KRATOPHANY


TAKI 183
Merde, I said, Monsieur, and Merde IS WHAT I MEANT.
Steve Stiles '73

KRATOPHANY 3

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CHONHYFUR

ELI COHEN

I'm taking a break from fighting with Brian McCarthy's mimeo to write this -- goddam machine chewed up three electrostencils of the cover already. But I have to put up with it; for one thing, it's a contributor to this issue. If you will cast your eyes to the left, you will note what I think is an interesting illo. What's more interesting is that it was a collaboration between Vincent DiFate and Brian's Gestetner 360.

See, the cover on KRAT 2 had large solid black areas, and every once in a while a sheet would simply plaster itself to the mimeo drum. This time a sheet stuck to the drum, went around once, got partially folded back, and then printed on the next sheet. With the illo resulting. If you have a KRAT 2 cover available, take a look-- it's astonishing how much of this was the machine's idea.

Well. It's been a while. I see no point in apologizing for the long delay, since I'm still keeping to my stated schedule. But I would like to thank all those people who've kept me on their mailing list for so long, despite my general fafiation over the last half-year. After KRAT 2 I went to LACon (where I experienced my first earthquake, ate green tea ice cream, and stared at those crazy trees), PgHLANGE 4 (where poor David was ceremoniously shorn and shaved of his hair in preparation for a stint with the U.S. Army), and then plunged into studying for my Ph.D. oral comprehensives.

In the course of two and a half months of intensive preparation, I stumbled on the secret of passing such things: Most people have trouble with their orals because they get tense and freeze up. Well, by December 20th (when I took mine), I had mononucleosis, strep throat, and 102° of fever. Nervous? I was barely concious! I couldn't care less whether I passed or failed, since I knew I was going to die anyway (strep throat can be very painful -- and it had been diagnosed the day before

the exam, so the penicillin had barely begun to take effect). Actually, the test was a lot easier than I expected (unless they were just being kind to a dying man). The first hour wasn't too bad, though after that my throat began giving out. I remember the last part as mainly Prof. Drogin formulating esoteric questions on measure theory and answering them himself while I tried to make helpful comments (I never did know too much measure theory). But they passed me, presumably in order to let me die in peace.

I spent most of the next three months recovering from the mono (which I actually didn't find out I had until after the strep went away). Now all I have to do is pass a couple of language exams and write a thesis, and the Mathematical Statistics Dept. will give me a doctorate. All I have to do ... (Excuse me while I go bang my head against a stack of books on multidimensional scaling and cluster analysis.)

This is by way of explanation as to why it's taken me almost nine months to produce this fanzine. (No, I did not change the method of reproduction!)

* * *

I have to tell you a Con Edison story. Everybody knows how inefficient public utilities are. Well, we've had our little troubles with the gas and electric company over the past year and a half, some minor problems that only necessitated three changes of my account number, some Xeroxes of cancelled checks, and a call to the Vice-President in charge of Manhattan.

I could understand this. I could almost understand their deciding to suddenly close my account and start sending my bills addressed to W. F. Mitchell, who if he exists at all is Peggy Mitchell's divorced husband (she lives two floors below us) who hasn't lived in this building for four years and has never lived in apartment 63. As I said, I can almost understand this, and in any case we straightened it out except for that $63 payment they "lost" in the process, but that sort of thing is expected with a big company, and everybody knows what terrible times we live in and so forth. But, you see, in the course of all this, they mis-typed my name, and started referring to me as Eli Colen. The last straw, as they say.

So I sent back their computer card with "Colen" underlined and a note to the effect that "There is no such person at this address. If you wish to receive payment, kindly bill Cohen."

They did eventually straighten out the account (following that call to the Vice President), and after a year of struggling we finally got a bill with the correct amount.

Addressed to "Bill Cohen."

* * *

This issue contains installment 3 of Wendy and the Yellow King. People have been complaining about the long intervals between publication of the installments; I apologize, but would like to mention the long intervals between the creation of the installments. Anyway, we are here offering, as a special to KRATOPHANY readers only, a chance to get copies of installments 1 and 2 for only 50¢! And we throw in a free offset copy of a Judy Mitchell fanzine cover. Just send your request (and your money) to me, here at the Avocado Pit. Mike and Judy are also talking about putting together and selling possibly offset copies of the first four installments, after the fourth is drawn and published. (Gee, is that anything like being drawn and quartoed?)

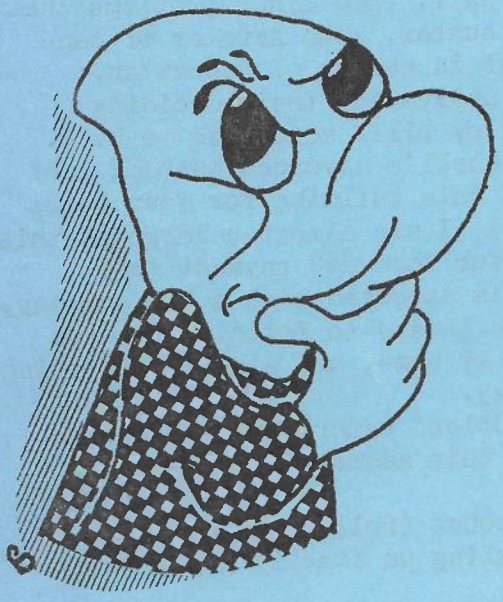
* * *

"Give me the gun," said Tom disarmingly.

I recently read The Sleepwalkers by Arthur Koestler -- a book I heartily recommend. It's basically about the motivations and beliefs of the people who founded modern astronomy, but it contains a wealth of fascinating information about Copernicus, Kepler, and Galileo that you'd never learn in school. For instance, if you were ever interested in the history of astronomy, you might be aware that Copernicus was just as bound to the dogma of corcular orbits as was Ptolemy. You might even know that Copernicus, like Ptolemy, used epicycles to make his theories agree with the data. But you've undoubtedly had drummed into your head what a terrific simplification Copernicus' heliocentric theory was over that horrible, cumbersome system the ancients used. Well, according to Koestler, who has actually read Copernicus' book:

> "...In fact, Copernicus uses altogether forty-eight epicycles... Moreover, Copernicus had exaggerated the number of epicycles in the Ptolemaic system ... In other words, contrary to popular, and even academic belief, Copernicus did not reduce the number of circles, but increased them (from 40 to 48)."

Koestler also gives the impression that Galileo was an arrogant, conceited bastard who deliberately and continuously provoked a church that was bending over backwards to avoid any trouble with him. (As to church dogmatism, evidently 17th century Jesuit missionaries were teaching the heliocentric theory.) Kepler emerges as the real hero of the saga, while Koestler claims that Galileo made no original contributions to astronomy (e.g. he didn't even invent the telescope); his genius apparently expressed itself mainly in his pioneering work in physics (which helped lay the groundwork for Newton and the whole scientific revolution) -- a work he began after the church placed him under house arrest.



Anyway, I found it great fun to read about all of these brilliant scientists spending years fudging their results to get them to agree with their preconceived theories.

* * *

I'd like to put in a plug for the Mae Strelkov's Friends Fund, an attempt to raise enough money to bring Mae Strelkov to DISCON in 1974. Mae (as anyone who's ever read any of her letters or articles can attest) is a warm, vital, and thoroughly fascinating woman; and she'll be unable to visit the U.S. unless we put together the money. The Fund, which is being run by the Bowers and the Glicksohns, needs to raise $700 by May 1, 1974 (to cover round-trip air fare from Buenos Aires to N.Y.). Send your contributions to Joan Bowers, P.O. Box 148, Wadsworth, Ohio 44281.

* * *

Editors do strange things, and the book version is frequently different from the magazine version. But I always assumed that where factual matter was concerned, changes in a later version were to make things more accurate. May I present two quotes:

"If one per cent of the stars are suitable, do you realize how many we will have to examine in order to have an even chance of finding what we need? ... the odds are as good that we will not find New Earth in the first seventy-five stars as they are that we will ..."

-- Poul Anderson, To Outlive Eternity, GALAXY, Aug. 1967

"If one per cent of the stars are suitable, do you realize how many we will have to examine in order to have an even chance of finding what we seek? Fifty!"

-- Poul Anderson, Tau Zero.

Though the second quote, from the book version, undeniably reads better, the first quote is the only accurate one (just intuitively, if you look at even 100 stars, it's not that unlikely that you still won't find New Earth; looking at fifty certainly doesn't give you an even chance). Who made the numerical change, and why?

* * *

A while ago the Pit went on sort of a theater spree, seeing "After Magritte" ("I'm Inspector Foote, of the Yard"), "The Real Inspector Hound" ("One is reminded of Voltaire's immortal cry, 'Voila'"), and "Rosencrantz and Guildenstern Are Dead." All of the plays are very funny, and they all, particularly the last, shake up your grip on reality. What I would call the "all the world's a stage" syndrome dealt with extensively in science fiction. (Did anybody else out there really freak out over The Universal Baseball Association, by Robert Coover? That's the best job I've ever seen of reconciling an omnipotent God with a universe that contains evil -- the paradox of "If God is good he is not God; if God is God he is not good.")

"R and G Are Dead" has some pointed comments on predestination vs. free will, such as:

ROS: I could jump over the side. That would put a spoke in their wheel.
GUIL: Unless they're counting on it.
ROS: I shall remain on board. That'll put a spoke in their wheel.

It also cuts across the fiction-reality boundary very effectively, especially as regards the Player's view of death:

PLAYER: I had an actor once who was condemned to hang for stealing a sheep -- or a lamb, I forget which -- so I got permission to have him hanged in the middle of a play -- had to change the plot a bit but I thought it would be effective, you know -- and you wouldn't believe it, he just wasn't convincing! It was impossible to suspend one's disbelief -- and what with the audience jeering and throwing peanuts, the whole thing was a disaster! -- he did nothing but cry all the time -- right out of character -- just stood there and cried ... Never again.

And later on, a beautifully staged scene:

PLAYER: In our experience, most things end in death.
GUIL(fear, vengeance, scorn): Your experience! -- Actors! (He snatches a dagger from the PLAYER's belt and holds the point at the PLAYER's throat; the PLAYER backs and GUIL advances, speaking more quietly.) I'm talking about death -- and you've never experienced that. And you cannot act it. You die a thousand casual deaths -- with none of that intensity which squeezes out life... and no blood runs cold anywhere. Because even as you die you know that you will come back in a different hat. But no one gets up after death -- there is no applause -- there is only silence and some second hand clothes, and that's -- death -- (And he pushes the blade in up to the hilt. The PLAYER stands with huge, terrible eyes, clutches at the wound as the blade withdraws: he makes small weeping sounds and falls to his knees, and then right down. GUIL makes a nervous, high, almost hysterical

(continued on p. 30)

LIFE WITH UNCLE

BY DAVID EMERSON

It is said that the difference between a fairy tale and a war story is that one begins, "Once upon a time..." while the other begins, "You ain't gonna believe this, but when I was stationed at...."

Be that as it may, it's still pretty hard to go through even a three-month stint with Uncle and not come out with any war stories. Even if nothing happened to you, you can always go into long detail about how bored you were; but this is rarely the case. It's a little-known fact that the Army is full of strange people, and you can hardly help but run into a few. Going through the Signal Officer's Basic Course at Fort Gordon, Georgia, I met my share.

For example, there was Captain Weird. We walked into class one day and the instructor said, "Good morning, men."

"GOOD MORNING, SIR!" we yelled. We were always good for a little mickey-mouse about that time of day.

The captain just stood there, moving nothing but his eyes; a funny expression was on his face, as if he wasn't sure of what we would do next. Then he tilted backward very slowly, like a great tree falling; but he caught himself in time, and proceeded into a little soft-shoe up there on the podium.

"....a little song-and-dance..." he said, "....the Army doesn't send me in here to teach -- they just turn me loose. They don't know what to do with me; when they measured me, they couldn't figure out how tall I am, 'cause I'm five foot eleven on one side and four foot six on the other." He looked intently into our midsts. "You see, I'm not all there."

I looked at him in disbelief. I looked around me, and all my classmates were looking at each other in disbelief. We were all thinking, "Who is this guy? What's he doing?" As for myself, I was wondering if the Army hadn't sneaked us into a course on Theater of the Absurd.

But Captain Weird continued on. "I had a little accident last time I was in Viet Nam -- stepped on a mine. It definitely ruined my whole day. But I found out: you don't really need two feet. Knees, though, that's another thing. Knees are where it's at, man."

At the time I was having trouble maintaining contact with reality. It was incomprehensible to my poor beleaguered mind that Uncle would send somebody like this to mold and shape young lieutenants and prepare them to be leaders of men. The walls shimmered, the windows clouded over, and the classroom grew fuzzy and indistinct. As I was polishing my glasses, he was saying, "....I went into the hospital for major brain surgery. They broke three drills tryin' to get in my head. Then they X-rayed it, and you know what they found?" He squinted forward and tapped his bald head with a pointer. "Ear-to-ear bone. But," he went on, "the Army medical program's real good. They'll give you free hospitalization, free medicine, free dental care, and even limited," *blink* *blink* "psychiatric treatment. It doesn't always take, though." *blink*

But, as Captain Weird said later, all this has no significance. Time goes on.....the birds sing....the leaves fall...water flows under the bridge.....

One of the things that brought out the strange side of the students themselves was the compass course. Formerly called "Orienteering." Now called "Land Navigation." We always call it the compass course. What it is, they take you out in the woods, give you a map and a compass, and say go in this direction for so many meters. And variations on that. Our version was to start at a selected point on a dirt road, go off and find an intermediate stake, then go from there to a final stake. This was done in broad daylight on an individual basis, and then in pairs at night.

I set off in the bright sunny afternoon, confident that my handy-dandy compass would get me through; I set it on a level surface, lined up my direction, and sighted through the peephole. At a tree ten feet away. This should have given me a hint to what the rest of the day would be like.

Well, I followed that little compass through the forest (do you realize how many dead branches are lying on the ground in the average forest?), over hills, across wide stretches of bulldozed sand, around fallen trees, and once, down into a swampy, jungly, bramble-infested creek. One time, I came to a great gaping hole in the ground. The ground just stopped at one point and continued on its merry way twenty feet below. I went around that one, and to hell with keeping an accurate pace count.

Eventually I reached the end of my first leg. "1,043, 1,044, 1,045!" I looked around. There ought to be a stake here, thought I. I was in the middle of a clearing, with a fringe of trees bordering a little dirt road ahead of me. I continued on toward the road, thinking I had miscounted my paces. Also thinking that they probably would've put the stake on the road, so they wouldn't have to traipse all over the countryside themselves to get at it when they needed to. But -- no stake on the road. Making a wide circle of my area, I saw a bright red-and-white-striped stake about half a mile away in an open field, but there wasn't one any closer. Maybe somebody had come out and stolen my stake. How like them. I shrugged, sighted my new direction and started off.

At the end of my second leg, I was again in the middle of the woods, this time with no road in sight. Another search for the elusive stake turned up essentially the same results. I sighed and walked toward where I knew the finish point to be.

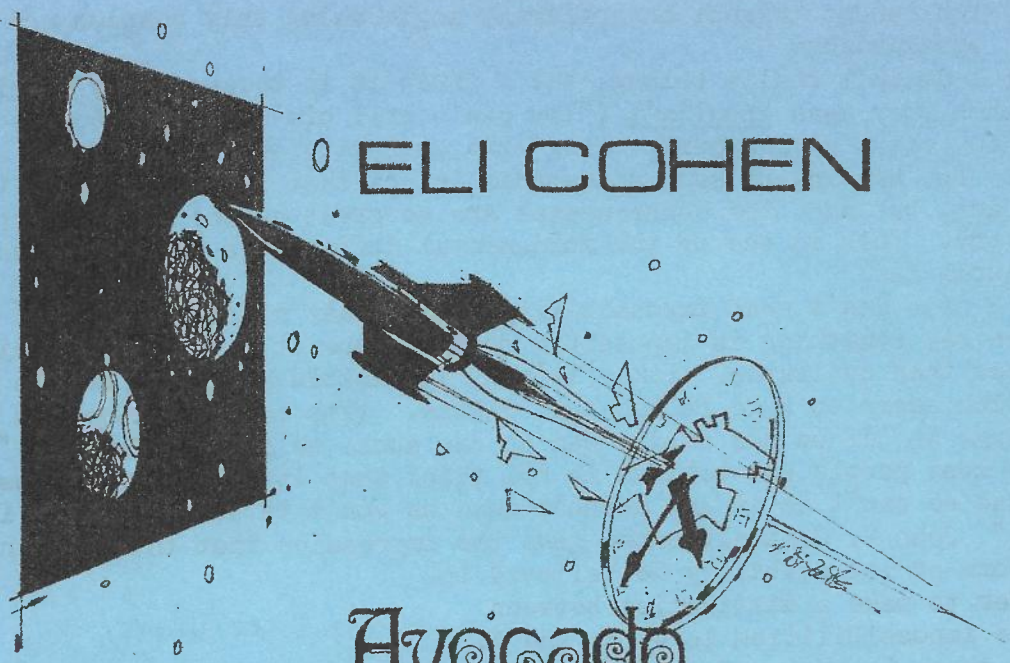
Nearly everybody was there as I trudged into the finish area, and they gave me a big cheer. There were only two more still out in the bushes somewhere. But I discovered I didn't have the worst time: one lieutenant came on a deer while walking his course, and being a city boy, he froze in fright. "I didn't know what it was," he told us. It ended up with him and the deer bolting in opposite directions. That's how, he explained, he had gotten himself lost. But he wasn't as lost as our last man in, who had been picked up about five miles away; while the rest of the class went in a generally southerly direction, he had somehow gone north. They cheered for him, too.

Now, that was just our class. But the instructors have been supervising this course for months, some of them for years, and they have the stories about lost lieutenants. Although the boundaries of the course are major roads, and they tell everybody not to cross any major roads, they say that one guy one time had crossed not one, but two roads, and an impact area for a mortar range: finding himself lost, he walked all the way back to the main part of the post, found the next day's classroom at 5 a.m. and went to sleep. He had three captains and a major out looking for him that night.

But the grand prize was the one the instructors told us about, who had crossed the wrong road on the night course. Even though the man he was with kept telling him they weren't supposed to cross any roads, this guy insisted -- the stake just had to be out there. Across the road was not the stake, but a training area where the MP's were playing war. They surrounded this guy, captured him and took him to their field headquarters where he was interrogated as an "enemy" spy. No matter what he siad, they believed he was trying to throw them off the track, so they just got more and more persistant. Can you see it? "But I tell you guys, I'm not part of your silly war games! I'm with the SOBC course, I got lost taking the compass course. No, honest, I swear, I don't know a thing about it. Look, will you just call somebody who can tell you who I am? How the hell should I know? Aw, come on, you guys...." Well, they did eventually call the Student Officer Company back at the post, but they got somebody who was just sitting around, minding the store for the night, and he didn't know anything about Lt. So-and-so. The poor guy was stuck out in the boonies with the MP's.

So after all these stories, and a little supper in my stomach, I didn't feel quite so bad about missing both of my stakes. Even after missing both stakes on the night course as well, I could console myself with the thought that I wasn't a prisoner of the MP's.

But to this day, I could swear that somebody had come along and dug up that first stake.



ELI COHEN

Avocado Abstracts

"It's impossible to travel faster than light!"

Does your blood boil when you read that? Do you shake your fist at the heavens and cry "Nothing is impossible"? Gee, you're wierd.

I'd bet, however, that at least three quarters of my readers don't believe that statement, and few of the rest could explain why they think it's true. Well folks, since it is one of my Duties as Editor to bring enlightenment to you ignorant masses out there, I am going to try, in simple, non-mathematical terms, to explain why it is impossible to travel faster than light. I remember an article by Asimov on the same subject ("Impossible, That's All" in F & SF), wherein the Good Doctor explained that faster-than-light (henceforth FTL) was impossible because (if I recall correctly) he said it was. This left me unsatisfied. More important, it left the Good Doctor with no real reply when Arthur C. Clarke did an article on tachyons -- hypothetical particles that do travel FTL ("Possible, That's All," also in F&SF).

Now, I too used to be an unbeliever, worshipping the pagan Cerenkov, Lawlor, and Koenig drives, the awesome space warp, the dread hyperspace that droves men insane -- yes, I followed the false prophets of science fiction for many long years. But I was saved. Joe Gerver, my roommate in college, showed me the light; for three days I wrestled with Lorentz-Fitzgerald, and finally, I believed! (Hallelujah, praise be to Einstein.) I will now see if I can convince you.

Digression on impossible:

"You can't do that" has many different meanings, and confusing them is an easy way to start a fruitless argument. For instance, here are 7 different contexts:

1) Thou shalt not kill
2) You can't fight city hall
3) You can't change human nature
4) An unprotected human being can't survive in a vacuum
5) You can't build a perpetual motion machine

6) You can't reverse the flow of entropy
7) You cannot trisect an arbitrary angle using only compass and straightedge

Number 1 doesn't really belong, but I threw it in because many people use can't when they mean shouldn't ("You can't kill him in cold blood!") -- if I said "You can't kill a human being" the absurdity of the statement would be obvious. The meaning of such statements is not that it's impossible to commit the act, but that the consequences are so great no one in his right mind would try. This is one of the fundamental differences between human law and natural law.

2 and 3 also don't mean impossibility, just great difficulty. But people often say something is impossible just because it can't be done with the resources then available. Like "it's as impossible as flying to the moon," a phrase which seems to have fallen into disuse. (Its equivalent, which is very In today, is "If we can send a man to the moon, we can do anything.") I would say most people who believe in FTL think that it is in this class-- "Just because we can't do it now doesn't mean we won't be able to do it in the future." John W. Campbell often gave the impression that this was the strongest form of impossibility he believed in.

I prefer to make a distinction between that and the impossibilities in 4, 5, and 6. Implicit in these is the preface "assuming certain things," or "according to current theories." I've tried to arrange them in increasing order of impossibility. Thus, 4 means under normal circumstances, an unprotected human can't survive for very long in a vacuum. 2001 shows an exception to this, but if I added enough restrictions I could probably come up with a statement everyone agrees with. It's the "can't" of breaking a common-sense physical law -- we all have our own ideas of the rules governing the universe, and if the rules are broken we either modify them ("Well, I meant can't survive for long") or close our eyes to the fact.

Since 5 is almost a direct consequence of 6, I'll skip it and get down to the nitty-gritty: "You can't reverse the flow of entropy." This is a perfect example of a general scientific law. It is embedded in a theoretical framework that explains many phenomena. If you accept certain assumptions which can be made plausible by experiments, you have to believe it. Once you believe it, you have to accept a host of consequences, but in exchange you can explain all sorts of things. Just because one of the consequences bothers you (say the fact that there can't be perpetual motion machines), you can't expect a scientist to throw away the entire theory -- the least you should do is offer an alternative explanation of the phenomena he's interested in. And because the statement is part of a whole framework, rejecting it may have other consequences you won't like. I would really expect a kettle of water put over a flame to boil, rather than freeze, and I would tend to reject alternatives to 6 that spoiled my dinner, even if they enabled me to build a perpetual motion machine. But that doesn't mean that someone, sometime, won't come up with a viable alternative theory. Every one of statements 1-6 might be false; there is no way to prove, once and for all, without doubt or exception, that they are true -- though some of them can be made very plausible.

Statement 7 is different. It is true, unarguably, unalterably true, the way "A red apple is an apple" is true. It is true in almost precisely the way 2+2=4 is true -- that is, by definition. It's not as obviously true

(in fact it took 2000 years of mathematical development to prove it), but it's as certainly true. Yes, Virginia, some things are impossible. But because it's true by definition, the place to argue about it is at the definition. If I say science fiction is anything I point to and call science fiction, and then I point to Asimov's Guide to the Bible and call it science fiction, you can't deny that it's science fiction by my definition. This won't, however, stop you from calling me an idiot. Mathematics is sort of a game where we agree to abide by certain rules and definitions, and then go on from there. (Bertrand Russell once described what mathematicians do as "forming tautologies out of undefined terms.") When the rules and definitions are reasonable and/or useful, lots more people are willing to play. Implicit in the problem of trisecting the angle is a whole body of agreed-upon assumptions and rules, and that's why it's impossible. (Lest people think I'm being overly dogmatic about the certainty of mathematical truth, I'm willing to argue the other side with anyone who has read "What the Tortoise Said to Achilles," by the eminent mathematician Lewis Carroll. It's in The Works of Lewis Carroll and The World of Mathematics, among other places.) If you change the rules, it's a different game, and people may not want to play it with you (bidding 6 No Trump in the middle of a chess game is generally frowned upon).

A problem arises, however, when scientists make claims with the certainty of mathematical truth. The point being that Nature is in the game, and she makes the rules. Since you can never be sure you're using the right rules, you can never be sure your results are true. As near as I can recall, Asimov's article gave the impression that FTL was in the same class as trisection of the angle. It's not. I consider it in the same class as 6 -- a physical law embedded in a theory, the necessary consequence of certain assumptions.

End of digression.

The proof is outlined below. I've left out all the math, since the algebra is true, and you either believe in it or you're not speaking my language. I'd be happy to go through the math in private correspondence, but I think it would only get in the way here. Write me if you want the details.

Proof of the Impossibility of FTL:

I'm only going to consider sending messages FTL, since if you can send an object, you can send a message, but the converse isn't necessarily true. In other words, if you can't even send a message FTL, you certainly can't travel FTL.

Note: By frame of reference I mean everything at rest relative to a specified reference point, e.g. everything at rest relative to the center of the Earth. "c" denotes the speed of light.

I) Assume the speed of light is constant for all observers. (There is a lot of experimental evidence for this, dating back to the Michaelson-Morley experiment)

II) Assume the principle of relativity, namely: Physical laws are the same in any system moving at a constant velocity. Or: There's no way to tell if you are moving at a constant velocity (rather than being at rest) by doing experiments inside your system. Or: No reference frame is unique. Or: All motion is relative. (This assumption is appealing because by making all reference frames equally valid, we don't have to find the one that's unique. And so far, the same physical laws have been shown to apply to objects moving at different velocities, for instance in particle physics. The chief motivation, however, is assumption I, which says whether we are "at rest" or "in motion," we will still measure the velocity of a beam of light as the same value.)

III) Assumptions I and II imply the Lorentz transformation, by algebraic manipulations. This means that once you grant assumptions I and II, by purely logical and mathematical manipulations you can prove the familiar results about time dilating, lengths contracting, and mass increasing as you approach the speed of light. The exact numerical formula that tells you how much things are dilating, contracting, or increasing is the Lorentz transformation. It lets you plug into an equation your measurements and the observed velocity of someone, and get out of the equation what he would measure for the same things. This is important to figure out what's going on when you're sending messages back and forth from Earth to a rapidly moving spaceship.

IV) Assumption II implies: If there is a way to send messages FTL between two people in one frame of reference, the same equipment will do the same thing between people in any other frame of reference (because the same physical laws are supposed to hold true)

V) The Lorentz transformation (step III) and step IV imply (by algebraic manipulations) that you can send an FTL message to a ship moving away from you, have the ship send an FTL answer to you, and get the answer before you send the message. You just have to set things up with the right distances and velocities. Imagine Starfleet Command sitting on Earth with an instantaneous transmitter. The U.S.S. Enterprise is a light year away, travelling where no man has gone before at 1% of c relative to Earth (about 1860 miles per second), with Lt. Uhura at the ship's instantaneous transmitter. On Jan. 4, at about noon, Starfleet Command requests (by instantaneous transmitter) the Enterprise to investigate some trouble on Omicron Ceti III. The Enterprise receives the message, and sends back a confirmation (by instantaneous transmitter). But remember, at relativistic velocities time and space get screwed up -- so we trot out the Lorentz transformation, plug in the information about dates, velocities, and distances, and solve for what time the Enterprise's confirmation reaches Earth. Well, as it turns out, their answer comes right in the middle of the New Year's Eve party at Starfleet Command, held $3\frac{1}{2}$ days before anyone had even heard of Omicron Ceti III. If the Enterprise had been travelling at 10% of c, the answer would have arrived more than a month earlier, and if they were moving at half the speed of light, it would have been half a year early.

But, you say, instantaneous transmitters are unrealistic. How about just FTL transmitters? Well, for messages at 500c, the answer will arrive a day and a half later than the above figures; even at 100c, you only have to add a week (so for a ship at 10% of c you've still gone back in time a couple of weeks). And what good is FTL if you can't do better than 100c?

VI) Given step V, lots of money, and enough nerve, any scientist with an FTL device could set up a fool-proof experiment designed to cause a paradox (for further details, I refer you to Asimov's thiotimoline stories)

VII) Paradoxes are impossible

Conclusion: FTL is impossible.

To put it more concisely, you can't travel FTL because,

"There was a young lady named Bright
Who could travel much faster than light
She went out one day, in a relative way
And came back the previous night."

Of course, now that the proof is laid out in front of you, a number of weak points become obvious:

First of all, what's wrong with paradoxes? Hundreds of SF stories have absolutely depended on paradoxes. What a dull universe it would be if paradoxes were impossible! But there is still the question of just what would happen if we actually did the experiment ...

OK, let's go back to step VI then. Who says we have the free will to set up such an experiment? Let me propose a plausible physical law, to wit, "An expensive experiment cannot be repeated indefinitely." (This, you understand, is a physical law I'm proposing, like Heisenberg's Uncertainty Principle, applicable to all technical societies and entities) See, to get a paradox, one must set up a fairly complex, highly expensive experiment; such things have a tendency to fail (cf. the thiotimoline stories again). If you don't succeed at first ... but sooner or later your money runs out, and the more expensive the experiment, the less likely it is to succeed before some Congressional committee (or its purple-skinned, many tentacled equivalent) cuts off the funds. With my law, we can FTL all over the place without paradoxes, at the minor expense of leaving a few disgruntled scientists (who should be working on useful things, anyway, instead of nasty paradoxes). However, there are sure to be a few soreheads among

However, there are sure to be a few soreheads among you who demand their free will and have insufficient imagination to appreciate real paradoxes. What can we do for them? Steps III-V are pretty solid, based on purely mathematical manipulations, and there's a lot of evidence for I, but what about II?

Here we have a practically metaphysical statement (from supposedly hardheaded physicists), impossible to prove, and rather sweeping in its generality. An obvious over-reaction to the discovery that our frame of reference is not unique -- sort of "If I can't be king, we'll make it a democracy." Let's throw it out.

We can now postulate a unique reference frame in which FTL is possible. Messages sent are instantaneous only with respect to this frame, so we have none of the "communicating with a moving ship" nonsense of step V. We don't want to be too chauvinist about this, so let's pick a reference frame everybody will be happy with: Let's say there are warps in the "fabric of space" that allow us to travel instantaneously from point A to point B (and hopefully back again), instantaneously, that is, to observers at rest relative to this "fabric of space." Like in Heinlein's Starman Jones, one might have to chart these warps very carefully, and match velocities exactly to use them, but that's a small price to pay to explore the universe. I can even suggest a name for the method of travel based on such a "fabric of space" : The Dacron Drive.

There was a young man who said, "Though
It seems that I know that I know,
What I would like to see,
Is the 'I' that knows 'me'
When I know that I know that I know."

--Alan Watts, The Book: On the Taboo Against Knowing Who You Are

If a tree falls and there is no one to hear it, does it make a sound? Yet, still the tree has fallen.

--"Kung Fu"

THE ADVENTURES OF GRAYSON GREENSWARD

Winthrop Macaroon, the space auctioneer, was at wits' end when Greensward arrived.

"First came the plague of cat shrieks," Macaroon explained wearily, leading Grayson through his spaceborne warehouse. "But in its place is something far worse..." He shivered in the foreboding darkness. "...a brooding sense of evil...ancient evil..."

Grayson learned that the hauntings had begun the very night that Macaroon had come into possession of a shipment of Emulion folk art, purchased from the insidious trader Carterlin. This time Greensward doubted that even the shady purveyor knew what had passed through his hands.

Grayson eyed the collection of baskets and beaded mocassins dubiously, then pointed to an unmarked crate hidden in the shadows.

"What's that?" he demanded of the merchant. Macaroon evaded his eyes.

"Carterlin...ah...threw that in with the deal," he muttered, as Grayson rummaged among the obscene statuary. "Seems the authorities...ah... closed down a ship of...ah...ill-repute...he picked up the furnishings dirt cheap..." Greensward brushed dust triumphantly from a wooden idol in the shape of a small, misshapen man in short pants. It had a distinctly distasteful, though faintly familiar odor, and Grayson discerned the taint of unwashed underwear. Taking a feather from his pocket, he applied it to the little man's nose.

"Tickle, tickle," said Grayson. "Cthulu," sneezed the idol. "Gesundheit," replied Macaroon. "Just as I thought," smiled Grayson.

Staggering under the odor, Greensward carried the idol to a disposal chute. He closed the portal to an unholy chorus of cat shrieks. The instant that the figure went hurtling into space, the manifestations ceased.

"What was it?" asked Macaroon, beginning to quake visibly.

"That was no ordinary ship of prostitution," explained Greensward, "but a Lovecraft."

"And the idol?" asked Macaroon.

"Yes," said Greensward. "It was the actual knickered gnome icon."

--Yarik P. Thrip
(with thanks to Jeff Kleinbard)

********** ********** ********** ********** **********

In words attributed to the Buddha himself, "I obtained not the least thing from unexcelled, complete awakening, and for this very reason it is called "unexcelled, complete awakening."

--Alan Watts, Psychotherapy East and West

The student Tokusan used to come to the master Ryutan in the evenings to talk and to listen. One night it was very late before he was finished asking questions.

"Why don't you go to bed?" asked Ryutan.

Tokusan bowed, and lifted the screen to go out. "The hall is very dark," he said.

"Here, take this candle," said Ryutan, lighting one for the student.

Tokusan reached out his hand, and took the candle.

Ryutan leaned forward, and blew it out.

--Zen Stories

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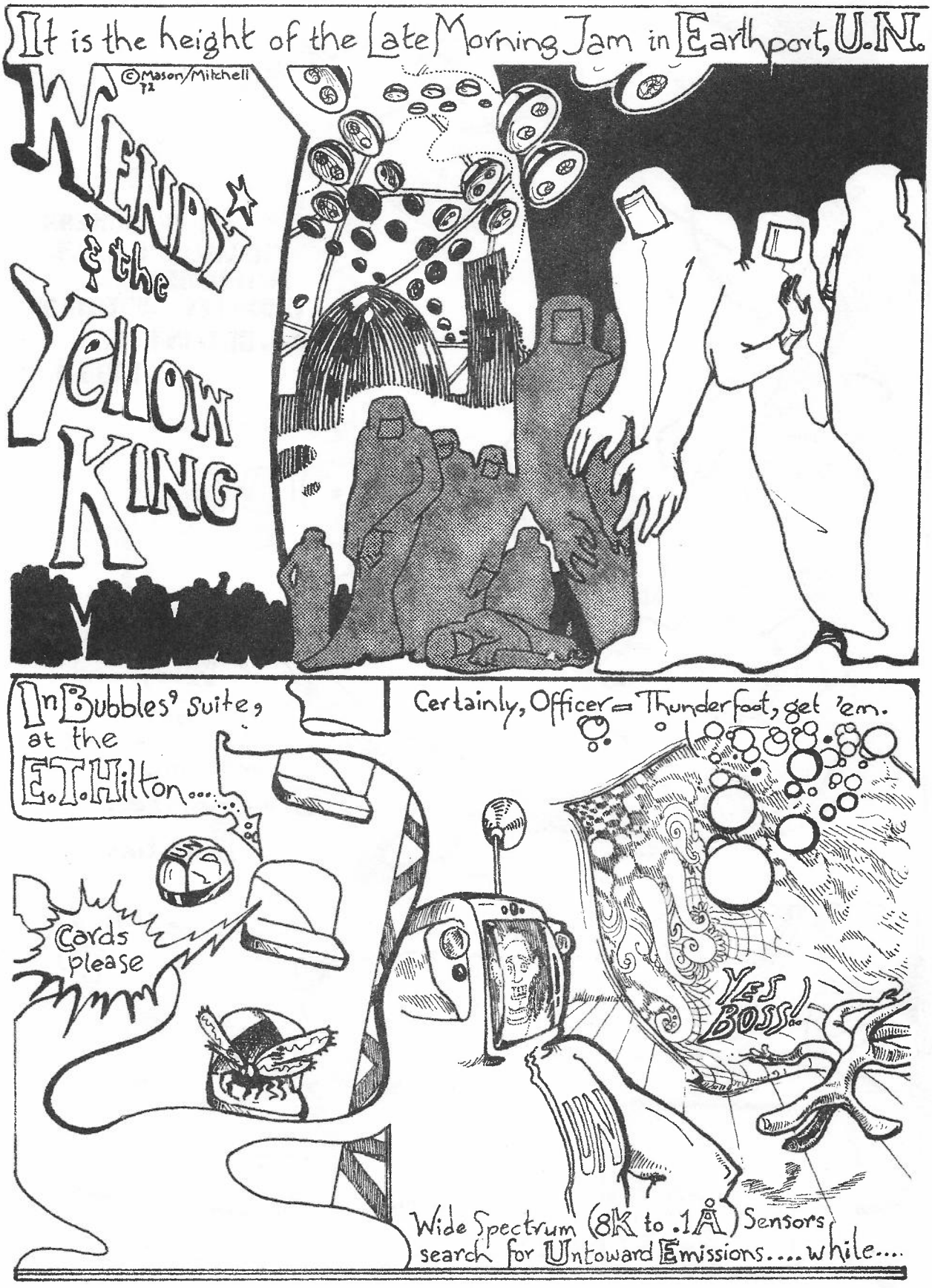
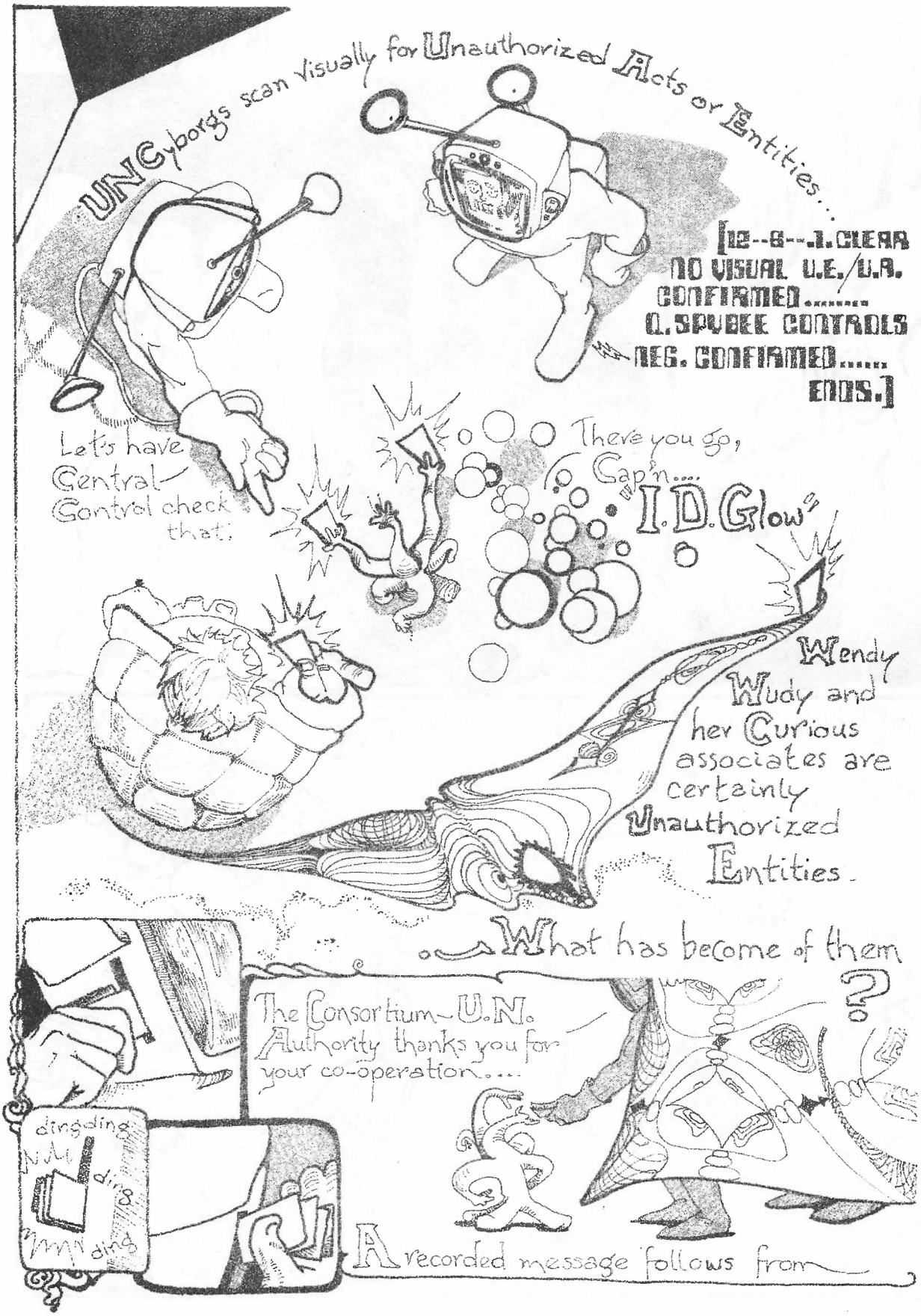
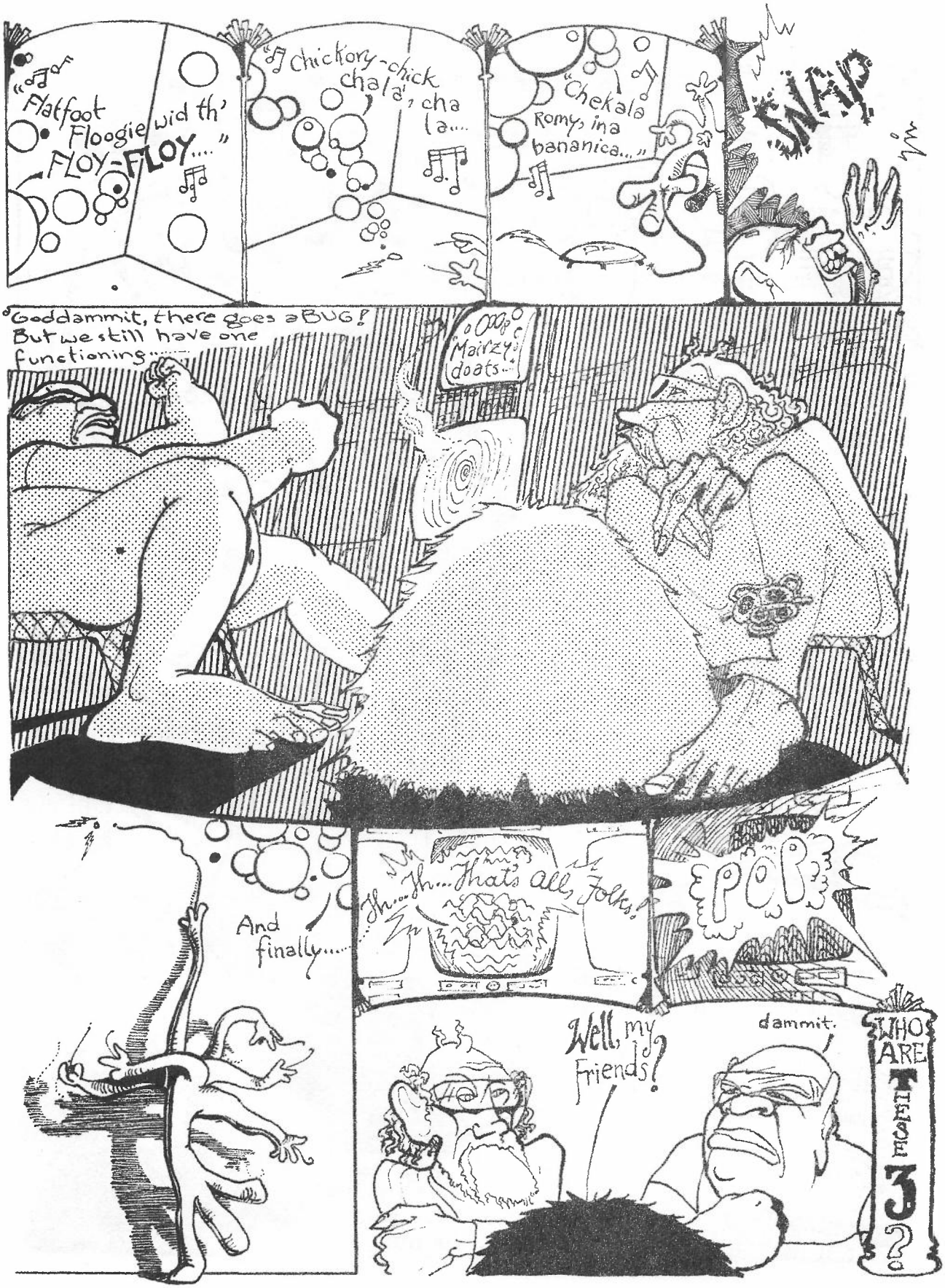
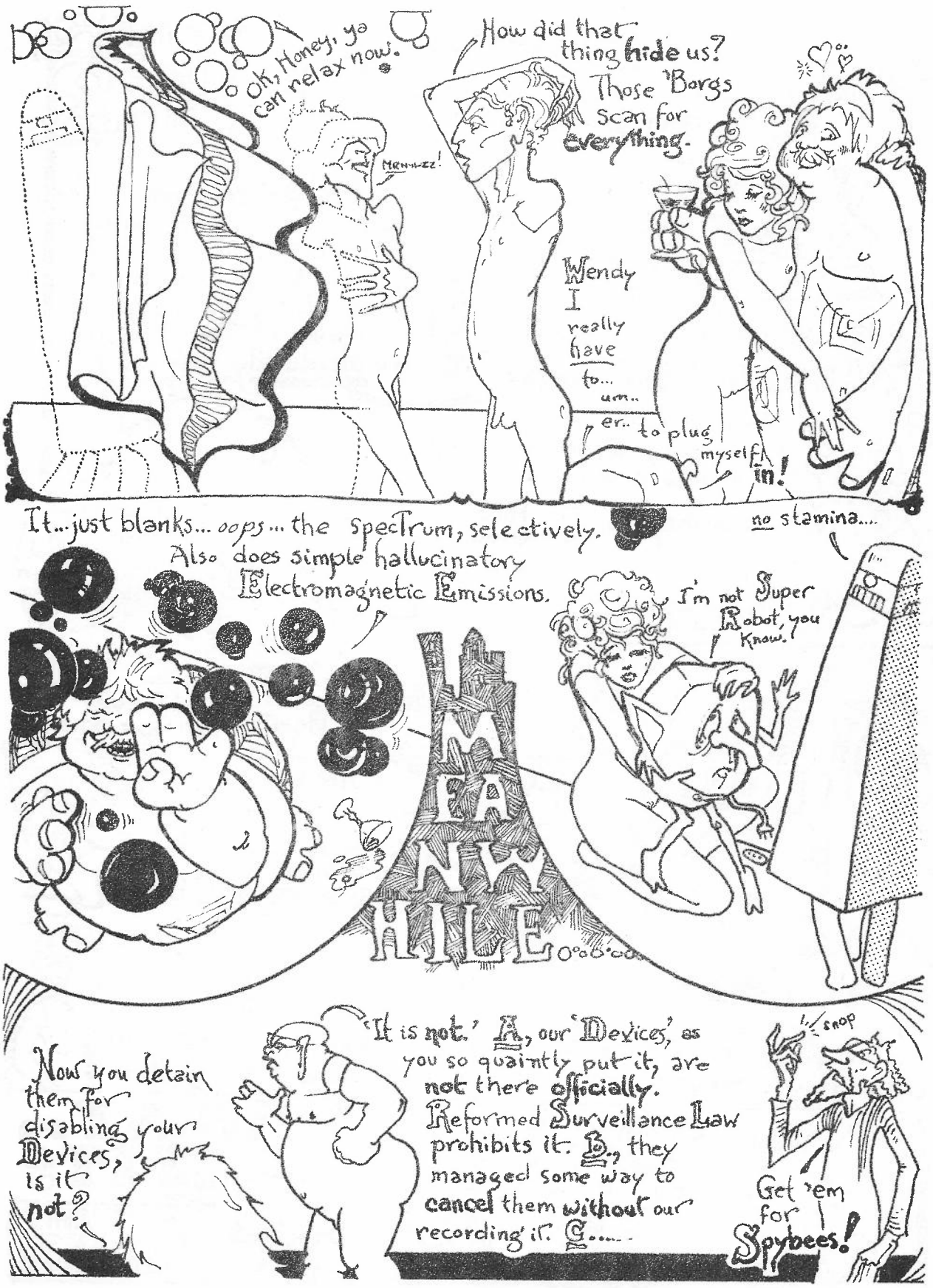

It is the height of the Late Morning Jam in Earthport, U.N.
©Mason/Mitchell 72
WENDY & the Yellow KING
In Bubbles' suite, at the E.T.Hilton....
UN
Cards please
Certainly, Officer — Thunderfoot, get 'em.
YES BOSS!
RUN
Wide Spectrum (8K to .1Å) Sensors search for Untoward Emissions....while....


UNCyborgs scan visually for Unauthorized Acts or Entities...
[12--6--.1. CLEAR
NO VISUAL U.E./U.A.
CONFIRMED.....
O. SPYBEE CONTROLS
NEG. CONFIRMED.....
ENDS.]
Let's have Central Control check that.
There you go, Cap'n....
"I.D. Glow"
Wendy Wudy and her Curious associates are certainly Unauthorized Entities.
What has become of them?
The Consortium~U.N. Authority thanks you for your co-operation....
ding ding ding ding
A recorded message follows from


...the First Fuzzy to
the name is
, officer.
and, furthermore,
Sure thing, Sweetheart.
STAND BY
TRANS MISSION
DO DROP BY ANY TIME, G'MEN.
But the Coast is not Clear yet...
Well, let's tidy up...
Well, let's tidy up...
Now, let's see how they run these SpyBees. I want to know how they hid those controls from my boys.


"Flatfoot Floogie wid th' FLOY-FLOY...."
chickory-chick chala', cha la....
"Chekala Romy, ina bananica..."
SNAP
"Goddammit, there goes a BUG! But we still have one functioning....."
Mairzy doats...
And finally.....
Th...Th...That's all, Folks!
POP
Well, my friends?
dammit.
WHO ARE THESE 3??


Ok, Honey, ya can relax now.
MMMMZZZ!
How did that thing hide us?
Those 'Borgs scan for everything.
Wendy I really have to... um... er... to plug myself in!
It... just blanks... oops... the spectrum, selectively.
Also does simple hallucinatory Electromagnetic Emissions.
no stamina....
I'm not Super Robot, you Know.
MANHILE
Now you detain them for disabling your Devices, is it not?
'It is not.' A, our 'Devices,' as you so quaintly put it, are not there officially. Reformed Surveillance Law prohibits it. B., they managed some way to cancel them without our recording it. C.....
snap
Get 'em for Spybees!


...C., as I was going to say, we can't 'get 'em for Spybees', because my boys didn't find the Controls. The place was clean. Read the record, Spokesman. We can't prove they're their Bees there!
Who ARE These Three??
umm.
err
Quite right, too, for:
MEANWHILE again
I want that Bubbly creature watched, I say. It is notoriously irregular and has been present at disorderly Events the Consortium over. Its claims of Tourist Status are absolutely suspect!?
Thanks to my genius handyman maybe now we can talk privately.
It WAS NOTHING.
It's time you talked. Or we pull out. The wire's too long already.
I called you guys for backup. Don't ditch me! I... I'm in the dark too!!
SHUT UP!
We got a cover to keep, Dearie. You're so clean your Spit bounces: 'oh, that's just W. Wuvy, Ph.D., pursuing her arcane anthropological interests!'
Did I ever let you down?
Jeez, you're enough to give a guy the jitters! When the Feds showed, did I deal ya a second? What're you beefing about? Look, the Fuzzies cramp my style just like they cramp yours. I figure we can work together!
What's your angle?
Get the Box, Big Boy.
WHAT IS IT?
WHAT? WHAT? WHAT?
TO BE CONTINUED!

BRANCHES

Richard Labonte
64 Marlborough
Ottawa KIN 8E9, Canada

This weekend past our co-op invited the landlady and her husband over for supper; and we served a really splendid salad along with the succulent $12 roast and the zucchini and brussels sprouts and wine and such. What made the salad so splendid, besides the home-made dressing, were the chopped-up (they didn't scream) avocados we used.

And as I bought the avocados, I thought to myself ... gee, I can have my own avocado-pit Avocado Pit avocado plant, and be that much closer to the pulse of New York City fandom.

It was a great idea.

Except that someone in the house ate the avocado pit. I live with remarkably unfeeling people with remarkably strong teeth.

Thank you for Kratophany 2. I seldom get fanzines these days, because I'm trying to become a minor Canadian fandom legend and legends can't be too active because it spoils the image. But they are nice when they come -- fanzines, not legends -- and better when they're good, and gooder when they're by people I know. I recognized Mike's name several times. Mike, perhaps you didn't know, has given up drinking, is preparing to leave fandom, probably won't get a last issue of Energumen published, and has sold Larson E. and bought a fluffy white and grey Persian which he has named Arnold Cat. He's going to go back to university, get an MA and a doctorate in advanced languages, and emigrate to South Africa.

It's quite a sudden change for Mike. Susan, Rosemary and I don't quite know what to make of it all; I suspect the shock of not seeing his name in either of the last several Locuses or the first two issues of Fiawol has done him in.

Ginjer's real-life accounts of life in the bowels of New York make me regret I never did ride the tube while in New York this spring. Nothing like that ever happens to me. Bus drivers are restrained, other passengers polite, destinations are reached on time, and the toward always happens. Once my bus to Toronto was hit by a horse, but nobody was hurt and the horse was sober at the time. Pretty dull. Of course, in Ottawa you can walk from one important end of the town to the other in two hours, with time out to feed the Royal Swans on the river and row a boat down the canal and wave to the Queen if she happens to be about. She is, once every couple of years. Figures we'll accept the manarchy more willingly if we get to pay for it once in a while.

In your very own newspaper today, I read a soul-wrenching piece of news which makes me waht to get out the bombs and do some destruction.

It is said, in the Aug. 16 NY Times: "The New York telephone company is phasing out its verification service on busy signals because, it said yesterday, it found that the public was using the service too much." Humph. Bastards.

And when they install a few more phones, they'll cut off everyone's service because too many people are placing calls.

Judy Mitchell's art is nice and the Feghoot is fine and the printing is swell and the comic excellent and I like the blue paper better than the yellow and while there is a lack of unified layout with no obvious thought given to the creation of an over-all concept of design which will no doubt displease Jerry Lapidus, thanks very much for sending me it.

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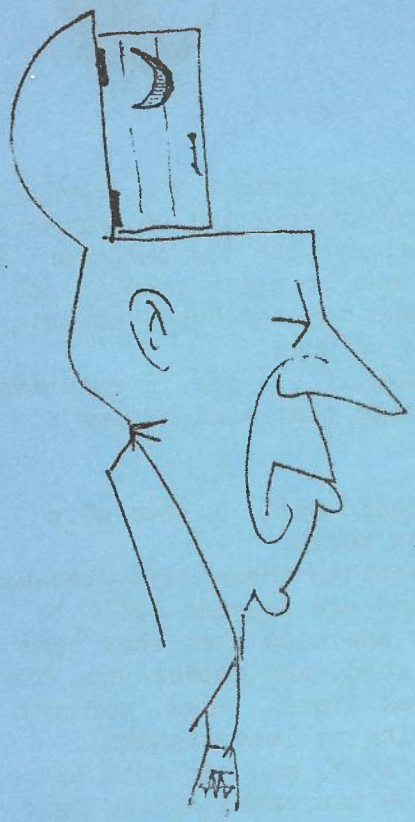

Mike Glicksohn
32 Maynard Ave., Apt. 205
Toronto 156, Ontario
Canada

KRATOPHANY #2 more than lives up to the promise of #1. The repro remains excellent, the cover is superb, although obviously a bugger to mimeo, and Judy continues to make KRAT one of the best illustrated fanzines around. Her TRUE SUBWAY STORIES ad is priceless.

I do like your blue paper, to; sorta makes KRAT (egads, what an ugly short form!) a poor man's ~~ERG~~ WARHOON, eh?

WENDY AND THE YELLOW KING is undoubtedly one of the best graphic trips to appear in fanzines lately. I think I'll have to collect all my KRATs together, though so I can reread it in its entirety each time a new installment appears. But on the art work alone this is a fascinating addition to the fanzine.

May I say, sir, that Ginjer Buchanan's column was perhaps the funniest fanzine contribution I've read in months and it's a tragic loss that such a superlative piece of work should languish in a fannish backwater such as KRATOPHANY when it could have titillated millions in the pages of some major fannish journal. What evil persuasion must have been employed, what brutal sadistic torture perpetrated on that furry little body, what vile threats or promises used to compel the poor innocent to permit such a gem to sink unnoticed in your squalid pages, my mind cannot imagine. But be warned, Cohen, that you will not long go unpunished; the International Society for the Prevention of Neglect and the Obtaining of Sufficient Egoboo for Unappreciated Koala Bears has been notified of this terrible case and a Blitzkrieg to rescue the Bear from your undeserving clutches is expected momentarily. (As for you, Bear, hand in your Canadian Flag tee-shirt, you ...you...you New York City/American chauvinist you!)

((Now Mike, you know that this was part of the plan to reduce America's balance-of-articles deficit, incurred in a misguided attempt to raise the quality of fanzines produced by some of our more backward neighbors. (Gee, these furriners sure are gettin' uppity.)))

So this fellow, where's his name, oh yea, Andy Offutt, he's never heard of Judy Mitchell, huh? Damn neofans!

Your excerpts from Zen Stories were very well chosen. I hope you continue the practice of quoting intriguing passages from recently-read (or any other) books in your future issues. (Assuming, of course, that there are any; I understand that people who pass up IPA for Coke and then write about it -- even in jest -- have very short life expectancies.)

********** ********** ********** ********** **********

What do you call a skinned elephant?
Answ: A lackaderm

********** ********** ********** ********** **********

Murray Moore
Box 400
Norwich, Ontario
Canada NOJ 1P0

The DiFate is a fine cover, unfolded or not. If you are going to insist on folding your zine in the future convince your cover artists to design the cover so that there will be some kind of three-dimensional effect when the right half of the cover is at right angles to the left. Make the most of a difficult situation.

Or if you wanted to be more progressive and far-seeing, cut the zine down the middle and mail it in two sections. That way you would not have to fold it at all, by the way saving a staple and gaining the gratitude of Tucker.

((I concede your point, as you can see from this issue. A lot of people complained about my folding the magazine. More to the point, the Post Office treated it with great contempt -- while most of KRAT 1, in envelopes, apparently got first class treatment. This time if a copy was undeliverable, the P.O. carefully tore out the address, destroyed the magazine, and returned the addressed shred with "NO SUCH PERSON" stamped all over it -- charging me 10¢ for the process.))

********** ********** ********** ********** **********

Mike O'Brien
945 Troost #7
Forest Park, Ill. 60130

The first thing I'd like to comment on is Ginjer's piece on subways. Chicago, as in most other things, has gone in the reverse direction here and built the El. This was done at a cost of many millions by painting the expressways with nutrient solution and placing a seed streetcar at the center. The system spread to the end of the painted sections and developed roundhouses. The most interesting result of this is miles and miles of exposed third rail, separated from ground (the original) by four-inch insulators. Now, mind you, I haven't seen anything spectacular yet, even in the wettest weather. However, I'm just waiting. I can't forget the pyrotechnic display that took place at the University of Michigan when the HV insulators at the physical plant arced over in midwinter, and kept on arcing for 45 minutes till they cut power to campus. That's what dirt on insulators does, and these insulators are plenty dirty. I'm waiting for the show to begin.

Interesting mathematical tidbit -- to illustrate an elementary point concerning consistent equations in quantum mechanics the other day, a professor wrote five linear algebraic equations with low-integer coefficients and four variables on the board. He just whipped them off, to show that they could indeed be inconsistent. Of course, by chance they were consistent, and he stood there with egg on his face. Now, what are the chances of that happening? Of all possible sets of five equations in four unknowns with integer coefficients less than 10, what percentage are consistent? Just curious. For some reason it reminds me of one of Hamilton's greatest triumphs -- finding a problem that was more easily soluble by Hamilton-Jacobi theory than by F=MA. Took him whole bunches of years to find. I've always been curious to know if he was disappointed that his quaternions were almost the only mathe-

matical development never to have any particular physical significance. Considering the general usefulness of Hamiltonian mechanics, it figures. (...and let's have no noise about quantum mechanics. Even a blind pig gets an acorn once in a while.)

((I am reminded of a teacher I had in a summer computer course while I was in high school. He decided to demonstrate the Birthday Problem to us -- you know, the probability that in a room full of people you'll find two with the same birthday. There were about 40 of us in the room, and it's easy to show (with a computer) that with 25 people the odds are better than even; with 40, the chances are better than 90% that two will have the same birthday. So he confidently started down the first row asking birthdays. By the third row he was getting nervous. By the last row he was visibly upset. And when he had finished, and there were no duplications, he feebly tried to explain about how after all there was this one in ten chance of it not working, and so forth. Most of the class was unimpressed, and probably went away convinced of their intuitive belief that this would happen every time. Well, that fall I and two others in the class had this same teacher again, for a probability course. Probability course, 35 people -- naturally you have to do the Birthday Problem. So he did. And the three of us rolled around on the floor laughing hysterically as he got to the last person in the last row-- again, with no duplicates. Poor guy. I wonder if he at least won lotteries.))

********** **********

How do you know a board will be faithful to you?
Answ: Plank's constant.

********** **********

Harry Warner, Jr.
423 Summit Avenue
Hagerstown, Md. 21740

There may be one big name in prodom who has never been seen at a worldcon. He is the man who writes all the spines, like the one for the issue of GALAXY you mentioned. He obviously was at work on the recently published collection of Cyril Kornbluth's early fiction which originally appeared under the name of Cecil Corwin. This specialized form of creativity must leave

this unknown man anxious to avoid the obvious. So he didn't put either Kornbluth or Corwin on the spine as the author of the pocketbook. Instead he provided the name of James Blish, who did nothing but write a brief introduction to the stories.

You may not realize how appropriate it was for your group to make a 1,100-mile trip in order to sing happy birthday to a fan. Since a Canadian fan was involved, this forms a neat non-violent parallel to a vaguely related episode involving another Canadian fan some years back. The other Canadian fan didn't like something a fan in Texas had said about him, so he bought an airline ticket to the proper Texas city, went from the airport to the fan's home, hit the Texan on the nose, returned to the airport, and flew back to Canada.

The letter section was quite interesting, and very neatly edited to stick to the main subject. The conflict between slavery and an industrialized society lies in the fact that slave owners under such circumstances would be forced to train their slaves in more complex tasks than those of non-mechanized farming, then would need to find land and erect big housing developments so enough slaves could be within easy reach of the size factories that are most profitable, and pay all the added expenses of maintaining the non-productive members of the slave economy under this urban-type community. Slavery worked fine in the Deep South where the farm produced almost everything needed to keep slaves alive, and lots of little kids and non-working old folks among the slaves weren't a financial burden on the owner. As for why the Greeks didn't have steamships, why didn't the United States have steamships after James Runsey demonstrated a successful one a few miles from Hagerstown instead of waiting for Robert Fulton to demonstrate another successful one quite a few years later?

((You might say, in a sense, we did have steamships after the Runsey demonstration. Just like you might say that the Classical world had steam engines after Hero. But we eventually got wise to the idea. Why didn't the Greeks or Romans ever pursue it? Would certain cultures, or alien civilizations be incapable of developing steam power even if a bright individual came up with a prototype?))

********** ********** ********** ********** **********

"I just took a speed reading course."
"Oh? Read any books?"
"Yeah. Read War and Peace last night."
"What's it about?"
"Russia."

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Norman Hochberg
Whitman College, Rm B16A
S.U.N.Y.
Stonybrook, NY 11790

I loved Wendy Wudy this issue. It was delightfully confusing, amusing, and insane, It's easily the best thing in KRAT 2 and I wish there were more of it. Say, is there any way I can get copies of the inserts so I can have all of them together? ((See my editorial this issue.))

Does the Yin-Yang symbol on the "Branches" logo connote harmony or opposition? ((Yes.))

As for the letters themselves the only one that really struck me was Mike O'Brien's. Another, more interesting (I think) question on the topic is: How likely is it that an arbitrary planet with Jon Singer will develop an intelligent life form? Or how about: How likely is it that an arbitrary life form with Jon Singer will develop intelligent planets? The permutations are endless.

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Patrick McGuire
11A Graduate College
Princeton, NJ 08540

Speaking of cats, as you do on p. 3, in Russia the beasties are only accorded seven lives, and not the American (and, I suppose, English) nine.

Seems to me that Ms. Mitchell has (shudder) slipped a bit in the artwork of the second episode of "Wendy and the Yellow King." It is not always clear which panels follow which, and sometimes within a frame it's difficult to keep the alternation of lines in a dialog straight (e.g., p.8 top). Plot is still running OK, on the other hand. And, again, the other Mitchell artwork in KRAT seemed very superior to my humble uneducated eye. I especially enjoyed the "subway pulp" ads.

Jay Freeman is probably right (if hardly original) in suggesting that biology might reach a high development before physics, but you would not be likely to get Mendelian genetics in "neolithic" times all the same. Common fractions, like zero, are something which seem a lot simpler in retrospect than they did in prospect. The Egyptians had a notation which could not represent any fraction with a numerator other than 1 (except for 2/3 and -- I think -- 3/4). 5/8 had to be written as 1/2 + 1/8, and so forth. Just try doing genetics problems that way: especially when your experimental results are only approximately in accord with Mendelian expectation, and then only for such characteristics as really are governed only by one gene. Admittedly, a few other cultures had better notations (the Mesopotamian peoples, the Mexican Indian cultures, etc.), but even these are hardly "neolithic."

In re Joe Gerver: So coal is the only thing that can fuel steam engines? Seems to me that wood saw a lot of use, and that much of the Mediterranean had not yet had all its trees cut down in Classical times. But for an efficient steam engine you need precise machining of parts, to standards the classical world could not meet -- or could not meet for large-scale production at least.

And what you call British factory workers in the nineteenth century is "British factory workers in the nineteenth century": they most certainly were not slaves, though their lot may (or may not) have been worse that slavery. Slave-owners typically must feed their slaves in slack periods, while capitalists can lay workers off and depend on the Poor Laws or whatever to feed them. And, conversely, workers, even in nineteenth century Britain, were free to come and go, and occasionally improved their position thereby. Some Southern attempts to run factories with slaves were moderate successes, as were a few factories run with "serf" labor in Russia (in Russia, in contrast to the West, so-called "serfs" were not attached to the land and were slaves in all but name), but the idea never really caught on. Similarly, the vast industrial empire of the Soviet secret police in Stalinist times seemed

efficient only because of faulty accounting, and following Josef Vissarionovich's demise it was reduced in size dramatically -- though even here we are already talking about forced labor rather than chattel slavery. If slave-factories really work, why was there never a society built on them?

Yes, the Incas were supreme, and yes, they were isolated. As they were preliterate (a result of their almost total isolation from the literate Mexican cultures), I don't know how they could have had "science," but they had adopted and maintained what in some respects was a surprisingly high level of technology ... Of course, the Incas were good at civil wars, if we want a Violence is Helpful theory.

********** ********** ********** ********** **********

Greg Burton
P.O. Box 69
Ocean Park Wa 98640

I hate to disagree with Sandra, but China did not invest all its stock in aesthetics. Flood control, really complex towers for astronomical observation, printing, gunpowder, dyes ... they were resource poor and labor rich, which I'm sure has a lot to do with the differing emphasis, but they had quite a complex technology. Porcelain and stoneware require temperatures of around 2300°F, and they were getting this with wood as the fuel almost a thousand years before the West. By the time of the Mongol invasions, the "barbarians" were using gunpowder. (Did you know that Genghis had his sons instructed in Taoism, though he felt it would be dangerous for the general populace to know of it?) The Mongols were doing a quite good job of subduing Europe -- after the first year of campaigning they were 7 years ahead of schedule -- and would quite likely have done a more thorough job of subjugating the entire west if Genghis hadn't died, requiring all the Hordes to go back to Mongolia to elect a new Kha Khan. The trip took several years each way, and with the momentum broken the invasion of Europe seemed much less important. And of course there wasn't the same calibre of general running things in the West -- Bayan Khan, who conquered China, was probably one of the greatest generals who ever lived.

It's doubtful also that the isolation of China had much to do with it, since that isolation was largely self-imposed. There is evidence that Greek pottery is largely copied from the Chinese pots of a similar period (in shape, not firing technique or decoration), and there was quite extensive trade between the Romans and Greeks and the Chinese. (Going mainly through Samarkand and Datmandu). The evidence suggests that the west wanted what China had and China didn't want much of anything western -- the opening up of Western "trade" later seems to have borne out their opinion of Europeans as barbarian pirates, and given the circumstances, their lack of enthusiasm for things Western seems justified. It is also well to remember that China has, over the past several thousand years, been the most important country in the world, and the most powerful. They have been in a 200 year slump, but

given the length of their history and the current invigoration of Chinese thought and technology, I suspect that within the next 50 years they will once again be the predominant force on the planet. (Partly I suspect this because of Bucky Fuller's westward-moving technology about to complete its first circumnavigation of the globe. Do you know that theory?)

(And they weren't <u>that</u> isolated, anyway. Nestorian Christianity made it to China long before the Jesuits.) I left out a few other inventions, too, like paper, and the fact that they had 5 elements (earth, air, fire, water, metal), or terracing slopes for maximum land use.

((I'd be interested in hearing more about this theory of Fuller's. But is doesn't necessarily matter <u>why</u> they were isolated. If an influx of new ideas and/or competition are necessary for technological progress, then being the unchallenged supreme culture in a region might slow down or halt further development. See Ken Scher's letter below. What I'd like to know is whether China, left to itself for another millenium, would have had a "Scientific Revolution."))

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Almost all of the cultures mentioned as having no science had one thing in common: they were relatively isolated, with no cross-fertilization of ideas from outside sources. The Greeks were big in the science field when there was enough cultural unity to facilitate communication, enough peace to make travel possible without too much interference, prosperity enough to allow for a leisure class who have time to think about things rather than work for a living, and enough difference to allow each part of the Hellenistic sphere to have different ideas to present to the other portions. Once this cultural unity got to the point where every portion of the Hellenistic/Roman world had pretty much the same information and ideas, there was no source for new ideas or information or points of view to stir up the scientific pot and bring it to a boil after it started to cool down. (Parthia, in the Roman period, was a combination of Persian nomadism and fading Hellenism, while India, which had made some contributions in the Hellenistic period, was plagued with invading Scythians (Sakas) in the north who wiped out the few Hellenistic enclaves, and in the Deccan adopted the provincial Hellenistic/Roman architecture of Syria from Roman traders and yet appear to have made no corresponding cultural return. China during the two Han dynasties, and the later period of civil strife, did have some slight contact with Rome (most notably, a group of legionaries who ended up in China and were used against the Huns), but the effects of this contact were very few, and mostly economic).

The idea that military success is a measure of scientific advancement is not so far-fetched ... military success was fairly often caused by technological (and thus, presumably, scientific)superiority: the Hyksos conquered Old Kingdom Egypt with iron weapons and the chariot, and the Greeks' military successes were, in great part, due to the fact that Hellenic metalurgy was superior and thus could produce superior armor.

The factors I mention in the first paragraph for the Greek success are really the generally necessary factors. Buzz Dixon's statement about Italy and Switzerland isn't quite correct ... by the 15th century, the Swiss were just about the most feared nation in Europe, being better than any other army on the continent; Count Rudolph of Hapsburg (already, I think, Holy Roman Emperor) was slaughtered by the Swiss, while a war with the Swiss reduced Burgundy from the status of a major European state whose Duke was both richer and more powerful than the King of France, to the status of a province. The difference, however, was that Italy was being enriched by the influx of Byzantine scholars and craftsmen (even before the fall of Constantinople, rich Italians were importing Byzantine craftsmen and Italians

were studying in Byzantium ... which had declined economically and militarily but was still a center of learning), and there were Italians who had nothing better to do than to study ... while the Swiss generally saw things from behind a pike of halberd ... which affected their outlook. The Swiss, I think, tended to look on science the way Stalin looked on the Pope ("How many divisions does the Pope have?"); if it wasn't of proven immediate use, it was forgotten.

I think Sandra Miesel has forgotten one point, the shift from the antique to the medieval world that produced the Serf was the result of a loss of freedom ... the Serf was the miserable descendant of a farmer-warrior (client or comitatus, they all started equal, save for the local chief); the serf's ancestors had been free.

I think Joe Gerver's idea is pretty good, but that the real reason for lack of interest in science in the static civilizations (in which I include both Rome and the New Rome) is simply that there is no source of interesting ideas to catch people's attention. It is notable that while the Eastern Roman Empire did not develop science, the Arabs who, to a fairly large extent, adapted and adopted the Byzantine culture to their own use, did. The difference was that, to Byzantium, the Arabs were uncultured barbarians (which at first, of course, they were), while Byzantium (which was static but had the accumulated knowledge of at least a thousand years) served as a source of concepts for the Arabs to take and build on. The Arabs, in their turn, served as the source of ideas for the uncultured barbarians of Europe, who built on that foundation, while the Arabs (in their turn) became static.

I think that the only reason that we haven't succumbed to the cycle is that our technology has reached the point where science is a practical source of economic advancement. I have great faith in greed, and so long as science remains profitable, I think we can expect to see considerable advancement in it.

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We also heard from: Alpajpuri, Sheryl Birkhead, Karen Blank, Donn Brazier, Grant Canfield, John Carl, D.F. Connally, Garth Danielson, Frank Denton, Vincent DiFate, Steve Eber, Dan Goodman, J.J. Hammersley, Lee Hoffman, Ben Indick, Paula Lieberman, Eric Lindsay, John Pettengill, Fred Phillips, Bob Stahl, Gary Tesser, and Pete Weston.

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While Bankei was preaching quietly to his followers, his talk was interrupted by a Shinshu priest who believed in miracles, and thought salvation came from repeating holy words.

Bankei was unable to go on with his talk, and asked the priest what he wanted to say.

"The founder of my religion," boasted the priest, "stood on one shore of a river with a writing brush in his hand. His disciple stood on the other shore holding a sheet of paper. And the founder wrote the holy name of Amida onto the paper across the river through the air. Can you do anything so miraculous?"

"No," said Bankei, "I can do only little miracles. Like: when I am hungry I eat, when I am thirsty I drink, when I am insulted, I forgive."

-- from Zen Stories

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speech; the TRAGEDIANS watch the PLAYER die: they watch with some interest. The PLAYER finally lies still. A short moment of silence. Then the TRAGEDIANS start to applaud with genuine admiration. The PLAYER stands up, brushing himself down. GUIL discovers that the dagger's blade retracts.)

Think about the concept -- you, the audience, are watching a play in which of course you know nobody <u>really</u> dies, but for which you willingly suspend disbelief and allow yourself to pretend that real deaths are occuring. Then one of the actors you are watching (who is himself playing an actor) <u>pretends</u> to die. Are you watching an actor pretending to die, or an actor pretending that he is pretending to die? Is there a difference? And how does either differ from a real death? (There are religions to whom we are all bits of God playing a vast complicated game of solitaire, so that all dying, and in fact, all living, is just pretend.)

R and G also cuts across the reality-fiction boundary in the other direction:

(ROS leaps up and bellows at the audience.)

ROS: Fire!

GUIL: Where?

ROS: It's all right -- I'm demonstrating the misuse of free speech. (Regards the audience with contempt) Not a move. They should burn to death in their shoes.

Now what exactly would you do in a play like that if the theater really was on fire, and the actors tried to warn you? Applaud with genuine admiration at the effective staging?

One last quote from the play: "A man breaking his journey between one place and another at a third place of no name, character, population or significance, sees a unicorn cross his path and disappear. That in itself is startling, but there are precedents for mystical encounters of various kinds, or to be less ~~extreme~~, a choice of persuasions to put it down to fancy; until -- 'My God,' says a second man, 'I must be dreaming, I thought I saw a unicorn.' At which point, a dimension is added that makes the experience as alarming as it will ever be. A third witness, you understand, adds no further dimension but only spreads it thinner, and a fourth thinner still, and the more witnesses there are the thinner it gets and the more reasonable it becomes until it is as thin as reality, the name we give to the common experience...'Look, look!' recites the crowd. 'A horse with an arrow in its forehead! It must have been mistaken for a deer.'"

They say we've been sending men to the moon since 1969. But where did all the unicorns go?

WHY YOU GOT THIS:

( ) Trade and/or review
( ) It seemed like the thing to do at the time
( ) You are mentioned
( ) You've frequently not been on a boat
( ) You contributed
( ) You would like to contribute?
( ) Don't think you're not incoherent
( ) You LoCed
( ) You paid
( ) This is your last issue unless you Do Something
( ) Je suis ergo sum