

G<sup>2</sup>

JUNE 1965

Now

WE'VE  
HAD IT!

In the February issue,  
with a series of nine little  
drawings, I stated flatly  
that "you took off from  
Earth to put that  
space station up

NOISE

there...from a moving surface...  
and therefore, you took the Earth's  
rotation up with you and imparted it  
to the space station. D'you see? Its  
orbit drifts with that." And my nine  
little drawings showed a space station's  
orbit "cycling" slowly eastward 'round the  
Earth.

The little drawings made it rather im-  
pressive. (In fact, I seem to recall making some  
remark about never having seen them in any technical  
reference book.) The whole thing was a complete and  
deliberate fake. And it was a rather good job, if I  
do say so myself.

Of course, in no way did it resemble any sort of  
"test" of each individual reader of this fanzine. (That kind of  
inquiry is best done by the "fan-poll" method; but unless you  
know there's something to "poll" the readers about, the "poll-  
results" aren't likely to mean much.) (And a lot of "fan-polls"  
don't.) (But I digress.) No, I pulled this stunt with a strong  
suspicion that even those who knew better would let it pass,  
that everyone simply wasn't interested enough to care. I had  
a strong hunch there would be absolutely no response to it at  
all, from anyone. I expected to receive locs about everything  
else but that, even from the ones who knew....

There are quite a few subscribers to this 'zine who must  
certainly have seen through that bit of crackpot theorizing with  
hardly a moment's thought. But denouncing or declaiming it  
would require a bit of technical argument, a lot of time; and  
too much effort being devoted to a subject which simply wasn't  
all that interesting. It didn't occur to any of them (and I  
thought it wouldn't) that this might mean a crusade is dead.

Fritz Leiber is the only one who did mention it -- but  
only in passing, in a loc prompted by more important things (see  
LOX) though he has to be concerned with scientific integrity more  
than most readers would care to be. He had just this much to



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say about it, and no more:

"As far as an Earth Spaceport goes, it still seems to me that any equatorial one is best -- that 1,000 mph bonus since earth rotates and moon revolves east. If not Equatorial, then near as you can to Earth's hot G-string (or hottest great circle). One thing, tho, Joe, I don't want you assembling my satellite if "the ships going up to assemble it (keep) imparting the Earth's rotational speed to it" -- because I don't see how they're going to do that except by giving it a very very hearty bump."

Fritz knew -- as of course, others knew -- that I was all wet. But nobody was going to dig into any "why" of it and I have not received one, single letter from anyone else who as much as implied that I must be some kind of a nut!

The only way a ship could get any such "rotational drift" would be for it to take off from anywhere on Earth except the polar regions, headed directly north/south into a circumpolar orbit, without making any allowance for the Earth's rotation (which would be rather foolish). Then its trajectory (T-E) would be thrown off by Earth's rotational speed (R-E) very slightly, the maximum possible deviation being no more than  $3^\circ$  for an 18,000-mph orbital velocity, so it would end up circling the Earth in an orbit tilted up to  $3^\circ$  max., instead of in a due north/south orbit over the Poles. Furthermore, the only time it would experience such "drift" would be while it was climbing out to that orbit. The work-energy of Earth's rotational speed would be used up in putting it into that tilted orbit.

But there I was, yakking about an "orbital precession" that was pure invention and there wasn't a murmur out of the crowd. Worse yet, none of this "orbit drift" nonsense was at all necessary to my main topic of a spaceport/space station/Moonbase system and where the spaceport should be located on Earth. Any orbit that's tilted northeastward on one side of the Earth will be tilted southeastward on the other side; which side you're on (and which orbit you shoot for) depends simply on what time it is....

But the thundering silence which greeted this stunt (especially from readers who've shown no reluctance to pin my other fool notions to the wall) seems indicative of a strong current trend: today's science-fiction readers don't really give a hoot for scientific science-fiction. They don't much care whether the "science" in s-f is accurate or not -- at least to the extent that they don't want to become much concerned about it. They don't want Science.

There have been times in fandom when I couldn't have pulled a stunt like this without being rendered into Instant Hamburger. Such times are past.

What's wanted today -- and I'm inclined to think it just might be what's needed today -- isn't Science per se; what's missing and longed for in modern s-f is a much broader and deeper concept which transcends any suggestive dogmatism of scientific accuracy, a concept where imagination has free



rein to explore new vistas, new dream-worlds. Just find them, first! and let's worry about how "scientific" they are later.

And if Science can't find them; then nuts to Science! Some fans are already saying it can't, saying "nuts to it!" simply because it isn't being done in any instance worth getting excited about. I think it could be done, but not the way it's been done before.

I concluded that the only thing which might really matter about the location of a spaceport on Earth is that it could have to be built at some inconvenient site -- maybe where a city must be moved to make room for it. Or better still, so space-shots which don't make it won't fall onto the city. It doesn't really matter which city is involved, except that it should hopefully be large enough to pose a hefty challenge.

(Matter of fact, it seemed quite possible that I could have carried this farce to the point where Los Angeles had verbally gotten carted off, bag-and-baggage, quite satisfactorily before anyone bothered to show it wasn't at all necessary!)

(It also occurred to me that we might do such an excellent job of meeting-the-challenge and moving-Los-Angeles that some of you would end up wanting it moved anyway!)

You must realize that I've been having fun with this. Particularly since it's Los Angeles, and especially since I've been discussing it in the San Francisco Bay Area -- indeed, yes! I'd begin describing how it was "necessary" to build Earth's spaceport on the Santa Barbara Peninsula and people with technical background would begin to frown dubiously... but then I'd get to that denouement that L.A. has to be moved and you'd be amazed how rapidly their doubts vanished! And I'd begin getting all sorts of helpful suggestions.

Most of them weren't too practical, though. In fact, most of them were virtually the same idea expressed in different ways: "Saw it off and shove it into the Pacific!" meant virtually the same thing as, "Move it five miles west--and drop it!" And the more I kept getting this same idea, the more I suspected it just might contain the germ of a really good idea....!

Why not move Los Angeles into the Pacific? And rebuild that entire metropolitan complex while doing it! Not to "change" it, particularly; it's now a patchwork of multiple cities crammed together, spilling out of a bowlshaped "smog trap" to cover an area nearly 50 miles in diameter, but to change that would make it a different city and some of its natives like the way it is. (But please, let's at least level off that "smog trap" and get more beaches?)

One begins by constructing, at a safe distance offshore (those Channel currents are wicked) a raft about fifty miles in diameter....

But the final city, as I see it, should be invisibly like a gigantic iceberg, with two-thirds of its mass underwater.\* Heavy construction of industrial and warehouse complexes, including docks and shipyards for giant submarine freighters and tankers, nuclear powerplants and fresh-water

\*For stability, not bouyancy.



\* - - - - -  
distillation plants could contribute such mass. It should be a lot bigger in size above the waterline, with spacious living areas requiring no such massive construction.

Then, when we've moved everybody into their new quarters, helped them set up shop and shoved off from the shore -- what have we got? A Los Angeles freed of its worst plague: tourists! And a cosmopolitan city that's free to roam the world, spreading its message of hope to all mankind: Jesus Saves! And those sandy beaches inside the Breakwater -- nearly 200 miles of them! Why, topless bikinis might become regular streetwear! (They may have some difficulty with a minority-group wanting the streets replaced with canals, so everyone can go about riding on surfboards.) But I'm sure the Angelenos, themselves, can think of many more advantages....

But don't you see? If Los Angeles can do it, other cities can do it! Living space? We haven't more than begun to fill this world's living space! Food? Natural resources? We'd be right on top of it!

Now, could there possibly be something wrong with Liverpool being where it is???

But does anybody care if we don't examine all the technical details to make sure each and every one is scientifically accurate? (You do? Fella, how much company you got?) No, the main thing is to find new concepts to daydream about, new vistas to explore.

Any cautious or conservative approach won't do. The problem of where Earth's spaceport should be located depends on what orbit that space station should have (or whether any space station is wanted) but like every major project, it is far more likely to end up "hedged-in" with compromises. Instead of a spaceport in the "best" location, we'd more likely get one in the "best available" location -- which, of course, means choosing the lesser evil.

Also, I hadn't begun to consider all the problems of shooting ships off from Earth to a space station. Actually, it's a two-orbit problem -- the ship rising out on a long, elliptic orbit to reach the space station's nearly-circular orbit, which the ship must enter when it gets out there -- and those two orbits don't have to lie in the same plane. But do you care, really?

Anyway, the Santa Barbara Peninsula still looks like a good spaceport site....

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( ) Your sub expires with this issue.

( ) It expired lastish. ( ) Sample; want a sub?



# CITIES

THE TREES OF      What's a city, any city? It's people. It's  
THE FOREST      too many people living in too small an area  
                 to exist comfortably without a city-system,  
actually -- a village is also people, but not so many that  
the city-system becomes necessary. A town becomes a city  
upon reaching that stage in its growth. That city-system  
denotes the needs which arise when a town gets too many  
people to remain a town.

So in terms of necessity, a city is a distribution center. Besides goods, foodstuffs and monetary exchange -- all the necessities which make it a commercial center -- it is also the central storehouse and distributor for communications, education, the arts, literature and drama.

The reason it's a city -- the cause of so many people wanting to live there -- is most often because so many towns and villages can most easily be reached from there. Crossroads become cities because whole regions need a distribution center; that need attracts people, offering them a livelihood. (And the present locations of the world's crossroads were almost all determined by the inherent limitations of the horse, the camel and the sailing ship....)

But the basic requirement remains: people. Quite a lot of people -- with nothing to prevent you from getting all kinds of people to make up the required population.

By and large, we have never fully accepted such cities in science-fiction. We've never had all kinds of story-character people in science-fiction. It would almost seem that you can't have them; they don't belong in it at all. You can have Catholics, Jews, Hindus, whites, negroes and Moslems when playing weak lip-service to tolerance. But you can't have hardcase Catholics who dislike anyone else who eats meat on Fridays, not as part of your story but simply because there are such people; you can't have hardcase Jews who dislike anyone else who eats pork; you can't have hardcase Hindus who dislike anyone who eats beef. You can't have a white man who hates negroes or a negro who hates whites. You can't have a Moslem who hates infidels.

If you include any one of such characters in any s-f story, you must show good reason for having mentioned him at all. But the world has such characters in abundance. The world's cities are crammed with them. The Catholic knows of hardcase Catholics; they may occasionally be a problem to him -- and thus, science-fiction offers nothing to him as a Catholic. But Catholics aren't much concerned with that problem, right now, and it doesn't prevent them from enjoying s-f. With negroes, it's a different matter. So it isn't at all surprising that we have practically no negroes at all in fandom. We have nothing to offer them...not in their present state of unrest. Nor can we expect science-fiction to find much of a market in Africa, India or the Middle East.



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We can't expect to, with American science-fiction in which all place-names, people and customs are distinctly Made In USA (to the point where even British authors have "Americanized" their stories for more lucrative sales in the US), nor with British science-fiction in which everything is distinctly British. Or German, in German s-f; or Italian, in Italian s-f; or Japanese, in Japanese s-f.

Of course, that's been the simplest, easiest way to avoid unpleasant realities -- to have a character of some future world civilization behave as, say, a Britisher in a British s-f prozine, so its British readers get no disturbing hint of strangeness to suggest that they couldn't fit comfortably into that future world civilization nor perhaps even "identify" with that story-character. Whether it's British, American or German, it's only in this way that the author can glibly assure his readers that such a future might be their future -- even to the extent of telling them they won't any longer be British, Americans or Germans (if his future requires that). It's mere sugar-coating on the pill. It only becomes noticeable (though not always distracting) when we American, British or German fans bother to read each other's prozines.

And there's a problem we have now: we can't go on like this, ignoring unpleasant realities, without seriously undermining science-fiction itself. Our literature of the future becomes mere flights of fancy, childish wish-fulfillment or (in the pessimistic vein) adolescent spitefulness -- becomes a literature of no possible future and, in direct proportion, a literature without a future.

In today's world, the unpleasant realities are upon us with a vengeance that's not to be ignored. Any literature which treats it at best with flights of fancy or spitefulness does less than offer nothing to negroes as negroes, Hindus and Moslems as Hindus or Moslems. It offers nothing to any of us as human natives of this planet Earth.

We can no longer afford to tackle any aspect of the future such as "cities" merely on the basis of technical progress. It may be enough for city-planners who are now proposing that cities must stop being futuristically streamlined pens for human cattle with none of the "neighborhood" appurtenances suited to human desires and preferences, or for architects who are beginning to dislike homes made into a glass-walled replica of a department storewindow display. It's barely permissible to note that mankind hasn't risen much beyond the caveman level -- now we're beginning to discover the caveman was often discerningly practical in his choice of caves.

The mere technical aspects aren't enough for us, now. It ignores the harsh realities -- the whites, the negroes, the Jews, the Moslems, the You-Name-Its...the people. Worse yet, it ignores the basic cause of such harsh realities: human population growth.

The world was obviously overpopulated thousands of years ago. It was bad enough when we got crowded out and scattered by the Ice Ages; but they receded periodically, leaving us in widely-dispersed groups evolving different skin-coloring and other "group" characteristics. But there were obviously just too many people around when we had to build walls around our possessions and learn how to defend those walls. There were



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CERTAINLY too many people around when those walls weren't enough, when we had to form nations. And there were ENTIRELY TOO MANY people around when we felt obliged to start carving out empires.

We had occasional small respites -- some convenient plague, or a nice horde of barbarians who'd level whole cities and slaughter the inhabitants -- but then, not only was the full tragedy played through again, there were always those "geniuses" making technological breakthroughs which speeded up the process.

In each stage, we used "stopgap" measures based on the mistaken theory that population growth was computable by simple addition. Its multiplication inevitably surmounted and overran each "stopgap" measure, and trampled it into crumbling ruin -- but each time, we've simply resorted to a bigger "stopgap" measure.

Until now. Today, that snowballing human multiplication is threatening to reach the leaping end of its graphic curve, to submerge the entire world in a population explosion of unimaginable fury. Here are our whites, our negroes, our Jews, our Christians, our Russians, our Chinese -- our modern cave-men. And our science-fiction readers. Here are our overrun city-walls, our tottering nations, our crumbling empires -- our nuclear-powered society. And our future.

This contretemps has a number of readily-apparent "solutions" which could be (and have been) presented in s-f. Nuclear war, of course. Universal, compulsory birth control. Cannibalism. A completely "canned" world packed with human sardines, perhaps with a slave-based "anthill" society. Such negative "solutions" are always the easiest to come by, but they all have one fatal weakness as a foundation for modern science-fiction: such a future isn't big enough.

If we can't do better than that, why try?

If modern s-f is to survive as a "literature of the future" worth reading at all, we've got to do better than that!

CRYSTAL CASTLES      The design of "cities of the future" -- a  
& GOLDEN ROADS      future which does not ignore unpleasant  
                                 realities -- is as good a place to start  
as any. Cities are distribution centers; okay, we have a new problem in distribution confronting us immediately. In fact, the first place any population explosion is going to trigger off chaos and anarchy is where the process of distribution breaks down under the load. (That's usually the same point where crime and vengeance bursts free of social restraints.)

Our present methods and established structure of distribution is decidedly incapable of handling such a sudden, mushrooming load on its facilities. However, we may have the technology to create a much better distribution complex. We no longer have to locate seaports wherever nature has seen fit to provide natural harbors, or to build major highways where the terrain offers the least obstacles, or even to inhabit areas of this planet having somewhat better climate than Antarctica or the Central Sahara.



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Taking all such matters in concert, we should have a giant-sized, manmade harbor and seaport city where no such harbor exists now. We should have this linked by a gigantic superhighway which rams straight through a mountain range or two to an inland super-metropolis located where it can distribute goods and services swiftly over a widespread interurban area. Such construction here on the West Coast suggests digging out the marshlands north of San Francisco Bay (actually, that means San Pablo Bay and the tidelands of the Sacramento River) perhaps as far inland as Sacramento and Stockton, forming one gigantic harbor with a super-metropolis astride the mountains behind it (leaving presentday San Francisco to become "the Old Town") and a superhighway ramming straight through the Sierra Nevadas to a much larger city somewhere in the Arizona-Nevada desert (and filling most of it).

This may be within the power of our technology, but the cost would be fantastically prohibitive. So we have presentday San Francisco harbor facilities congested even though the Sacramento River's been deepened so ocean freighters can go all the way to Sacramento -- which also cost something. So we have winter truck-freighting from the East via Los Angeles because the direct route's passes over the Sierras are snowed in, and summer truck-freight for Los Angeles coming through San Francisco and down the coast because the direct route across the Mojave Desert bakes the varnish out of furniture and explodes canned goods. Besides which, our coastal metropolitan areas are running out of fresh water -- with a new supply to be had, ironically enough, in the midst of the Arizona wastelands (by damming the Colorado River). And we haven't really been hit by any population explosion yet.

The real problem with that fantastically prohibitive cost is that it's the initial cost; and it's a problem simply because our society hasn't devised a means of raising such funds by any other method (with one exception: the Eastern States' Turnpikes) than the politically-enshrined potluck of taxation. We'll simply have to create some better method. We can't tax the public until we have hunger marches and mob riots to build super-cities where greater profits could be made if only we hadn't stripped everyone of their last dime.

Besides which, it hasn't been made at all clear just how super-harbors and super-cities and super-highways mean greater profits, much less to whom such profits would accrue.

A population explosion isn't that small a market. The production requirements alone call for something drastic, and we've got that on the drawing boards: full-automation industry. And with that, we'll be throwing everybody out of work at just the precise moment we need to tax them blind to raise enough funds for the super-cities to hold them and the society intact. (And if you think we've got problems, try balancing the audit-sheets of the Soviet State Bank through such a crisis! Siberia beckons, Tavorich!)

The human race is going to have to come up with something new in economic systems. We have never formulated an economic doctrine based on an exploding market.

But in speaking of methods and centers of distribution, we can't limit it merely to considerations of packaged goods and perishables. Such distribution includes human traffic. There's a point where travel becomes most economical if it's



Vertical, rather than Horizontal. Most human traffic is from home to work to shopping, three focal points which we now have distributed horizontally until travel-time lost getting from one to the other is becoming critical. We've never stacked them vertically. But such future ultra-metropolitan complexes -- let's call them ultrapolises -- must be the product of human engineering. People must have space to live easily, to move freely, to change their minds. You can't put consumers in strait-jackets; it spoils their appetites. A population explosion won't be any market if it lacks any appetite for living. Or if it lacks money. Just as we lack the money for all these super-cities and whatnot.

It's got to be an exciting world -- full of surprise and change, challenge and daring. The system's got to allow that.

Is there room enough?

Even in the United States, there's a surprising amount of territory available. More than half the nation's land-area is still federally owned, still untouched by private/corporate enterprise. That's excusable by 19th Century standards, but a 20th Century technology which can build cities on the Moon has no such excuse. But even those areas of the United States which have had several centuries of habitation and use still aren't anywhere near being fully developed. As regards such ultrapolitan future cities as we have in mind, such regions are almost as untrammelled as a virgin wilderness. The Southern States are definitely such a region, mostly due to the perversities of history. At the same time -- though perhaps solely in terms of efficient distribution of goods -- the New England States belong more to Canada than to the US. But Canada is almost certain to develop the greatest super-cities, have the greatest population and wield the most political and financial power in North America. Most of the United States and Mexico will as certainly be more closely associated with the world's food-growing areas, including Siberia and the Pacific Ocean.

THE UNDERSEA KINGDOMS... However, this is very analogous to the situation in Europe, though the analogy may not be obvious at first glance. Europe has certain special problems. Specifically, Europe doesn't have space. The cities of Europe cannot be razed to make room for our ultrapolitan culture unless we want to destroy a continent-wide museum of the rise of western civilization. As Walt Willis observed once, "We can't have archaic and eat it too." Even those modern cellblocks of apartments filling London's suburbs could, in time, become museum relics. As will presentday Aachen and Hamburg and Cologne.

There's only one place Europe can build its ultrapolis. First, a gigantic, kilometers-thick seawall has to be built, extending from the coast of Norway out past the Shetlands and around the west coast of Ireland to the coast of France somewhere in the Bay of Biscay, perhaps south of Bordeaux -- thus completely enclosing the Baltic and North Sea, the Irish Sea and the English Channel. And then, inside the seawall, they've got to start building their "living space" from the bottom up, until they have raised a manmade "seabottom" to within thirty feet of the surface -- a depth just enough to permit passage of ships admitted through locks in the seawall, so the entire "undersea" complex can be supplied most economically by waterborne freight, unloading at thousands of manmade "islands"



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(with admission to the completely sealed, controlled environment of their "Undersea Europa" through some rather impressive-sized airlocks). Such a seawall would bar the Arctic current from the coast of Europe (and thereby reroute the Gulf Stream) and such shallow seas would contribute further to provide a milder and warmer climate for Europe. Being warmer and rising higher, quite a bit more moisture would traverse the mountains of Eastern Europe to reach the Ukraine and Black Sea area.

But such an "undersea" ultrapolis would increase the habitable space of Europe only about threefold -- in the face of a threatening population explosion that's more likely to be tenfold! And there's the analogy to North America, in that even such drastic measures as these won't provide room enough.

An ultrapolis, in itself, would be just another "stop-gap" measure -- but this time, without even the "grace period" which city-states, nations and empires had before they were proved insufficient. It becomes more than a "stopgap" thing when you remember that a new economic doctrine must be devised for it, that a "forced" advance in technology and automation industry is required by it -- we don't even have to go into the nature of construction firms or government agencies (or both) it would require.

In short, building an ultrapolis would give us more than just the ultrapolis. And we'll need more.

Mass-migrations are very much in order -- but not at the cost of interplanetary travel. Too much of humanity has simply lived long enough in the natural comfort of these large land-masses the Northern Hemisphere has in the Temperate Zone. The bulk of land-masses in the Southern Hemisphere lie in the Tropic Zone and aren't so naturally comfortable, and it's got small, underdeveloped nations mostly which have already begun their population explosion -- though nothing like they're going to have! But as compared to what it would become with ultrapolitan development, it's practically an empty wilderness.

Some local resistance can be expected where we must do the developing, as perhaps in the Sahara; but in other areas, as in nations like Brazil, we won't be in charge of it. But the majority of the human race seems destined to inhabit the Southern Hemisphere -- and here, the really "futuristic" cities will be founded, with the cultural centers of a new world civilization.

The accumulative effects on the Moslem world, with a possible revitalization of historic Islam for development of the Middle East, can't be shrugged off as a completely impossible premise. But if there's one nation of people on Earth, today, who feel that they're as big as the future (as they see it, anyway) it's Soviet Russia. Consequently, theirs is bound to be the greatest accomplishment in comparison to what they have now -- which will subject them to the greatest forces of change. A comparison of today's USSR with Czarist Russia is probably nothing to what the future Space Age Russia is very likely to become -- and building cities on the Moon could be a major factor in forcing such changes upon them, although their population explosion makes it a practical certainty.

Anyway, the best way to build cities on the Moon isn't either underground or under domes. It's in roofed-over cracks



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and crevices, which the Moon very likely has of sufficient size for the purpose. This technique might be useful on Barth, too.

THE SUBTERRANEAN WORLD... Russia has one overriding problem with regard to habitable living-space: cold. The one key that will unlock the Eurasian land-mass to human development is the conquest of cold. They can't do it with solar mirrors orbiting in space, either. That would "warm up" the Siberian mainland, all right, reflecting more sunlight onto it -- but with disastrous results!

Most of that vast area, scraped nearly flat by succeeding Ice Ages, is comparable to a frozen peat-bog. In the brief summer months the surface thaws to a sea of mud. Pour more sunlight onto that, lengthening the summers of warmth, turning those Arctic blizzards that now sweep across it into cloud-bursts and thunderstorms, and the erosion would be utterly fantastic. Most of the Siberian topsoil would end up in the bottom of the Arctic Ocean, and most of that land-mass would end up under water.

That entire, vast area will have to be roofed over and enclosed, then radiated and warmed in a sealed, carefully controlled environment. Mankind simply can't make full use of it until that's done. Such a "roof" will have to be something like a series of gigantic mountain ranges (analysis of mineral compounds formed in the lunar crust might lead to a manmade material for this) simply to provide useful watersheds for generating hydroelectric power (they'll need every bit they can get) and filling storage reservoirs. But of course, such "mountains" will be hollow; and thus, perhaps they will contain the future cities of Russia.

There are going to be sociological and psychological pressures on people. Established codes and hidebound tenets are going to crumble. We're just beginning to feel such pressures now.

This future is bigger than all of us.

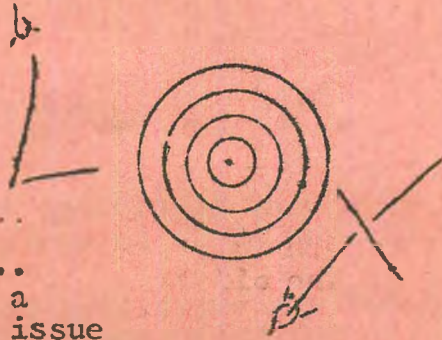
China, India and Southeast Asia comprise an area with its own particular problems, as many resulting from the perversities of history as from the perversities of nature. The pressures of an imminent population explosion have already reach violence-triggering proportions here; it's very possible that any measures attempted in this area will come too late. Cumulative and repeated mass-migrations out of this area would seem to be the most probable result.

But it should be stressed that the "ultrapolitan areas" I am proposing here have no relationship whatever to any Caves of Steel crammed with human sardines. In stressing that this must be the product of human engineering, I mean that it must provide us an environment that's actually more comfortable and preferable than any we've had in history. That may seem like a tall order, but it's exactly what must be done. We must build a world for ourselves, not merely adapt the natural world to our comforts.

After all, the whole upshot of all this is that mankind must create all of its environment. We have ceased to be Earthmen.

We're either going to the stars, now, or become extinct.





- + Okay, you win...
- + and we do have a
- + lettercol this issue
- + if only because I just couldn't
- + wait to get these locs into print, here.
- + This undoubtedly means there'll be LOX in next issue, too,
- + and perhaps even that my every-other-month "policy" will
- + simply have to be junked as an unworkable scheme should be.

F.M. BUSBY, 2852 14th W, Seattle 98119:

I do dig this man-and-airplane stuff in g2, both the WWI history and the homemade-plane business. (My problem is that when I had the great enthusiasm I didn't have the money, and when I had the money, I didn't have the time or the enthusiasm, any more than you have, lately -- for real action, I mean.) I did at the age of 15 build a very inept hang-glider and get off the ground with it far enough to lose one wing in a gust of wind and land on my can in better shape than the glider did, if that is any recommendation. If the thing had held together for another 30 seconds I would have landed hard enough to relieve me of all further worries about anything at all, I suspect, since we were working on top of a hogback ridge.

- + Now that I've sketched in the "big picture" of this Future
- + Exploring donnybrook I'm onto, this issue, I can forget it
- + and get back to Viewing the Future from a more personal
- + and enjoyable viewpoint. Hand me my goggles!

Some months ago I had plenty to say (but refrained from mailing it) about this time-stretching phenomenon in emergencies, but all it boiled down to was that I've had this many times and never really understood it before. How the adrenalin can hit a person, and all. It is certainly a fantastic thing: there you are in a death-trap and suddenly everything goes into slow-motion and you have all the time in the world, and nothing exists at all except the immediate problem (certainly not emotion of any kind), and you try to explain it to anyone and they think you must be some kind of a nut. Oh well.

- + The other day, a young guy at work asked me if I'd ever
- + been shot at "during That Time..." Things like that make
- + me feel very tired and old, all of a sudden. It may have
- + saved my bacon, being lucky enough to meet somebody who
- + could tell me about that "adrenalin shock" before I got
- + into that mess. Anyway, I found out they were right.

I've also (but not lately) had the intermediate stage where you freeze and can't think at all but make it through anyway; this is not fun and gives you the shakes sometimes.

- + You can be staggering, stupid drunk and it will make you
- + cold sober (in fact, chillingly sober) in something like
- + two seconds flat. Your whole body chemistry speeds up.

Basically, I came to depend on that superkick some years ago, and if it ever fails me in the clutch you will hear about it from someone else, if at all. However, it does seem to get more rather than less dependable in recent years, though less often called upon or needed. Well, let's don't waste space on examples...



- - - - -
- + I was always amused how much it resembled the cornball
  - + "action-packed" stuff in the old thud-and-blunder pulp
  - + yarns. Hell, Buz, we're so old and mean now that our
  - + reflexes steer us around most dangers.

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

Behold, I am again come into the realm of living fandom. After wanderings in the silent glooms of semi-fafia, I am attempting to restore myself to the good graces of fanzine editors and correspondents. ((+Funny. Colin referred to it as ~~duck and bullets~~ -- the silent glooms, I mean.)) There is no point in commenting on all the issues of g2 that have come since my last letter, and there is even less time than point for accomplishing this theoretical ideal. So suppose I restrain myself to remarks on the three latest issues, and add to those remarks a promise that I'll be mailing out the non-FAPA copies of the last two issues of Horizons within another week. Said issues are here right now.

- + I've occasionally wondered if you go to see Eney when he
- + runs your stencils off or whether it's all by mail.

Working backward from the present, then, your revelations about airplane fandom reminded me of something that had long gone forgotten. There was a brief period when I might have gone as bats over airplanes as these individuals. I've never been much good at mechanical tasks, but I was fairly skilled at putting together the little balsa-wood models that were sold for nickels and dimes when we were young, before plastics conquered the toy counters. Moreover, I joined something once that might have plunged me right into the middle of real airplane fandom, not just the model plane hobby. This was an organization called, I'm pretty sure, Junior Birdmen of America. Maybe you can confirm or deny my vague suspicion that it was sponsored by the Hearst newspapers. ((+Who, me?+)) I can't remember too much about its activities or the duties of members but I do know that it brought the new member a fat papercovered book that told him how to fly real airplanes. I was old enough at the time to know that this wasn't just soothing generalities to make kids think they could become aviators easily. It told about engine speeds at each stage of takeoff and flight and landing, showed with diagrams how you handled the joystick, published fairly complicated facts on map reading, wind velocity effects, and so on. The only other thing that sticks clearly in mind about this group is a lapel pin containing two wings with a span of two or three inches. I wonder if any of the home workshop airplane builders got started in aviation through this group?

- + Let's face it, Harry -- all you needed was a hogback ridge.
- + One of those "homebuilt" nuts, a guy named Pete Bowers,
- + used to design model planes which won competition meets
- + and got produced by the model kit companies. I haven't
- + read anything about their youthful affiliations, but I
- + suspect you'd be very right in some cases.\*

The nice things you say about Horizons in this issue cheer me up immensely, in view of the unhappy events in FAPA that have been making me wonder if it's worthwhile publishing an apazine that is not devoted exclusively to partisan

\*Robbie says she used to belong to "Jimmy Allen & His Flying Aces" -- whatever that was...



arguments on one of the two or three major squabbles of the day. You are right about the autobiographical slant to so much of what I write. Somewhere I've written about this for publication, partly to apologize in a round-about way, partly to encourage others to do likewise. I feel that there is more to the autobiographical subject matter than the obvious reminiscing about past events in one's life and straight reports on what one has been doing during the past week. I would include in this category anything written about subjects in which one has a deep, abiding interest on which the writer has spent a lot of time and thought, like your airplane articles. I think they're autobiographical, in the sense that the topic has become a part of the life of the writer. It's almost always possible to detect the difference between an article on a subject that the writer has lived with and an essay that was written as a result of two hours' boning up on an unfamiliar topic through reference to library books and conversation with one expert in the field. In this sense, non-fiction is almost exactly like fiction. It's possible to write well about subjects outside one's experience, but awfully difficult.

Anyway, your adventure with the greasers was one of the best things I've seen in g2. Curiously, I'm just finishing Kristin Lavransdatter and I sense a strange similarity between the Undset story and your episode, even though the styles are utterly different and the scenes are separated by 6,000 miles and 600 years.

- + Robbie, whose literary tastes are just a bit better than
- + mine, tells me any similarity would be no small compliment.
- + Frankly, I didn't know about Lavransdatter.

Stuff like the Fritz Leiber letter in the previous issue strikes me as the ideal type of science fiction material for fanzines. If I ever should reactivate Spaceways in my second childhood, this would be the sort of thing that I would seek out, not the reviews of the latest Heinlein novel or the panel discussions on the question of whether science is catching up with science fiction. I feel that there are many topics involving science fiction that have been almost exhausted, until a rare genius with superthoughts or a completely fresh outlook comes along. On the other hand, there is a lot of material like the Wanderer-slanted discussion that couldn't possibly have been rehashed over and over to the point of tedium. Remember when one or two prozines used to run story-behind-the-story features? I've always thought that this was a department that every prozine should have on a permanent basis, one that almost all readers would like, fans and non-fans alike. It's dreadful to think of all the thousands of prozine stories that have appeared with no opportunity for their authors to set down for posterity the little titbits of information that increase enjoyment and comprehension.

- + I can remember when the lettercols in most issues of the
- + prozines would have comment and criticism from readers on
- + some story in a previous issue, and a letter from the
- + author replying to them and telling more about it. I
- + think that gave rise to the story-behind-the-story features.

On terraforming, I wonder how much anxiety will exist in the centuries to come to find planets that are or can be made habitable from earth standards? What we forget is the



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probability that for the first years, more probably the first decades, of genuine manned space flight, we'll be pretty much limited to putting people on the Moon. There is no likelihood of doing anything there except living in airtight containers of various shapes and sizes. Isn't it possible that a quarter-century of lunar colonization, relieved perhaps by just a couple of tentative trips to Mars and Venus, will make us skillful at keeping people alive under the worst possible conditions that we'll consider this a normal adjunct to life on other worlds? That we'll no more make a special effort to find planets on which men can live without protection, or make planets over for this purpose, than men attempted to build bridges across oceans and seas? They took for granted the fact that they had to cross large bodies of water in devices specially designed to cope with an environment hostile to man, and they did it so well that we hear almost nothing today about artificial islands in the seas, which might now be within our capabilities.

+ --And which is decidedly preferable to any fool notion of  
+ building cities on the ocean bottoms. But I got a hint  
+ that there might be even more to it than this, Harry, when  
+ reading Beach's book on the world cruise of the atomic sub.  
+ It was a sealed environment, too, staying submerged for  
+ weeks at a time, which older-class subs couldn't do and  
+ which no sub crew had experienced. And they liked it.  
+ The controlled environment was always comfortable.  
+

+ You know, every time s-f has mentioned "weather control"  
+ I've grimaced in disgust. Nobody seemed to realize you'd  
+ just have government bureaucracy (whoever decides what the  
+ weather will be) rather than the weather, itself, to com-  
+ plain about -- and experience with bureaucracy tells me  
+ there'd be one helluva lot more to complain about, too!  
+ The "weather control" bhoys forget how little we're able  
+ to control ourselves. Enough that they might do battle  
+ and win against tornados, hurricanes and monsoons.  
+

+ And have you ever looked much into architectural problems  
+ of building ventilation? Much depends on the effects of  
+ sunlight. They've never designed one where you had radiant  
+ lamps wherever needed; it would suggest extremely large  
+ chambers, rather than cellblock warrens within slab-sided  
+ towers, deep chasms rather than sprawling tiers of flat-  
+ roofed suburbia. That's just to move the air around.  
+ Forced-draft ventilation with fans and ducts is just too  
+ inefficient and power-hungry to do the job in a really  
+ large structure. And that's as true on the Moon as on Earth.  
+

+ But would you agree, now, that s-f just isn't bothering to  
+ really come to grips with the future? That perhaps its  
+ professionals are being too afraid to make fools of them-  
+ selves, in their effort to be angels of scientific accuracy  
+ and "adult" storytelling?

Your artwork doesn't look as bad as you seem to con-  
sider it. But if you're still not satisfied with the sten-  
ciling of headings and pictures, have you considered the  
stencils as your villains?

+ It was enough of a bother, just finding the type of stencils  
+ best suited to my typewriter. I use them for the artwork  
+ too, altho I'd done better with other stencils this typer



- - - - -

- + didn't like. But I could cope with that. The thing I
- + absolutely hate with utter loathing is the pressure you
- + must use on a stylus to cut any stencil. Anything more
- + than the gentle thrust of a softlead drawing pencil, the
- + careful touch of a delicate penpoint or tip of a tiny
- + brush, drives me to a fine, towering rage. I have very
- + little dexterity in my hands, anyway...
- +
- + And that's why you see hardly any artwork at all in this
- + issue. I enjoy doing it a lot -- but not putting it on
- + stencil. Man, could I use an Eney! preferably a type
- + one plugs into a wall-outlet.

FRITZ LEIBER, 542 Frontera Dr., Pacific Palisades, Calif.:

According to my globe and cord (which I just been cuddling on my lap, like trying to put a G-string on a very rolly-polly girl) you got that very-close-to-earth 32-degree orbit crossing the Equator twice ("south across the Equator to Africa" "north again to cross the length of the Himalayas") before it gets 180 degrees around the world; then there are two more crosses--southward to Australia, northward toward Florida--before it gets over home again. (Of course during this 90 minutes the earth has moved about 22 degrees east, so "home" is now about the bottom of the big downward dip of the Rio Grande--but that's nowhere enough to make the difference between two and four Equatorial crosses.) Your orbit wiggles like a snake, Joe.

I suggest this orbit heads north, starts swinging south over northern Africa, crosses the Equator above the Indian Ocean, crosses Australia, heads north again, recrosses the Equator north of the Marquesas, and so "home."

I also suggest, very tentatively, that you were thinking of or used data or diagrams on a 12-hour orbit. In that case the satellite would take two earth-rotations to get back over "home," and in so doing cross the Equator four times.

- + Since I didn't work out as far as a 12-hour orbit, a much
- + simpler answer becomes appallingly obvious: I was referring
- + back to my own notes, which were none too good. After get-
- + ting down the 90-minute orbit to my satisfaction, I wondered
- + about Cooper's photos of the Himalayas; of course, each time
- + he circled Earth, it rotated another 22 degrees, until he
- + was finally passing over the Himalayas. And, too, I was
- + still being "cute" with that "rotational drift" nonsense.
- + Made an utter fool of myself, I did.

In a 24-hour orbit the only motion re earth would be a daily drift due south to a point over Chile's San Ambrosio Island and then back north again to a point over Cape Kennedy. (This lifted straight out of Heinlein's SPACE CADET, of course.)

A Himalaya-cross from Kennedy would take you over Greenland and Siberia--again it's a first 90-minute orbit I've in mind.

Of course any sort of circumpolar orbit eventually scans all the earth. Whereas an Equatorial orbit would scan just that. Two extremes.

- + And any tilted orbit in between -- which most of them are --
- + scans a belt as wide as their tilt, eventually.



Now about inclination of the orbit of the moon re earth. The moon sometimes passes straight above Florida and even Canaveral and also over the southern tip of Texas. (see St. Heinlein in THE MAN WHO SOLD THE MOON). Reason: its inclination varies from 18 degrees to 29 degrees (THE OBSERVERS HANDBOOK, ed. Ruth Northcott, The Royal Astronomical Society of Canada, 252 College St., Toronto 2B, Ontario, \$1--they get one out each year, sold at telescope shops, etc., in U.S. We have no equivalent publication I know of.) Luna is the only satellite in the solar system showing a variation of this sort, because she and Terra are both dominated by the sun's gravity, sort of doing a brother-sister waltz around Sol. I haven't the brains or books at hand to understand and so explain this more clearly. I theenk this involves the point that the inclination of the earth's equator to the Ecliptic is 23.4 degrees, while "the moon's orbit is tilted or 'inclined' at an angle of about five degrees, relative to the earth's." (Moore's GUIDE TO THE MOON p.47) Subtract and add 5 to 23.4 and you get about 18 and 29. Seems to hang together. And if my visualization is correct, there is a day each month when the moon is farthest north of the ecliptic and also a day, a fortnight after, when she is farthest south, these days corresponding to the bi-monthly days of the moon's greatest libration in latitude. One of these days she swings farthest from the equator (29 degrees) while on the other she stays closest (18 degrees).

- + They just don't write astronomy books for space travellers
- + yet. I've found the same facts mentioned in scattered
- + places in my PICTORIAL ASTRONOMY, but with no hint of
- + their correlation. And there must be one. Undoubtedly
- + the Gemini gang's got here ahead of us, though.

I would guess that any satellite closer than a 24-hour one would be dominated by earth's gravity, just as the satellites of Jupiter and Saturn are dominated by their primary's gravity. So they wouldn't stay in the same plane as the moon's orbit with its devilish variation. Have to keep using fuel now and then to correct, if you wanted to stay in an "under moon" orbit.

- + No, it's the same problem as the jump from Earth to a space
- + station. Put a spaceport in Antarctica and you'd be lined
- + up for a jump to a circumpolar-orbiting satellite once every
- + time it circles the Earth; each time, it would come right
- + over your spaceport. The same's true for a spaceport on
- + the Equator, jumping off to an equatorial-orbiting satellite
- + -- with the 1,000-mph additional bonus of Earth's rotation.
- + But then you've got to jump from satellite to the Moon.
- + The Moon's 5-degree variation prevents us from putting a
- + satellite directly under it, orbit-wise, but we can have
- + it line up for a direct-line jump at least once a month.
- + (There's also the variation in distance; I haven't yet
- + correlated that.) Furthermore, it's a slowly changing
- + deviation compared to the time our satellite takes circling
- + the Earth, and the distance makes it a very small deviation
- + in terms of hours-and-minutes.
- + So I think we'll want that satellite in an 18° orbit to take
- + as much advantage as we can of Earth's rotation, as well as
- + requiring as little correction as possible on the Moon jump.
- + At least once a month, anyway. That "once" should last long
- + enough for us to have several consecutive chances to make



+ that Moon-jump as our satellite comes swinging around the  
 + Earth. So if we have to "abort" once, we'll have another  
 + chance coming up in a few hours....  
 +  
 + And that means locate the spaceport to reach that satellite  
 + in that orbit. Again, it's a matter of being able to make  
 + the jump most often with the least correction.  
 +  
 + I'm beginning to think we need a good, rollicking yarn  
 + about the "bus-drivers" and "truck-drivers" to a Lunar  
 + colony!

At my Equatorial Spaceport, incidentally, all Venus flights will take off at noon and all Mars flights at midnight. (I don't know if this is old hat or not.)

+ I'll bet all your rocketships stand on their tails!

Maybe I'm getting just too gosh-darn astronomical for my own good, since I'm supposed to be a "soft" SF or science-fantasy writer. Cele Lalli (Bless her--and Three Cheers! for a great performance now that Fantastic and Amazing are leaving her and Ziff-Davis) started me on it by giving me the DEADLY MOON cover-story to write for the November 1960 Fantastic. Have two astronomical shorts--MOON DUEL and CYCLOPS--coming up in the Galaxy Group and an article HOMES FOR MAN IN THE STARS in Science Digest.

About THE WANDERER, those little guys are mostly my friends. I also killed off some high brass, a German scientist, at least two officers of Moonbase U.S., and a certain big-domed piano salesman. As for the somewhat "juvie" Wanderers, by me they're right.

+ And by me, the Stranger's crew is right! I don't sympathize  
 + with kids blasting around in a stolen car just because they  
 + have good reason to be rebellious, no more than I respect  
 + some fans' expressed distaste for cops just because a dis-  
 + trust of any police authority is healthy, nor much impressed  
 + by some fan's announcement that an apa is discussing Nazi  
 + doctrines (whereupon I wonder: did they discuss the matter  
 + of some 300 murders, and what was done about them, in the  
 + Weimar Republic between 1918-1925? or the other so-called  
 + "political" private armies that competed with Hitler's? or  
 + if today's expressions of guilt over slaughtering nearly  
 + five million Jews means they're just forgetting the seven  
 + million non-Jews fed into the same furnaces?) I don't hate  
 + Germans and I don't hate cops. There's one hell of a lot  
 + more to it than that.  
 +  
 + You kicked the Wanderer off into a cosmic limbo from which  
 + supposedly they could never return. It was the whole basis  
 + of that galactic civilization. Well, after I laid your book  
 + aside, I spent a very enjoyable half-hour or so, musing over  
 + what utter Hell would break loose when the Wanderer did  
 + return....

JACK SPEER, 2034 Kiva, Santa Fe:

I received the January g2 some time ago, and read it last weekend on the way back from firing the last shot of the Civil War. I don't think I want to get involved in g2's discussions, when I read as slowly as I do, but comments sprang



to mind unbidden and resulted in margin marks, so I'll make them, late as they are.

- + I should've made margin marks on your letter, so I wouldn't
- + have forgotten to mention in my reply that Lagunas or other
- + Amerindian tribes or Chinese or, more recently, a deposed
- + Consul General for the previous Bolivian government have
- + nothing to do with my job at the University of California.
- + That's my present job there. My previous job got a bit
- + uncomfortable after some stunts I pulled -- by which, among
- + other things, a negro student got his degree and at least
- + a couple of years besides at Hastings Law School in San
- + Francisco -- and my present job doesn't pay as well. But
- + you never know where you'll run into it, do you?

Is Earth more dense than Mercury? I ran a quote in a recent Synapse, from a turn-of-the-century book of information, which remarked how dense is Mercury and how undense is Jupiter, from which it drew the erroneous conclusion that we'd be crushingly heavy on the former and lighter than Earthweight on the latter.

	Density (water = 1)
Mercury	2.86
Venus	4.86
Earth	5.52
Mars	3.96
Jupiter	1.34
Saturn	0.71
Uranus	1.27
Neptune	1.53
Pluto	5.0 ?

- + The list to the right, here, is a direct
- + quote from my Ley/Bonestell picturebook
- + CONQUEST OF SPACE. The gravitational
- + pull of a planet is its mass-attraction; all the density
- + means is how big that mass gets and how much surface-gravity
- + its mass will exert on the surface, which is howcome Saturn
- + has only 1.17 g's on its visible surface and Uranus, 0.92
- + g's -- being so big, bulky and undense puts their surface
- + so far above their center-of-mass, it's no more than that.
- + Which means something I wish I'd thought of months ago: any
- + world with Earth's mass-attraction could have oceans -- but
- + if denser, its surface gravity will be greater; if less
- + dense (and we might build worlds that are) its surface
- + gravity will be less. A  $\frac{1}{2}$ -g Earthtype world sounds like
- + fun.

Is the mechanism of cancer any more minute than the mechanism of memory? I loved someone's comment in the FAPA discussion of matter transmission, that it should be feasible to approximate the original object but "I don't want to be approximated."

- + From what I could make of it, which isn't much, the mechanism
- + of cancer is a mechanism of memory or rather a failure of
- + cells to "remember" how they should behave.

I disagree that s-f is capable of encompassing any field of mundane literature. Maybe similarities can be found between various mundane types and fantasy types, but anything that involves fantastic elements is removed from the surface on the three-dimensional-time cube which represents the subjectmatter of fact and mundane fiction. (See discussion in Ramblings circa 1945.) "What is the way of thinking that you say s-f is?"

- + "Departure" thinking -- resulting in that departure from
- + cubistic mundane literature (and thought) you refer to.
- + Why should the idea of s-f encompassing mundane literature
- + imply the result must be "s-f becomes mundane" rather than
- + the reverse? Or even some entirely new type of literature?



-----

There was a discussion in some very neat fanzines of the fifties which i never got around to reading, in which the author speculated on gravity as instantaneous. What was your conclusion on this in 1964?

- + It isn't -- and I had some fun showing what would happen
- + if it were, after someone dragged it in.

The electoral college did get deadlocked. It was 1824, and resulted in the "steal" that made Quincy Adams president in 1824 and set the stage for Jackson's victory in 1828. At any rate, it's my recollection that this was decided in the House of Representatives, because I remember the Speaker, Henry Clay, would have liked to make himself president, but in view of his poor showing in the popular (and electoral) vote, didn't think it politic.

Boston: Most libraries don't see to realize that adults use them, and gewiss when one looks around most of the patrons one notices are kids. Does this indicate that children read more than adults?

"I always get quickly bored with Lovecraft's operatics" sounds like something Tucker might have been thinking of when he said "Any given paragraph in it refers to nothing whatsoever."

Since i got my telescope i've been reading The Milky Way Galaxy, and i can't buy SDR's "we see too many stars in the Milky Way, and at too great a distance", and i'm very skeptical of your "we...see...two-thirds of those suns".

- + The Sangre de Cristos are a fine location, Jack, but you're
- + aimed the wrong way. You'll just have to move to Australia.

What has the Uncertainty Principle to do with General Relativity?

I still don't see how a pulp publisher could make a profit from publishing a magazine that never made a profit, but I'm not going to start another page to argue that and my other marginotes.

- + I'm not going to answer your last question, either.

RICK NORWOOD, 111 Upperline, Franklin, La.:

Sometimes I think you're putting us on about this science fiction not doing what it "ought" to do. I read all the sf-mags, a passtime I will not apologize for. It takes about five hours a week. Of this time, I write off a good half of it as absolutely wasted. Wothell. At college, 90% of your time is wasted, studying stuff you don't want to know and won't remember. With ideal administration it might get a little better, but not much. ((+and be totally unlike the mess awaiting you when you get out of college.+)) How much of the time you spend publishing a fanzine is wasted cutting stencils, assembling, mailing, etc., etc., etc.? ((+a couple weekends is all I can spare for it, mosttimes.+)) How little is spent creatively or even pleasurably? Reading all of the stories is as necessary to finding the good ones as cutting stencils is to fan pubbing. Human beings aren't built to use their time to its fullest. Those who do can accomplish almost anything, if they don't ruin themselves first. The rest of us settle for pursuits