daily life for either vocational or hobby purposes.

+ Has the comparison occurred to you, then, between this and the qualifications JWC would have you meet to be a reader of Analog? Or of the Golden Age Astoundings, for that matter?

Would it be possible to create an elementary type of three-dimensional star charts with multilith illustrations? A few years back, when the photography magazines were trying to stir up interest in the stereo photography procedure, they occasionally published stereo pairs that could be viewed without anything over the naked eye for an illusion of depth. I don't recall how far apart they were placed on the page, but you stared at a spot right dead center between them, then gradually moved the magazine toward your nose, and suddenly the images merged and you saw a three-dimensional picture for a few moments, until screaming ocular muscles gave up the struggle and you either lost focus or became permanently crosseyed.

You know, I have come to suspect a suspicion that won't go away. It snuck into my mind while I was reading the remarks you scattered through these last two issues on the fans you used to run around with and your dislike of fanzines that come for loc's and apas and several other topics. Is it possible that all the stands you've been taking and arguments you've been getting into derive from one simple and harmless little trait: that you hate to write letters? It sounds that way,

and it causes me to think about the same dislike of letterwriting that Ted Sturgeon freely admits to and what a remarkable correspondence might spring up between you and him as a result.

+ Don't move, Harry; stay right there.' I've got something here I've
+ sort of kept in mind for you ... yes, here 'tis; now, read on

EARL KEMP, 4925 N. Washtenaw - Chicago, Ill. 60625

Well, if everything goes according to the script, we should make the con out there this year. I'll expect you to buy the first three Margaritas; is it a deal?

Think a kind thought this way, occasionally, and I'll do the same. It won't do you any good to write, you've had it from me for the next _____ (kindly fill in) years.

+ It is, most indubitably, a deal. But can you imagine me trying to
+ convince Harry Warner that there are quite a lot of others in fandom
+ who do matter somewhat besides the avid (to us), noisy (to us) fan-
+ zine fans?! Now I publish one, I guess I'm in Rome -- but some of
+ these Romans got some peculiar ideas of behavior, if y'ask me ...

MARK OWINGS, 3731 Elkader Road - Baltimore, Md. 21218

M'sieu Jheetu:

Those last comments of yours disturb me. To take them in reverse order: Probably the only real opposition Detroit will face would be from Cleveland. The bid was semi-seriously announced in the Chicon program-book, so you should have known about it by this time. Secondly, who said Phil Rogers could win TAFF? For that matter, who's interested really? Myself, I quite happily contribute to TAFF --- on the ground that it might someday become worthwhile. As for that clubfan-fanpubber vendetta, I'd be quite happy to believe that the average Philadelphia fan doesn't read fanzines; from what filters down to me, not many of them read science-fiction either. In fact, one Nameless Source would have me believe most PSFS members can't read...

+ How d'you do that thing? Jheetu? No. Jheetu. Tsk; and here I
+ always tho't those platen knobs were for mixture control on this
+ machine! Okay, no fooling around, now: on some real opposition to
+ Detroit's bid, let me quote you something from Page 5 of 'DOUBLE BILL
+ #8 (25¢ each or 5/\$1 from Bill Bowers, 3271 Shelhart Rd., Barberton,
+ Ohio 44203): "Like, how would the US fen who didn't go to London in
+ '65 vote for their choice? . . . What I suggest is this: . . .
+ Have the London Convention Committee send out voting ballots to all
+ the non-attending members when they send out the progress reports,
+ and let them choose either Cleveland or Detroit, send the ballots
+ back to England, to combine with the con attendees votes. (Of course
+ if London doesn't like this idea, and they agree to it, we could
+ by-pass London and let the fans vote here in the States this year
+ for the '66 con -- at Pacificon II.)"

+ It occurs to me, Mark, that some very real opposition to Detroit may
+ arise, because of this problem, from fans who actually have nothing
+ to do with either Detroit's or Cleveland's bid -- fans who realize
+ they'd not have to bother with any problem if Detroit were persuaded
+ to withdraw, making Cleveland's bid unanimous -- fans who might even
+ evolve into a "pressure group" trying to force Detroit to withdraw,
+ simply so they won't be bothered. I've seen this kind of jazz before
+ and it wouldn't surprise me in the least, now. I'm hoping both
+ Detroit and Cleveland refuse to have any part of such nonsense; it
+ might indicate some slight maturity in fandom.

+ You could ask Phil Rogers' nominators who said he could win TAFF.
+ This late in the race, I feel safe in saying I know how he could've
+ done it -- if his supporters simply got out and got up the votes --
+ and I know where they could've done it well enough to win TAFF be-
+ fore ATOM's supporters would ever get wind of it. Now, these are
+ perfectly valid political techniques in any election based on the

+ democratic principles fans profess to believe in -- but d'you see the
 + furor over "casual fan" votes, the charges of "dirty politics" and
 + feuds this would cause in fandom? That's why I say fans as individ-
 + uals may believe in fairness and democracy, but as groups they're al-
 + most totally incapable of practicing 'em. It's too much to ask of
 + people who're simply in fandom for their own, personal enjoyment,
 + perhaps. If so, they're always going to have such problems.

+ There's nothing wrong -- and a lot that's very right -- about the way
 + TAFF is set up, now. Where it suffers is from a fault that's in fan-
 + dom, not in TAFF.

COLIN FREEMAN (his address as our European Agent is around here some-
 where...)

Have you read van Vogt's "The Voyage of the Space Beagle" and is
 this the sort of exploration you have in mind? If you haven't read it,
 get it.

+ Somehow, it seems I must've read that a half-dozen times before van
 + Vogt ever wrote it! (I have not read "Canticle For Liebowitz" or
 + "Man In A High Castle" or "Glory Road" and doubt very much that I
 + ever will.) There's an earlier exploring series I vaguely recall
 + -- bunch of robots found this professor's corpse (corpse??), revived
 + his brain and put it in a robot body; then they went star-roving...

At first I thought you were pushing non-publishing fandom be-
 cause of TAFF, and this is fair enough because they are involved in
 TAFF, but now I see that you are reminding us of their existance at
 every opportunity -- if not more often. What's the idea? O.K., so the
 guys exist. They have every right to exist, but what have they got to
 do with most of us in fanzine fandom? Apart from cons, we are two sep-
 arate worlds. What do you want us to do -- send them greeting cards?

+ Well, there's where Phil Rogers could've got all those votes with
 + fanzine fans being none the wiser. There are the fans who sent the
 + "WSFS, Inc." founders out to be lynched by irate fanzine fans, the
 + bunch who "doublecrossed" San Francisco at the '52 Chicon and -- it
 + has caused one blowup after another in fandom, Colin, with these two
 + groups remaining so indifferent to the other's existance? Do I need
 + to get Busby and Coulson in here again to prove that indifference?
 + And does such indifference show either group to have any respect for
 + the other's right to exist? And must this go on?

I see from Warner's letter that your secret is out. You want to
 join an apa but you can't decide which one. So you complain that Robbie
 has never seen an apazine. The expected happens and everybody sends you
 apazines. You examine them and decide which apa to join. Hope it's
 OMPA.

+ Don't believe all you read, even if it is Harry Warner's letter! I
 + have no need for apas; Robbie had begun showing a distressing curio-
 + sity about them, however. Now she's finally managed to borrow a copy
 + of Enéy's A SENSE OF FAPA and, I am pleased to note, that took care
 + of it. She has since waded through Sam Moskowitz's THE IMMORTAL
 + STORM cover-to-cover.

You have me slightly wondrous concerning your periodic upheavals.
 I used to think you did it to provoke a controversial lettercolumn, but
 now I wonder if you are perhaps trying to prove something.

+ No -- merely to say it. Perhaps now I can. Let me say beforehand
 + that I know you'll ask rather exasperatedly why the devil I couldn't
 + just have said it in the first place, without all this upheaval. If
 + not, I congratulate you, now.

+ All the space I've wasted these past few months on "dirty politics"
 + has been done deliberately to get everyone fed up with it. I wanted
 + the comments I've received about it, knowing you were all getting
 + such things out of your systems, before I said this. Otherwise,
 + what I want to say would quickly have been forgotten in the resul-
 + tant furor it caused.

- + It seems to me that today's fandom possesses a rather large amount
- + of "fannish traditions" which include such concepts as What Fandom
- + Is Like and What Fandom Means To A Fan.
- + These "fannish traditions" were evolved quite some time ago -- but
- + they're the sort of thing older fans pass on to young neofans, the
- + tried-and-true concepts which may influence very many of our own
- + conclusions and decisions in fandom. How to run World Cons, how to
- + publish a fanzine, how to promote a TAFF candidate, how to run a
- + fanclub -- perhaps even how to enjoy ourselves in fandom, how best
- + to associate with other fans.
- + These "fannish traditions" were established, and proved in practice,
- + in a fandom that was small.
- + It isn't small, now.
- + Colin, I feel that the reason today's Big Fandom is such a seemingly
- + awful prospect is simply because nobody's come to grips with it. I
- + suspect there are things needing to be done here, things every bit
- + as important to fandom as the original founding of apas or even the
- + first conventions.

You have put forward some reasonable arguments in the apa discussion as a result of which your duty is now clear. You must found and organize a new apa with an unlimited and unrestricted membership in which fans are not pressurized to publish their own zines. That should satisfy this latent frustrated demand that you represent.

- + We'll call it "Apaville" which is a little village full of beeyooti-
- + ful femme fans and plenty of booze, and we'll all fly over in our
- + machines after each patrol and burrrp our spacebars....

WIM STRUYCK, Willebrordusstr. 33B - Rotterdam, Holland:

Lazier and lazier I get. Four issues of g2 look at me now, reproachfully, and filling me with shame. True, you did send them in pairs ((+No, we did not send them in pairs -- it's strange that you are receiving them that way.+) but still the fault is mine. On the other hand, I can't see any improvement. My days seem to be filled as never before, and I don't even work (for money) very much. There isn't much of that kind of work. Let me show you one day of my life, to illustrate. This morning I got up at half past nine. (I had worked late the night before.) Loes was already at my Mother's, helping with the Spring cleaning. I was to come at about 3 in the afternoon, to do some wallpapering, and before that I should go into the city to bring Loes and my Mother some articles I had to buy.

So. I first made me some coffee and read the morning paper. Then I started on my motoped to change a back-tyre. Had to dismantle the rear wheel. It didn't go right. Had to break off for telephone calls, lost some screws, had to go and buy new ones. The new tyre didn't fit, had to go exchange it for another one. At 2 I made myself some bread, ate it standing, then phoned my Mother to say that I'd come later and couldn't go shopping. I couldn't leave the bike. It stood upside down before my house and on the street.

At five I arrived at my Mothers (after about half an hour of cleaning up myself and the tools). I did the wallpapering, or rather finished what I had done the day before. We had dinner. We went home. On the motorbike, not the motoped. Had coffee. Went to a rehearsal from 8-9. Returned home 9:30. Read one story, had one cup of coffee. Copied some music. Now 11 o'clock and writing this letter. TomorrowI won't bore you! Not every day is as bad as this one. But there's always something; it seems. I have got two rooms to wallpaper, I've got to do gardening, to whitewash, to seed grass, to clean the motorbike carburetor, and sometimes I also work for money. Next Saturday and Sunday from 4-7 & 8-12. Tomorrow 9-4 (at night).

- + Wim plays piano for a living; I've heard somewhere or other he plays
- + rather well.

Now I haven't got any room left to say anything about the g2's. But, that I enjoyed them as usual, and that I want to thank you and the Kujawas' whiskey. I'll ask Letty to give you some more.

+ Win, I would have printed anything at all that you bothered to write
 + just to have that last line! But now here's a fellow in Rotterdam
 + with his motoped upside down on the street in front of his house,
 + with the back wheel off, the drive-chain hanging loose from its
 + pedal sprocket, the rear-wheel brake cable disconnected and ghod
 + knows what sort of gear linkage that motoped has! And the new tire
 + won't fit. Your only remark that puzzled me was how you had made
 + yourself some bread. The expression is unknown here.

BETTY KUJAWA, 2819 Caroline St., South Bend 14, Indiana:

Hey....its getting spooky. Kuj has been going down to a fishing camp at Mountain Home, Ark., each time Something Bad Happens.....as they are due to take a bus-load there two weeks from now on a Big Excursion Thing Gene is wondering what next?? First time he went there was the week-end of JFK's assassination, this last week-end he was there and uh-huh on a Friday again that earthquake hit Alaska....get this, up to the moment it struck the fish were biting like flies.....minute it hit they stopped...dead...no more fish caught Friday, Saturday or Sunday. Is possible they could feel the tremors?

+ Is possible Mountain Home, Arkansas, had an almost simultaneous
 + earthquake of its own. When those things kick down through the
 + Earth's core, they kick back in all kinds of directions -- and the
 + seismologists say that the Alaskan quake had the whole Earth ring-
 + ing like a bell. Fish could sense it. When you're out in timber
 + country and see a li'l wood spider gathering up his web, you can
 + bet any meteorologist it's going to rain within 12 hours. Gene's
 + next trip will be one week from the day I'm cutting this on sten-
 + cil....y'know, he just might have to find hisself a new fishin' hole
 + someplace else!

Since last Nov. I've held back (barely) and patiently awaited Spring and the time when we could get another dog....Kuj opted that we be wise..get a registered breed, so we'd know what size and all the dog would grow up to be. So okay, said I....This was before I had dealings with the AKC (American Kennel Club)... Y'see having where-withal and good intentions and needing a pet and companion means nothing, n-o-o-t-h-i-n-g.....I'm not intending to breed the dog nor to show it for ribbons, prizes and egoboo.....ergo, I am out.

I think I could adopt a baby in half the time and with half this trouble. What ever happen to the card-board box of puppies in the Feed-store window like when we was kids? Me for the good old days when all you'd have to do is drop the word at the corner grocery and tell the kids on the block and you'd have puppies coming out of your ears by sundown.....hand me that time-machine, I'm going back.

Kuj says to tell you that there National Championships will be held in Reno....dunno where we'll stay, last time Gene was at a skeet pal's motel&gambling-hell-thing but that guy killed himself in his airy-plane awhile back....now Big Daddy says to tell you that the theory of Torque is greatly maligned. It gets the blame for other phenomenons ofttimes...he sez it's easy to blame it for this-and-such ((+Such as 'the P Effect'?+)) but that he is just too damned pooped and sick wid his flu (and his pumped-full-of-penicillin-fanny) to comment intelligently.

+ That's okay. Gene knows as well as I do that some pretty weird
 + things can happen when some guy starts flying a typewriter....

Should-a seen me kids flying the new bird from Charlotte, N.C. over Ashville to Nashville above the Smokies...(eh, and 5 days later 4 folk in a similar plane splattered themselves all over a mountain-top right on the route I took)...over Ashville I waved at Billy Graham (mebbe that's why I made it a-okay?).

+ Betty, I do believe your attitude toward flying has changed just a
 + wee bit for the better. Yessir, I just don't recall you regaling
 + the CRY lettercol (we've got to send Buz a sub someday) as to how
 + one does not find one's checkpoints enroute by pushing the airplame

+ through 'em as one does little pins on the sectional map. (I got the
 + "skin" on this stencil...be some tricky "flying" on this page!) Ah,
 + but wait....
 +
 + A few readers may not know that BettyK isn't just riding around in a
 + plush-expensive-type airplane with her husband to Big Money Skeet
 + Contests and faaan conventions and the like. BettyK went out and
 + learned how to fly that airplane herself, so if Gene ever konks out
 + she can at least bring them and the ship back down in one piece ...
 + and at an airport, thru the traffic pattern, with clearance from the
 + tower as per FAA regulations, by jing! So then, Big Kuj trades in
 + their Beech Bonanza on a twin-engine Piper Apache....
 +
 + As for 'the P Effect' I mentioned back there, Betty wrote in an ear-
 + lier letter about Gene in training for the multiengine license to be
 + allowed to command their new ship:

We returned from SanAntone Jan 9th..the next Tues, Jan.14th Gene
 flew right straight back there again and spent the next 4 hectic days in
 a crash(ouch)-course of multi-engine instructions, Joe.....now he'd
 heard about that "P Effect" but you know Kuj, he's from Missouri....yeh,
 so about the 2nd day up Bill(our long suffering instructor, the sort of
 Joe Gibson of the Marine Reserve, meaning he's about the biggest gold-
 brick wheeler-dealer I ever heard of in that outfit) well Bill cut off
 Gene's left engine....Gene naturally give the remaining right one more
 juice.....

..she can't hold altitude, she stalls...Gene with foot natur-
ally jammed h-a-r-d against the compensating right rudder, gives the
 right engine everything he can in power...and....

The "P Effect"...plane
 goes with the direction of the prop and....Big Daddy, instructor and
 airy-plane are flying along upside-down! Gene now believes in the 'P
 Effect'.

+ One time I'm reading where some guy has rebuilt an old WW1 1917-type
 + Sopwith Camel complete with rotary engine...and he finds on take-off
 + it wants to roll over and kill him exactly like those crates were
 + claimed to do. But he wondered how this dinky fighter won its spot
 + in history for downing more enemy aircraft than any other plane ever
 + built -- especially against the Fokker D-7, a much better and faster
 + and more maneuverable aircraft! So then he tried a snaproll in the
 + opposite direction to that whirling engine, and she just barely made
 + it around...so he tried one with the engine-twirl, and...a moment of
 + violent pilot disorientation, and....yep, upside-down -- and going in
 + the direction he'd been coming! She could also turn awful tight with
 + that rotary's help. So maybe 'twas no wonder....! But there were
 + other ships besides the Camel with rotary engines, and they never had
 + it that bad. Most int'resting...

POUL ANDERSON, 3 Las Palomas - Orinda, Calif.

Here comes Anderson again, bitching as usual. Not that I don't
 enjoy g2. I do. But a certain fraction of the pleasure comes from the
 reversal of positions: here's a fan with the guts to climb out on a nice
 breezy limb ((+Yeh, I'm flying this machine right over the treetops now
 ..it's bad here!+)) where the pros can snipe at him.

So let's look at this planet you just discovered and named dng
 or Hellhole.

First its binary sun. The primary one you tell me is about half
 the size of Sol but three times brighter and with about the same mass.
 According to current astronomical theory, this isn't possible. A star
 with the same mass as Sol would have just about the same luminosity
 (variations from the mass-luminosity ratio are slight, and apparently
 due to differences in chemical composition) as long as it's on the
 main sequence. When it gets old enough to move off the main sequence,
 it'll get brighter all right -- but bigger at the same time, until it
 turns into a red giant and eats its inner planets. Then it starts to
 contract again, goes through a series of violent adjustments (this is
 probably what novas amount to), and that should take care of the outer
 planets. Eventually it shrinks into a dim white dwarf, like the

companion of Sirius.

So where did you find this star of yours?

(+ Hhhheh! Keep going -- you're doing fine!++)

Doubtless the same place you found its companion, that ghostly thin red star with merely twice the mass of Jupiter. Astrophysicists will tell you, the old fuddy-duddies, that an object with twice the mass of Jupiter isn't a star at all, but a planet, because something so small can't generate the interior heat and pressure needed for thermonuclear reactions. And I really can't imagine a gas bubble no bigger than this hanging together. Not enough gravitational field. You need some kind of massive central core, or the whole thing flies apart. ((+Ja! Und zo...?+))

Now, the planet. Temperature ca. 373° K. (if I'm plying people, I'll ploy 'em good) and atmosphere of "hydrogen, nitrogen, chlorine, and formaldehyde -- with not a speck of water vapor and almost no trace of oxygen." You know what happens when you mix hydrogen and chlorine or fluorine at ordinary room temperature? They scrape you off the ceiling, as soon as the violently corrosive acid vapors have dissipated. ((+I dunno if 212° Fahrenheit is "ordinary room temperature" where you came from, but it sure ain't where I came from!+))

However, take courage. This planet's atmosphere isn't going to explode. An Earth-size planet with that much solar energy falling on it can't retain hydrogen, which escapes into space; and the halogens are so reactive that they simply don't occur in a free state in nature. ((+Possibly ... but you can't lose all hydrogen, there's so much of it; and nature could get a bit of help in this planet's ecology..!+))

The nitrogen looks plausible enough, and the complete absence of water vapor can be defended. (What you say is, "Photodissociation of the water molecule causes the liberated hydrogen to escape to space while the oxygen recombines with surface minerals," only be sure to say it in a plonking voice.) But where's the carbon dioxide got to? ((+Stratosphere, mostly.+)) Thermal breakdown of carbonates in the body of the planet should produce fairly huge quantities of this gas, and in the absence of liquid water it does not get tied up again in rocks. (Us expert planetographers can say "Urey equilibrium" without even smiling.) Cf. recent data on the atmosphere of Venus. The formaldehyde I'll pass on; dunno where you found it, either, but conceivably it resulted from oxidation of methane.

So let's go down to the surface, braving those rivers of liquid mineral. Like the salt that melts at 100° C.... Not in my edition of the Rubber Handbook, it doesn't. There you have to get up to 801° C. In fact, I can think of very few inorganic substances that come anywhere near melting at 100. ((+Hoo hah! Someone once told me I'd have this trouble if I ever said merely "salt"...Poul, try halides -- the -oxide and -oxate compounds like chromium oxide, of which this planet has more than the usual minute amounts. Try BORAX, for that matter!+))

Be it understood, your series is very well conceived and a lot of fun. I am only carping on behalf of all us battered old pros. It simply ain't that easy designing a planet. In fact, it might be worth trying as a curative assignment for those psychos who believe they are God. You think you got troubles? Man, let me tell you about this planet I'm currently working with.....

And your previous issue; with the section on stellar astronomy, was a beautiful job. In fact, I've put it on my reference shelf.

+ I've begun to have some vague thoughts about reworking a lot of
+ this material -- and redoing all the artwork (I can think of some
+ improvements there, too) -- in a single volume, a sort've SCIENCE-
+ FICTION FANS MEET THE UNIVERSE thing, which might have some small
+ use as a reference work. Well, perhaps.

+ But you've offered me a most excellent opening here, Poul. (And
+ this being the end of the lettercol, I can drop these plus-signs
+ and get down to work.) All this time I've been bellering that

today's science-fiction is ruled by a "Campbellian Orthodoxy", some may well have thought I was merely (and stupidly) implying that John Campbell forces his own ideas on writers, refuses to accept any other ideas -- and what he rejects is what the other magazines get. Which is sheer rubbish. What John has done, thank goodness, is force writers to make the 'science' in their science-fiction authentic, thus ending that earlier period of pulp-magazine, pseudo-'science' crud we all deplored.

But every new trend, no matter how much good it accomplishes, is almost inevitably carried to later extremes which prove equally as detrimental. 'Too much of a good thing, in short. What was good becomes, in its turn, an evil. Now, you're one of the few writers who can take what's even become an evil practice and do a good job with it -- but look what you've done, here!

Obviously, I'd made up that whole binary star system and planet out of whole cloth, without the least effort to check my facts; matter of fact, I had to stretch my head a couple new directions to do it! So what do you do? It's clearly not authentic, so you heave the book at me! As tho you felt you've got to be authentic ... even to a fault! Now, let's see if I can't demonstrate a better way, and not just preach about it.

We have this star-system in front of our starship, see, no matter what the book says; and we have the data I gave. Does this mean we must throw the book away? Certainly not. About the primary sun, you said, "When it gets old enough to move off the main sequence, it'll get brighter all right -- but bigger at the same time," so what's the answer? Obvious. Where the data says it's about five-tenths the size of Sol, that's wrong; it should say about five times the size of Sol. Somebody simply misplaced a decimal point. Its companion is something else again; it can't be a star and that gas bubble can't be there. But think, please, of the burned-out cinder of a dead star, a very small, minor sun at its best, with most of its mass dissipated long ago, just this little bit left -- twice Jupiter's mass, incredibly dense, its size not much bigger than an asteroid, a black lump of rock -- with a solidified crust, but with its core still molten, slowly cooling. So imagine the magnetic field that body could generate! So I don't show a tiny, black rock as the corpse of a dead star; I show a big gas bubble dimly glowing, like some giant hydrogen arc lamp that's plugged into a weak circuit! D'you think I'd have all those place-name references to Purgatory without something being dead? It's not in the books, certainly; and much of my postulates may be in error. But it's rather intriguing. Now, that planet: 100° C. is the mean average without much variation, perhaps -- but such geological processes, with the accompaniment of violent catalysts, must raise temperatures quite a lot in some localities, not to mention resultant volcanic activity. The region we explored was possibly the most accessible, least rugged area on that whole planet. At lower altitudes, formaldehyde gas isn't at all unlikely -- nor its condensation to form "black rain" -- since such areas compare to the ocean bottoms of Earth, tho such low-altitude regions cover a small percentage of Hellhole's surface (where they aren't honeycombed deep within its crust). Ghod, what a world!

And with one star dead before the other formed, perhaps this is a binary that could have planets. No? And wouldn't a magnetic field of such strength slowly gather itself a nice, big bubble of gas?

But d'you see, now? I believe the trend of making the 'science' in stf authentic has reached the stage where you can kill any interest a reader might have in that part of it. If you go strictly by the book you're bound to! So for ghod's sake, speculate. And throw in an occasional good human error like misplacing a decimal point.

Let's make it fun!!!

Of course, I'll be extremely interested in everyone's reactions to my article this month. I certainly have proof already that this fanzine reaches many fans who don't claim technical understanding even on a highschool physics level -- yet, by Yngvi, they like science-fiction. They know rockets work in space, too. Something odd there!

Of course, I am somewhat curious about that "current astronomical theory" Poul mentions because any such 1;1 ratio between the mass and luminosity of most stars seems just a bit odd.// Stars vary in size and brightness; their sizes range from 4,000 miles to two billion miles in diameter! A sun's size depends on how much dust & gas was around when it began to form. But the mass of most stars doesn't vary more than 1/5th to 5 times that of Sol. Also the density of matter within stars varies tremendously, but not mass. If a sun is $\frac{1}{2}$ Sol's size, but has about the same mass (as I made Devil Star) then its density is twice Sol's. This indicates more heavy elements than Sol has, which may indicate this sun's age. And if I now say Devil Star is 5 times the size of Sol, with the same mass, it'll have just 1/5th Sol's density. This means it has a low percentage of heavy elements.// The brightness of a sun depends on two things: its size and its temperature. The hotter it is, the more light it gives per square mile of surface; the bigger it is, the more surface it has. A big, hot star is bright. A big, cool star may be no brighter than a small, hot star.// If Devil Star is $\frac{1}{2}$ Sol's size, it has only one-fourth as much surface area; so if it's 3 times brighter than Sol, its brightness per square mile is .75 Sol's -- meaning it's slightly cooler than Sol. Now, if I'd made it 4 times brighter than Sol, then its square-mile brightness would be equal to Sol's, just as its mass is. (Is this Poul's 1;1 ratio?)// But by making Devil Star 5 times as big, I'd increase its surface to $1\frac{1}{4}$ times Sol's and its square-mile brightness becomes 3.75 times Sol's which means it's a hotter star. So it's either small and cool, but with twice Sol's density, or big and hot with only 1/5th Sol's density. If density were a direct indication of temperature, this would be all wrong: the denser, the hotter. But if Poul can assume we'd find a sun by random choice on the edge of the Hyades to fit some current theory, then I can juggle my decimal points. But stars do vary in size, density and brightness.// However, I'm sure you're interested in all this. Yeh. That's why it's back here. But we are just watching this West Coast mess, now, waiting for any action by the Unghodly that deserves any notice. In their publications so far, the erroneous assumptions of "fact" have been exceeded only by their convenient omissions of much fact. For instance, they've assumed no one outside the Pacificon Committee would have assisted Bill Donaho from the very beginning -- or was that a convenient omission?

Anybody need a map?



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