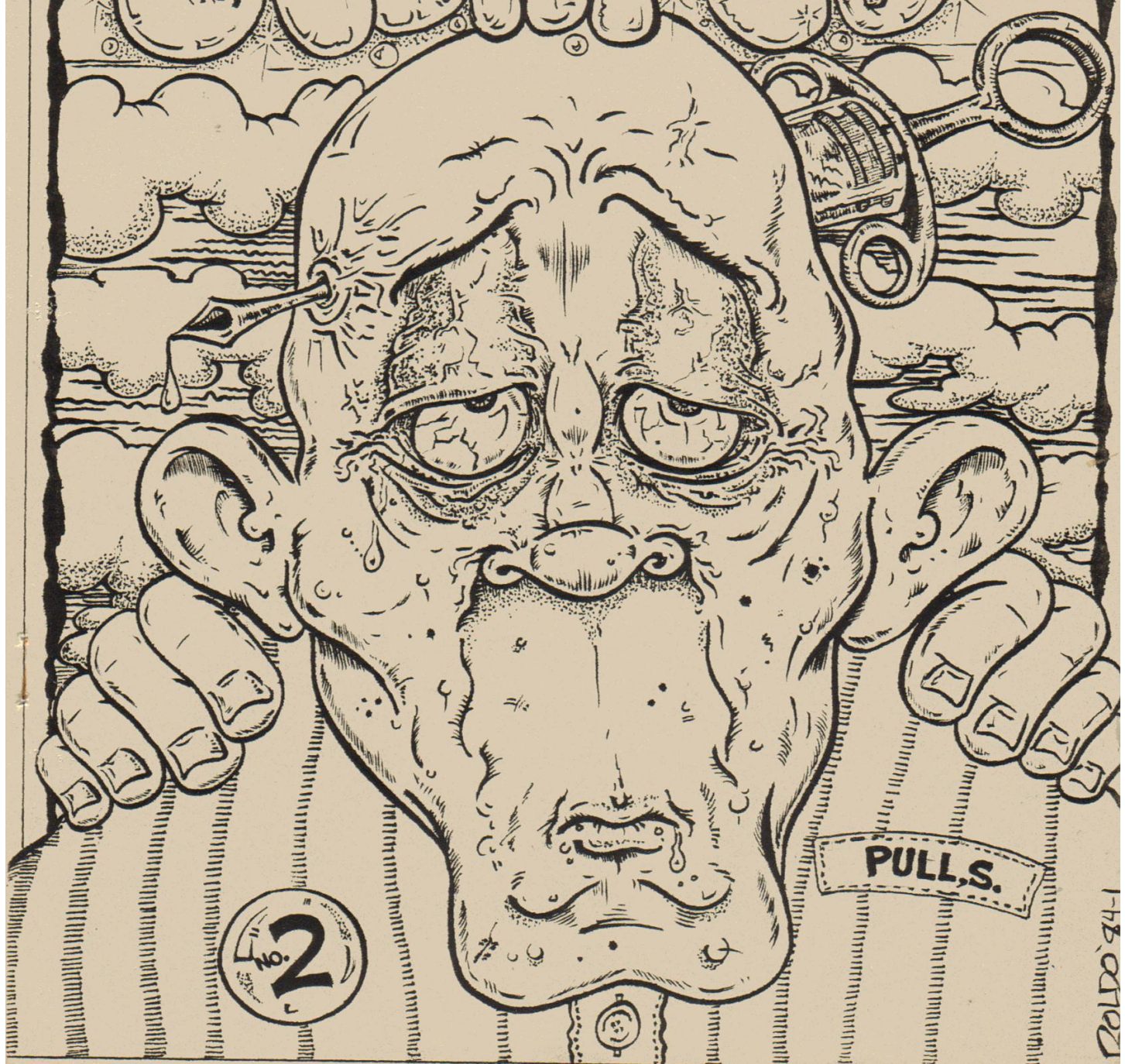


# CAREFULLY

# SEPARATE



No. 2

PULL, S.

1-84-2010



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### CAREFULLY SEDATED 2

c Alan Rosenthal & Catherine Crockett  
September 1, 1983

All correspondence to: "Carefully Sedated",  
c/o 117 Wanless Ave., Toronto, Ontario, M4N 1W1  
All rights returned to the contributors.

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at ConStellation, Baltimore MD, September 1-5, 1983.

I had to climb out from under a wobbling pile of Letraset to write this; procrastinating as usual, I'm writing this while halfway through layout. Still, Letraset is not a bad thing to be enveloped in. My mother is the patron goddess of rub-on lettering. She used to do concert posters & programmes, and now I get to use the stuff. Thank Goddess!

\* \* \* \* \*

I am now out of the secondary school system. I'm still not quite certain that I escaped with my sanity, but I did pass, and I did get into engineering at the University of Toronto, (quit bragging, already) which will probably further try my mental hygiene.

Metallurgical engineering is now quite fannish; Alan, me, Bob Webber, and Robert Atwood are all in Met.& Materials Science. Well, if the profs can handle it...

Considering school and work, we'll possibly get another ish out around Christmas, though I'm not making any rash promises; this issue is four months late and, considering school and travel plans, was scheduled at least 2 months too early. Another one will be out, R.S.N., come hell or high water. I need the egoboo.

The response to the last issue floored me. At collation time, I'd had to be restrained from throwing out the whole batch and starting over. Reading a lot of Simulacra and DNO's had given me an inferiority complex of massive dimensions.

I was surprised! We got a 75% response rate to the mailing. Thanks for that, and thanks to Roldo, Victoria Vayne, and Taral, for bending over backwards to help us. (And yes, Taral, the Kahlua is forthcoming...)



# *Delusions of Grandeur*

Alan Rosenthal

...And I actually thought we'd have our second issue out by the end of June. Who said that the first issue of a fanzine is always the hardest one to do? The temptation to sit on your butt looking smug is almost irresistible; the memory, however, of the week before *Carefully Sedated 1* was published is indeed very resistable.

Murphy's Law was working at full strength. Everything that could possibly go wrong, did so with a vengeance. The typewriter smudged every piece of paper it could get its ~~hands~~ keys on. The Letraset flaked and peeled like paint in the desert sun. Taral's electrostenciler began complaining vociferously; we ended up wasting fifteen electrostencils to cut sixteen good ones. Despite all these problems, we finally got around to printing the damned thing. Until the paper started sticking to the mimeograph's drum. Each piece of paper had to be very carefully removed from the mimeograph's drum by hand, then it had to be slipsheeted...

But it was worth it. Mike Glicksohn's loc arrived three days after we mailed the zine out. Upon reading it, I was stunned. It had never really occurred to me that anyone would actually like the zine, let alone think that it was a good effort... At first I thought that Mike was only being nice. But then more locs came in, and many other zines in trade, and people offering material... I was even talked to by total strangers at Disclave, who complimented me on the zine. It's a far cry from being the painfully shy person who always sat on the edges of beds at convention room parties, desperately trying to get up enough courage to talk to somebody, and not quite succeeding...

But why is this issue so late? A trip to Florida to visit my parents took up most of June. Trying to get readmitted to University after last year's illness forced my withdrawal took up all of July and part of August. And here we are.

Once again, I would like to thank everybody who contributed anything to the zine, whether it be articles, artwork, locs, zines in trade, or esoteric forms of egoboo to a humble co-editor... Special thanks go to Poldo (you're a large part of the reason why even I think that this issue is pretty darned good), Steve Fox (thanks for all that artwork; if it isn't used here, it will be used next ish), and Brian Earl Brown (Twiltone at last!).

And thanks, Cathy. (See? I told you that one day I might surprise you by not wearing plaid...)



# Frozen Assets

I reluctantly decided to sit and have my cup of coffee with Paul. I really wasn't too keen on the fellow, because he was a sort of social pariah...other delegates avoided him...but it was principally because of me that he had journeyed so far to attend the convention, so I felt duty-bound to give him some of my time. At a fleeting pre-dinner discussion he had intimated that our evening together would give him time to give me a detailed account of his recent operation for haemorrhoids.

I walked slowly towards him, and passed the table where my colleague Martin, and friends Roger and Roderick were talking. I heard Roderick, a South African, read confidentially from a little notebook 'Janine du Bois, artist, will give you a good time.'

I paused at their table to pour coffee from the saucer back into the rattling cup, ears flapping.

"What's the address?" panted Martin.

"St. Mary's something or other", read Roderick, "it was a bad line. But I promised to call."

"What are we waiting for?" said Roger, pushing his chair back.

"I say, you chaps," I said. "I overheard your discussion and find it most distasteful that at this cultural weekend you should be looking for crumpet."

"D'you mean we shouldn't go?" queried Martin.

"No," I said hurriedly, putting my cup and saucer on the table, "I merely feel that it is my duty, as organizer of the convention, to accompany you...perchance add a modicum of maturity to the scenario...to monitor the situation in case you have any luck, er, I mean, rather, in case my experience as a man of the world is required."

"Well, that will do nicely," said Roger. "It's freezing cold outside, let's put our warm clothing on and meet at reception in ten minutes."

Studiously avoiding Paul's anxious gaze, I careered across the lounge as if I'd suddenly forgotten an administrative chore.

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My illustrated brochure, detailing the convention hotel at a Yorkshire seaside town, and the amenities the place offered, would certainly render me liable to prosecution under the Trade's Description Act, should any delegate wish to press charges. After all, it was almost at the end of April, and I had inserted descriptive prose such as 'the wheeling of inquisitive seagulls over the azure blue sea as white-frothed waves seduce the golden beach under the benevolent watchfulness of the torrid sun'. One of my finest examples of literary technique, I thought, topped only by 'young nymphets bringing the phenomenon of topless sun-bathing to this paradise of the north.'

Unfortunately, the paradise at this time was under the grip of a sudden unwelcome bout of Arctic weather...icy winds chilled to the bones, icicles hung from the roof outside my hotel bedroom, and snowclouds hung menacingly overhead.

We had remained in the seclusion of the hotel, the central-heating system of which was undergoing its yearly overhaul, the owners deciding that the inclement weather had migrated to the north pole for the summer. In fact, the only outdoor experience we had undergone was my organised visit to the nearby grave of Anne Bronte, the lesser-known of the Bronte Sisters, eventually being beaten back to the hotel by sleet.

So I tried to whistle through my chattering teeth as I put on warm clothing. Well, truth to tell, I really didn't have anything really warm to wear, bringing with me thin summer shirts, white trousers and sandals, being lulled into false security by my own propaganda. However, I put on three pairs of socks, my pyjamas, all my vests and underpants, four shirts, three pairs of trousers

and a heavy bath towel round my shoulders, tightly buttoning up my brown corduroy jacket. I was bulky but reasonably warm. Being convention organiser I had been able to seize the only teapot warmer on the premises, which I cleverly utilised as a sort of Russian hat. Unconventional, I agree, and rather difficult to peer under, but it kept my nose remarkably warm.

I plodded downstairs, and met my friends. I felt rather sorry for Roderick. I mean, South Africa is a warm country and he figured England in late Spring was probably going to be an extension of his winter, hence the shorts. I knew he was going to suffer, but I suddenly smiled to myself, realising that he would definitely be hors de combat within a few moments of staggering into the blizzard. English people are supposed to be sporting and unselfish, but I noted Martin and Roger had declined to proffer any of their improvised gear to Roderick. I wished I thought to bring my blankets, as Martin had done. I liked the red rubber hot water bottle suspended in front of Roger's family jewels, a wise precaution, I felt, bearing in mind the object of ~~for~~ their quest.

Yes, it assuredly was a blizzard, outside in the darkness. I had a sudden impulse to revolve 360 degrees round the swing doors, but it occurred to me that my mission was to counsel the delegates, should any contretemps occur, so I bent forward at right angles and followed Roderick's trembling silhouette.

Roger had already made enquiries and knew of the whereabouts of a St. Mary's Avenue. We passed through the churchyard, through the gate, down the cobbled streets, hugging the gables of the houses.

Ah. St. Mary's Avenue on the left.

The blizzard had now calmed to a mere snowstorm. Being in a poetic state of mind I muttered something about vagrant balls of fluffy cottonwool dappling the pavement, but Martin stopped my philosophical thoughts by shouting that he 'frigging well wished it would stop snowing'.

We huddled in the doorway and I pressed the buzzer.

Aggressive barking grew louder, and the door opened, revealing an old woman trying to restrain an Alsatian, saliva dripping from its exposed molars.

"Er, ahem," I coughed, "does Janine du Bois live here?"

"Artist," said Roger.

"Will give you a good time," shouted Martin.

Roderick's teeth clicked in the background.

"Never heard of her," snapped the woman, and slammed the door shut in our faces.

People in St. Mary's Avenue didn't seem anxious to answer our frenzied knocking, and none of them invited us in for coffee. We pushed Roderick to the front, hoping that people would take pity on us, but they just weren't interested. However, a small corner shop was open, and we did manage to purchase half a dozen pairs of ladies red woollen tights, which we poured Roderick into. He looked rather like a ballet dancer who'd just had the operation, but his blue face did thankfully turn to a deathly white, which does happen to sunburned people who are exposed to sub-Arctic conditions.

The shop-keeper did direct us to St. Mary's Drive, half a mile away, but this locus was as inhospitable as the Avenue, except that one old man, who looked colder than Roderick, told us that St. Mary's Street was up the hill...he pointed blue gnarled fingers vaguely in the direction of our hotel.

We never did find it, but whilst cowering against a wall for protection against the next blizzard, we saw an immobile figure wearing a large white helmet and cape. It was a policeman, supposedly on patrol. He spoke huskily, he had a terrible cold, and to our solicitous probing he said he was too ill to report sick. He had certainly never heard of Janine du Bois, but St. Mary's Close was just the other side of the snowdrift, we were really close to it.

We waded across the snowdrift, bent against the driving snow. South African men are supposed to be physically strong and brave, and I felt embarrassed to hear Roderick sobbing, but insofar as we could understand from his gibbering posture, it seemed that he wished to conclude the mission. But, we said gently, we're so near.

Yes...yes...up the drive in St. Mary's Close...rattle a big brass door knocker.

A distinguished, grey-haired gentleman, muffled into a dressing gown tightly round his neck, answered our frenzied knocking.

"Does Janine du Bois live here?" I grated.

"Artist," gasped Martin.

"Will give you a good time," screamed Roderick.

The man's eyes flickered angrily...he removed the neck of the dressing gown to reveal a white collar around his neck...he was obviously the local Parish Priest.

He made a rapid genuflexion when he saw Roderick...we turned away and stumbled to the hotel.

They wanted to thaw us out with whiskey, and I said it was a good idea but I wouldn't join them. I went up to my room, cracked off the outer clothing, rubbed my dead fingers into clutching reality, and went to the lounge.

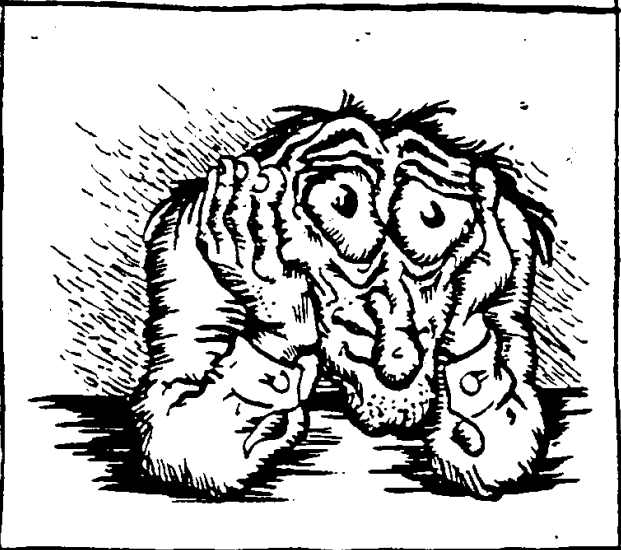
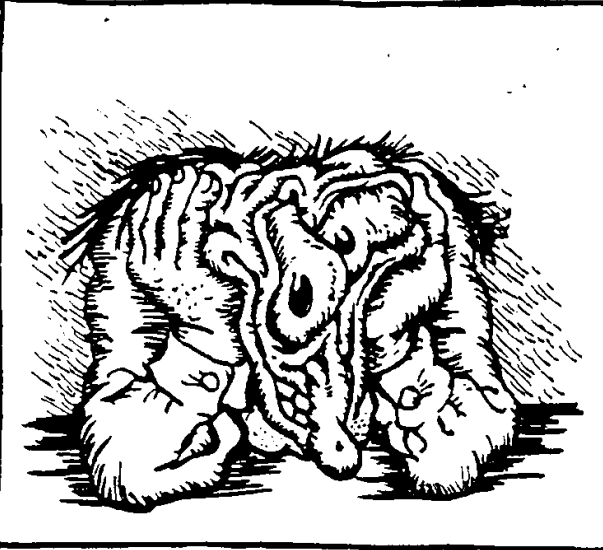
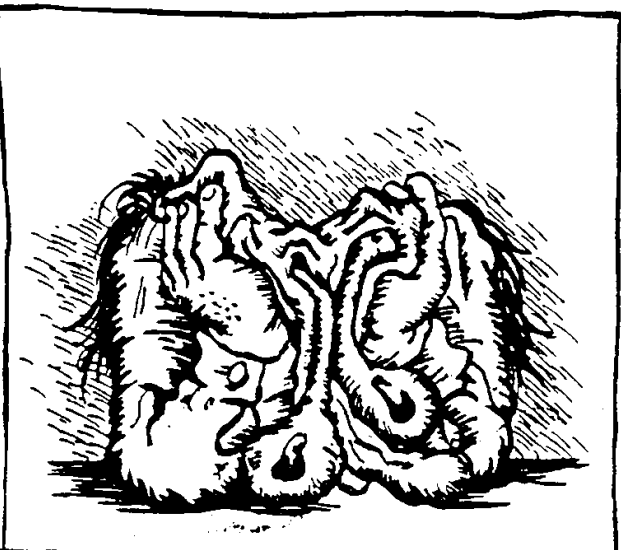
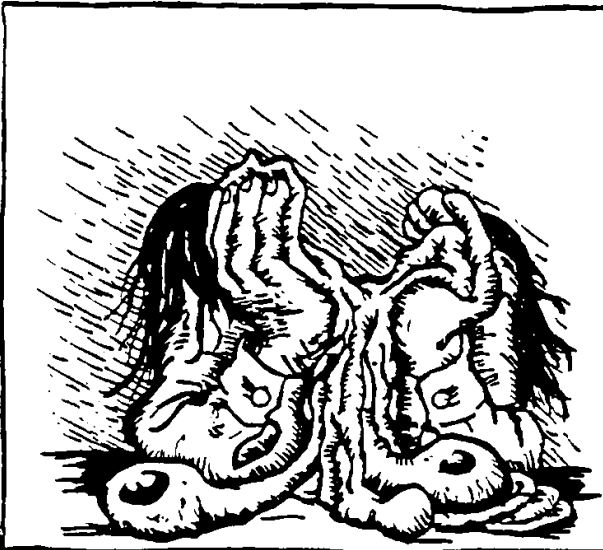
Paul was sitting in front of a roaring log fire. Other knots of delegates were nearby, but had granted him the sanctity of the fire so as to avoid his company.

A log spit a spark arc-like over my shoulder, and I gazed at Paul's red face.

"My dear chap," I said, sitting next to him. The heat hit me in the face like a blast furnace...it was gorgeous.

"Tell me, John," he said, "have you ever had internal stitching?"

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ROLD'93

WITH ACKNOWLEDGEMENTS TO R. CRUMB

# STRAIGHT AGIN!

WELCOME TO THE 90'S, KIDS.....



# TUNE!N·TURNON·&·FALL·OUT·TARAL·WAYNE

Periodically I go through my things for the purpose of throwing away whatever I can. It's emotionally satisfying to cleanse yourself of the fetishes of a decade. While going through boxes of stuff from the late 80's -- you remember how crazy the news was ten or fifteen years ago? -- I found a lot of precious keepsakes as well as obvious junk that had been packed away for storage without sorting. Among the self-sealing bags and file folders I found a number of out-takes from my first animated zine. (By the way, they completely proved me right and Mike Glycer's review wrong. As is usually the case, I couldn't find the clips when I needed them.) Held in a bundle by a rubber band was a collection of potato-chip bags in 41 flavours -- Anchovy Pizza, Saurkraut, and Fruit Punch were among the more imaginative. I threw these out at once. I used to keep a file of newspaper clippings that had anything to do with fandom. They were found between files labeled Abnormal Psychology, and Malthusian Populations, but I can't imagine why I had ever put them there. Without further ado, most of the clippings had long ago lost relevance. Some were amusing enough to share with you before consigning them to the circular file once and for all. The fandom of this more humane and enlightened age may ask themselves, "Were we ever as silly as this?" I leave it to you to find an answer.

From somewhere in the back pages of the Toronto Star, dated August 7th, 1985:

## "Survivalists' Turn To Fall Out"

Survivalists collected in Washington DC yesterday for their annual convention. Unlike other events cancelled in Washington on the 40th anniversary of the bombing of Hiroshima, this was the second straight year the survivalists were frustrated by unexpected developments. Last year, the convention was cancelled when the organizing committee failed in its attempt to retake a small African nation from the People's Provisionary Government which had ousted the original hosts in a bloodless coup. The Guest of Honour-to-be was killed in action, along with several thousand black nationals.

This year the survivalists returned to the United States in regard for its greater stability as a convention site. A new Guest of Honour was chosen. He is Jerry Pournelle, a leading figure in an important contributory branch of the survivalist movement -- Science Fiction.

Not merely a Sci-Fi writer, Pournelle is a Libertarian and a social philosopher in his own right. Author of many utopian novels such as Oath Of Fealty, he has helped shape the political thought of many of the young technical elite who are the future of America. Interviewed several days before the convention -- it is presumed he was on the site of yesterday's opening ceremonies and so cannot be reached -- Mr. Pournelle gave many examples of the dry wit and penetrating thought that has marked him as a leader in his field. Asked about his views on pacificism, he produced a flick knife under the reporter's nose and quipped "I'm going to kill you. Are you a pacifist now?" On another topic, Mr. Pournelle corrected the historical misunderstanding of Benito Mussolini. "He did make the trains run on time," reporters were told. And again, remarking on his critics, Mr. Pournelle observed that artsy-fartsy intellectuals failed the modern literacy test by lacking even the minimal computer skills of his least reader. It is easy to see why Mr. Pournelle has inspired such loyalty and refreshing iconoclasm among his many thousands of fans.

During the convention the survivalists award recognition to their choice of the year's outstanding contribution to the survivalist cause. Last year the coveted G. Gordon Liddy Award was given to Harrison Ford for his role as the post-holocaust hero in Armageddon: A+14.

The popular adventure TV series set fourteen years after the destruction of civilization as we know it is based loosely on a story written by Harlan Ellison. A later script by the author led directly from filming A Boy And His Dog to the ABC smash hit. The original story is a nihilistic statement of the dehumanization of holocaust survivors, whereas the television series celebrates the adaptability of human beings to any catastrophe. The obvious key to the show's success is this reversal of the original downbeat ending. Harrison Ford as Albert must also take credit for the show's appeal. His superb characterization of the cool, competent Albert -- played against the comic foil of the cowardly robot canine, Blood -- was cited as the ideal model of a survivalist, and the show as the ideal medium for dissemination of survival education.

A list of program items was submitted to the press before the convention opened. Among many films, guest speakers, panels, and seminars scheduled for the weekend were the following topics of special interest to survivalists:

"Surviving a Nuclear Attack on Your Downtown Office ( Ten Effective Things You Can Do in That First Vital Second. )"

"Decontaminated Air From Hydrolysis of Bottled Vichy Water."

"Interruption of the Food Chain and Your Special Diet."

"Your Stock Portfolio For The Post-Holocaust Economy."

"Controlling Mutated Populations in The Recovery Period." ( Guest speaker, F. Jagger. )

"Future Convention Sites After the Destruction of Major Centres of Population."

The first day of the convention opened quite uneventfully, with more than 3,000 attendees from all over California and the rest of the world. Notables seen checking in at the hotel included many of the Guest of Honour Mr. Pourmelle's friends and peers. The writers were on hand in speculation that the Dean of Sci-Fi, Robert A. Heinlein, would be awarded the Liddy for his life-time achievements. Mr. Heinlein was reported to be resting comfortably in his wheelchair in the privacy of his room. Several Pentagon officials, and many representatives from the aerospace and national defence industries had begun to arrive that morning to set up their displays. A motorcade had already left the White House to deliver President Reagan at 11 a.m. when he would officially begin the convention as Toastmaster. Expectations were that the con would continue until Monday hadn't World War 3 broken out 20 minutes before the opening ceremonies.

The survivalist movement was vapourized by the lone missile accidentally launched by an off-shore Russian submarine, along with the greater part of the population of Washington DC and neighbouring communities.

\* \* \* \* \*

It would appear to have been an act of providence that DC area fans who we needn't name were away from Washington that day, all except two who were found miraculously intact beneath protective layers of old fanzines. Quick thinking had spared their lives.

F!N!S

## *Performance Criteria for Near-lightspeed Propulsion Systems*

### I: Introduction

"...to explore strange new worlds, to seek out new life, new civilizations..." To seek out and explore the worlds that circle other suns is an idea that is central to much science fiction. The idea is a powerful and evocative one. It leads to images of great deeds set against the background of a multicultural interstellar civilization. Who among us is so lacking in the sense of wonder that we have failed to thrill at the thought of great starships slipping silently through the void?

Fiction aside, however, what are the realities?

The reality is two-fold. First, stars are far apart. This is not true in general, but is certainly true for this region of the Galaxy. Second, the Universe has a built in speed limit: no material object can travel at the speed of light.

Given these limitations, there are three options open to us:

1. Find a way to exceed the limitation of lightspeed imposed upon us by Nature.
2. Travel to the stars at comparatively low speeds, taking timespans of many generations to do so.
3. Travel at much higher speeds and take less than a human lifetime to reach the desired destination.

We will not consider option (1). The "warp drive" in its many fictional incarnations requires the application of entire bodies of Physics presently unknown and possibly forever unknowable. There are no facts which lead us to believe that the "warp drive" can be anything more than science fiction, at this point in time.

Option (2) leads to the multi-generation "ark" or the sleeper ship or other variations on this theme. Long duration starflight requires technology which must be counted upon to be dependable over hundreds or thousands of years. A multi-generation ark requires in addition not only the commitment to purpose of the first generation of Earth-born crewmen, but of succeeding generations as well, something which is completely impossible to control. We will not consider option (2) except in passing, and in no real detail.

Option (3) assumes the capability of high speeds in the relativistic domain. In the following discussion, we will consider possible methods of achieving such speeds, and the consequences of relativistic flight.

### II. Relativity and Other Problems

Consider our hypothetical starship. We want to make it go places, fast. We have two possible approaches. We can construct the starship with an internal powerplant, or we can depend on an external source for propulsion.

The external power source is an attractive proposition from the point of view of mass economy. If the powerplant and fuel don't need to be carried, then more of the ship's mass could be devoted to crew and crew support.

How might we create a propulsion system that doesn't need to be carried by the ship? The answer lies in the concept of the lightsail.

In quantum theory, the photon is the particle associated with a light wave. Photons have no mass. However, they do possess momentum. Consequently, a lightsail consisting of a wide sheet of light-weight material can be moved by the pressure of light -- and in turn can move a payload which is attached to the sail.

The disadvantage of the lightsail is that the intensity of sunlight (and therefore, the intensity of the motive force) decreases as the distance between sun and lightsail increases.<sup>1</sup> While it may be possible to use a laser beam instead of sunlight, we would have to use a very powerful laser, and we would also have to consider the problem of aiming the laser over interstellar distances, toward a moving target, from a moving platform.

Internal or onboard propulsion systems fall into two categories. Those based on the Newtonian action/reaction principle, and those that do not.

In the 1950's and '60's, John W. Campbell published a number of articles and letters from one Norman Dean in the pages of Astounding/Analog. Norman Dean had claimed to have invented a 'space-drive', a device which converted angular momentum into kinetic energy. Simply stated, the Dean Drive changed the rotational energy of a spinning flywheel into linear thrust.

Such claims were never substantiated, nor were the claims of other space-drive inventors both preceding and following Norman Dean. Newton's Third Law of Motion, which states "For every action, there is an equal and opposite reaction" is still the only known way to make an object move in space. The Third Law is sometimes referred to as the 'rocket principle', since the operation of a rocket depends entirely on this effect. The rocket's exhaust is the action -- the exhaust has some momentum associated with it. The rocket moving forward is the reaction -- a similar amount of momentum has been imparted to the rocket by the exhaust.

For purposes of this discussion, we will only consider so-called "reaction drives" -- that is, propulsion systems based on the rocket principle.

Let us now consider what happens when something goes fast. For the purposes of this article, we will assume fast to mean a significant fraction of the speed of light. The fastest-moving human artifacts are four American space probes that are currently in the process of leaving the Solar System. Pioneer 10, Pioneer 11, Voyager 1, and Voyager 2 are each moving at roughly 20 kilometers per second. For comparison, the speed of light is approximately 300,000 kilometers per second; thus, the fastest spacecraft launched to date are moving at less than one one-hundredth of one percent of lightspeed. This is not significant.

At much higher speeds the effects of Einstein's theory of relativity become important. At significant fractions of lightspeed (say greater than 0.1c) time dilation becomes noticeable. The passage of time aboard the spacecraft becomes unrelated to the passage of time on the Earth. An observer on the Earth would see his counterpart aboard the spacecraft moving slower. A year aboard the ship as experienced by a crewman would be a longer period of time as experienced by the Earth.<sup>2</sup>

We are now ready to discuss the performance of possible propulsion systems for our starship.

### III: The Ion Drive

From our discussion of the rocket principle, it should be obvious that one way of making the rocket go faster is to make the exhaust go faster. The increase in momentum in one will result in an increased momentum imparted to the other.

The disadvantage of the rocket, of course, is that the fuel for the rocket must also be carried -- this costs in performance, since the drive must boost not only the lifiesystem/payload, but also the unexpended fuel. The question which we will consider is whether or not the increased efficiency in jet exhaust will compensate for this.

We will examine the performance of an ion drive system. An ion drive works by heating its reaction mass to high temperature, creating ions -- electrically charged particles that may be manipulated by electromagnetic fields. Using such fields, these ions are accelerated to high speeds and used to create thrust by being expelled from the spacecraft. Ion drives have been tested in a number of American satellites since the mid- 1960's.

Assume that the lifiesystem/payload is a hundred metric tons, and that one ton of fuel is carried. Note that this is very far removed from present day chemical rockets where most of the weight is fuel and very little of it is payload.

The mass ratio,  $M$ , is the fueled mass divided by the empty mass of the spaceship. Hence

$$\begin{aligned} M &= M_f/M_e & \text{-----} & (1) \\ &= 101/100 = 1.01. \end{aligned}$$

Let us assume that our ion drive can create a jet exhaust that has a velocity of one-tenth the speed of light --  $0.1c$ .

The velocity parameter of the spaceship, assuming that it uses all its fuel to accelerate, is

$$\begin{aligned} \theta &= \frac{v_{ex}}{c} \log_e M & \text{-----} & (2) \\ &= 0.1 \ln 1.01 = 1 \times 10^{-3} \end{aligned}$$

Finally, the velocity of the spaceship is related to the velocity parameter by

$$\begin{aligned} v/c &= \tanh \theta = (e^{\theta} - e^{-\theta})/(e^{\theta} + e^{-\theta}) & \text{-----} & (3) \\ &= 1 \times 10^{-3} \\ v &= 300 \text{ km/sec} \end{aligned}$$

Now, this is interesting. At a velocity of 300 kilometers per second, the Moon is less than twenty minutes away. Of course, it will take time to accelerate to this velocity: at 1 gravity, it would take just under nine and a half hours.

However: 300 kilometers per second is not fast. How about if we increase the efficiency of the jet -- make its exhaust  $0.9c$ . Duplicating these calculations, we find that the final velocity of the spaceship is 2,700 kilometers per second -- just a touch under a tenth the speed of light, and in the right range to be considered fast. At this velocity, Pluto would be just over twenty days away.

But, as we have noted, stars in this region of the galaxy are far apart. Alpha Centauri is over four and a half light years distant -- at a tenth of



lightspeed, it would take nearly fifty years to get there. This would be as experienced both by the astronauts and by the Earth; time dilation has not become serious yet.

What if we were to carry more fuel? Say we made the mass ratio 10, and left the jet exhaust at 0.9c -- we can achieve 0.97c given these parameters, which is fast.

However, the perceptive reader will have noted that in the previous analysis, we have not made any provision for stopping. All of those flights are one way, because we have not left any fuel in reserve to slow down with! Let us examine again the last example.

If the payload is one hundred metric tons and the full weight of the starship is one thousand metric tons, then we have (obviously) 900 metric tons of fuel for the ion drive. Reserving half for deceleration, we have four hundred and fifty tons available for acceleration, the same for deceleration.

Consider equation (1). A better definition for the mass ratio (better, that is, for starships which can slow down!) would be, instead of fueled mass divided by empty mass, initial mass divided by final mass after the acceleration phase.

Thus

$$M = M_i/M_f \quad \text{-----} \quad (4)$$

= 1000/550 for the example we are considering.

This works out to a mass ratio of 1.8, which will give our starship a final velocity of 0.5c. Alpha Centauri is just over two years away; assuming human lifespan to be 100 years, we can send astronauts out to over a hundred light years distance, and still have them alive to radio back -- since at 0.5c, the time dilation factor is becoming significant. Time dilation is related to the velocity parameter of the starship by

$$D = \cosh \theta = (e^{\theta} + e^{-\theta})/2 \quad \text{-----} \quad (5)$$

$$= 1.15$$

It should be noted that the limitation on the range of this ship is twofold. First, the size of the life-support system will determine the number of years that a crew can be kept alive. The second limitation is on whether or not we need to keep fuel in reserve for the crew to come back. If the starship can be refueled at its destination, then the above analysis holds true. If, however, we need to save fuel for the return to Earth, then we must make some changes: assuming 900 metric tons of fuel, we can allocate one quarter to the outward acceleration phase, one quarter to the outward deceleration phase, one quarter to the homeward acceleration phase, and the final quarter tank for the homeward deceleration phase. This means that  $M = 1000/775 = 1.3$ .

The performance characteristics of the starship given these additional limitations is left as an exercise for the reader. However, it should be obvious that the lower mass ratio means a lower top speed, and consequently a more restricted range.

#### IV: The Photon Drive

The most efficient possible reaction drive should be a drive whose exhaust velocity is lightspeed. One system meets this criterion: matter and antimatter mutually annihilate to produce photons of gamma ray intensities. If this annihilation could be controlled and the resultant gamma rays focused into a beam, we will have created a photon drive.

Again, we consider the standard starship lifesystem/payload of 100 metric tons. What would it take to accelerate to a time dilation factor of 5, decelerate into the target star system for exploration, and then return to Earth?

From equation (5), we note that if  $\cosh \theta = 5$ , then  $\theta =$  (approximately) 2.29. Substituting into equation (2), and noting that the  $V_{ex}/c$  term cancels out, we have that the mass ratio  $M$  must be 10. Since there are two periods of acceleration and two periods of deceleration, the mass of fuel required must be  $10 \times 10 \times 10 \times 10 \times 100$  metric tons, or 1,000,000 metric tons.

Since we have considered here a photon drive, it should be noted that this one million metric tons of starship fuel consists of five hundred thousand metric tons of antimatter.

An additional factor to note is that if a reasonable density for the interstellar medium is assumed, say 1 atom per cubic centimeter, then we find that the leading edge of the starship is being subjected to a barrage of particles having impingement energies on the order of 4 GeV (giga electron volts -- i.e. 4 billion eV). Massive shielding would appear to be in order.

However, such a starship does have fairly long range: time dilation factor of 5 multiplied by half of an astronaut's lifespan (50 years) gives us 250 light years, which will give us access to a very large number of stars.

It is due to the fuel requirement and shielding requirement that the Nobel prize-winning physicist Edward Purcell stated (in 1963) that interstellar travel would never be feasible...

#### V: The Bussard Ramjet

...never be feasible, that is, for any starship that must carry its own fuel. However, we note that the interstellar medium is filled with atoms, primarily of hydrogen, to a density of approximately one atom per cubic centimeter.

In the early 1960's, Robert Bussard suggested that it might be possible to exploit the interstellar medium for a fuel source. The Bussard Ramjet is constructed around a drive which uses hydrogen fusion as the energy source. The origin of the hydrogen, used both for the energy-releasing thermonuclear fuel and for reaction mass, is from the interstellar medium via electromagnetic sweep fields.

Bussard's solution does away with the necessity to be concerned with the mass ratio -- the ship carries no fuel, other than a maneuvering reserve. And the electromagnetic sweep fields act as shielding.

Some estimates of the performance of the Bussard Ramjet are interesting. It should be noted that the final velocity of a Bussard starship is a problem in continuous acceleration, where relativistic effects must be accounted for, in particular, the relativistically magnified mass of ship and contents.

We consider a Bussard starship, accelerating at 1 gravity, where the acceleration is defined by the crew of the ship. Elapsed times in the discussion that follows are shipboard elapsed times.

The velocity parameter of a Bussard starship is related to acceleration by

$$\theta = (a/c^2) cT \quad \text{-----} \quad (6)$$

After one year: using equations 6 and 3, we find that the ship is moving at  $0.77c$ . The distance in the Earth frame of reference travelled by the ship is given by equation (7) to be 0.56 light years.

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$$x = \frac{c^2}{a} \left[ \cosh\left(\frac{aT}{c}\right) - 1 \right] \quad \text{-----} \quad (7)$$

After ten years: the velocity is greater than 0.9999c. The distance travelled is 15,000 light years, which is roughly one half the distance to the Galactic Centre. Elapsed Earth time will be roughly 15,000 years.

And after fifty years: the velocity will be greater than 0.999999999c. The distance travelled will be  $4 \times 10^{22}$  light years. For comparison, note that the age of the Universe at this epoch is on the order of  $2 \times 10^{10}$  years.

Our Sun is expected to have another 5 billion years before it enters the next phase of its evolution, and in so doing, destroy the Solar System. This point occurs just short of the 22 year mark aboard the Bussard starship.

Whether or not the Bussard starship will work is a subject of controversy. The process whereby hydrogen atoms are swept into the Bussard engine must operate at an extremely high level of efficiency. Tiny momentum losses here at the collection phase mean major losses in efficiency for the Bussard drive.

Based on an extrapolation from present knowledge and technology, one may reasonably hold the expectation that ion-driven craft will be interplanetary ships, and that Bussard Ramjets will be the true starships.

#### VI: Acknowledgements

This article is based in part on some work which I did for a physics course back in 1980. The course was taught by Professor David Harrison of the Department of Physics, the University of Toronto. I have incorporated his suggested changes into the revised text which forms this article. Any remaining errors, of course, are the fault of the author, who would welcome them being pointed out.

For all would-be SF authors, I have tried to summarize and put into physical context a set of equations which can be used to describe the performance of relativistic spacecraft.

Robert Heinlein's Time For the Stars and Poul Anderson's Tau Zero are two very good fictional treatments of relativistic interstellar flight.

This article owes its genesis to Paul Taylor and Kathryn Grimbley-Bethke. In the summer of 1982, Paul asked me about a good way to get to the Moon -- naturally I thought of ion propulsion. And Kathryn wanted to do a special science issue of the OsFiC newsletter -- naturally I thought of recycling some other material...

#### VII: Footnotes

<sup>1</sup>In fact, the decrease in intensity follows the inverse-square law.

<sup>2</sup>See any good physics text for further discussion. Albert Einstein's The Theory of Relativity and Edwin Taylor & John Wheeler's Spacetime Physics are highly recommended.

<sup>3</sup>An electrically neutral atom, if sufficiently energized (by heat, for example), will become an ion if it loses at least one electron.

<sup>4</sup>Assuming that the jet exhaust is 0.9c and  $M = 1.3$ , then  $v = 0.22c$ . What is the time dilation factor?

## *Second Hand Feet (a typical conversation)*

by Roldo

-- And this one's for Spike Milligan

"To find the Rat, look for the Hole." -- Hemlock Stones

Running into the strange being known as "Bjorn Fnord" is never a simple matter.

He is, by his own designation, the Most Paranoid Person on the Planet, and he never ventures out in public without radically altering his appearance, so there's always a degree of difficulty in recognising him.

He claims this is because he knows too much about the nefarious doings of a Secret, Multi - National Financial Conspiracy called OMNICORP that controls all political, religious, and business activities on Earth. He says.

I say its because anyone who knows him leaves when they see him coming.

Bjorn Fnord is a particular problem to me, since he's decided that as a cartoonist and writer of topopsychotic fiction, I can get The Truth to that segment of the Public who still retain the mental agility to accept unusual ideas ( 5% according to the latest polls, he tells me ) without having OMNICORP take me too seriously. Therefore, when I found myself faced with the neccessity of spending an hour in the Eaton's Co. "Executive Place" Concourse -- a futuristic nightmare with all the warmth of a Z grade space - opera set -- I was keeping a cautious eye out for anything that could be Bjorn Fnord.

Even so, when a harmless - if - grimy Bag Lady sat down opposite me and began to sort through her mobile Reality, I suspected nothing until she suddenly looked up and said,

"So, what do you know about Yog Sothoth? "

"Fnord! " gasped through a mouthful of foul and overpriced coffee, "I thought you were in Washington."

"Of course you did...because I was in Ottawa. But there's no time to play Holmes and Watson. I'm on to something, so answer the question."

"Well", I began, realizing he was using my pride in obscure knowledge to lure me into his game again, "Yog - Sothoth is a rather unpleasant kind of Cosmic Entity, one of a group of nasties who controlled the earth and will do anything to get it back. Yog - Sothoth is also known as the Eater of Souls. He's believed to give Power in exchange for blood sacrifice. This isn't your usual style of stupid questions...are you branching into some new school of Paranoid Delusions?" I asked him, asking myself why I was asking even as I asked.

"Someday that attitude is gonna get you turned into a servo - unit" he snapped, "Look, I need your help again."

Aware that the simplest method of dealing with Fnord is to listen patiently, nod appropriately, and hope he goes away quietly, I opened with the accepted conversational gambit.

"So what's afoot in Our Nation's Capital?" I asked, hoping to get him started on his standard "metric - is - an - OMNICORP - plot" rap and avoid any new revelations. It didn't work.

"Have you ever wondered," he intoned sonorously, making a ludicrous attempt to look deadly serious despite his grotesque disguise, "why the Government is so intent on continuing the Seal Hunt



despite the massive International ill - will it creates? The official reason is to aid the income of the fishermen, but we can discard that for three obvious reasons...A ) why did the Government refuse to allow that millionaire to build a fake fur plant that would provide year - round employment? B ) when did the Government ever care about fishermen or anyone else? and C ) who believes anything the Government says? So why, then, does the Government continue the hunt, despite public outrage and since it's unnecessary? I'll TELL you why! Because OMNICORP TELLS THEM TO -- THAT'S WHY!"

"Cool it," I told him, "You're attracting attention." He clambered down off the table heavily, bits of his ragged costume falling gently to the floor.

"Don't worry about it," he quipped, "There's enough pacifier subliminals in the Muzak here to keep these geeks calm if I started tossing grenades. Watch." He lumbered across to the nearest occupied table and snatched the pseudoburger from the hand of its occupant. Giggling and cackling he proceeded to take a big bite, which he washed down with a gulp of Crock - a - Cola. Returning the burger to its startled owner, he lumbered back to my table, still chuckling and muttering. Overhead a surveillance camera swung to follow him.

"Ignore that," he told me, turning and sticking his tongue out at the camera, "Security has orders only to interfere if you hassle executives. They let working stiffs take any sort of guff short of violence, it's part of the plot to get them to vote Law'n'Order."

Sometimes, I thought, Fnord almost makes sense. But I kept it to myself.

"Now, about Ottawa," he continued, "I was poking around Parliament, wearing the standard CIA - KGB "Japanese Tourist" disguise. If I'd known what I was gonna find, I'd have put some film in the cameras. I found this door with an "Official Use Only" sign, so I checked it out...you can go anywhere in that disguise...and after about an hour of tunnels and stairs, I found their Secret Chamber. You should see it, man -- it makes the one in the Vatican look like a Daycare Centre."

"Vatican?" I blurted before I could stop myself.

"Yeah...where they got Christ's body stashed. You read 'Another Roadside Attraction', didn't you? Don't you ever believe anyone?" At this point I noticed the first camera aimed at us had been joined by two others.

"I think they're trying to read our lips," I whispered, shocked at my growing gullibility.

"Don't be so naive," Fnord sneered, "This place has more bugs than a welfare mother's kitchen. So...there they were, the combined leaders of the Country, plus a few visiting dignitaries and lots of naked women. Everyone else was wearing black robes and there was a big banner with the OMNICORP logo on it...like this, see ( See sketch ) it's the Closed Eye. They were all hopping around chanting "Yog - Sothoth Neblod Zin" and beating on stuffed Seal Pup toys with baseball bats while 13 TV screens showed films of seals having their heads pulped or being skinned alive. I just stood there, amazed. I didn't have to hide...there were a dozen or so Omnicorp Watchers there, and they were all wearing the Tourist outfit too. So were a few guys who actually were CIA or KGB. One of the Watchers even strolled up to me and started to chat. "Pretty impressive, huh?" he says. Must've been American. "Actually, we'd hoped to have Him fully adapted to the electronically simulated Blood sacrifice by this year, but it seems its going to take a little longer. I'm afraid we were a bit premature in announcing a possible cancellation of the Hunt, but we really thought that techno - sympathetic magick would be enough, with the victims of auto accidents and industrial negligence. Good thing The Board decided it was time for a Right Wing swing, huh?"

"The Board is Always Right," I told him, using the correct response. When they mention The Board, it's always a code. This assured him I was not only an Official, but probably a Superior. They're really into that Hierarchy crap. So I just strolled out and headed back here to find you." He settled back, looking as smug as a TV preacher.

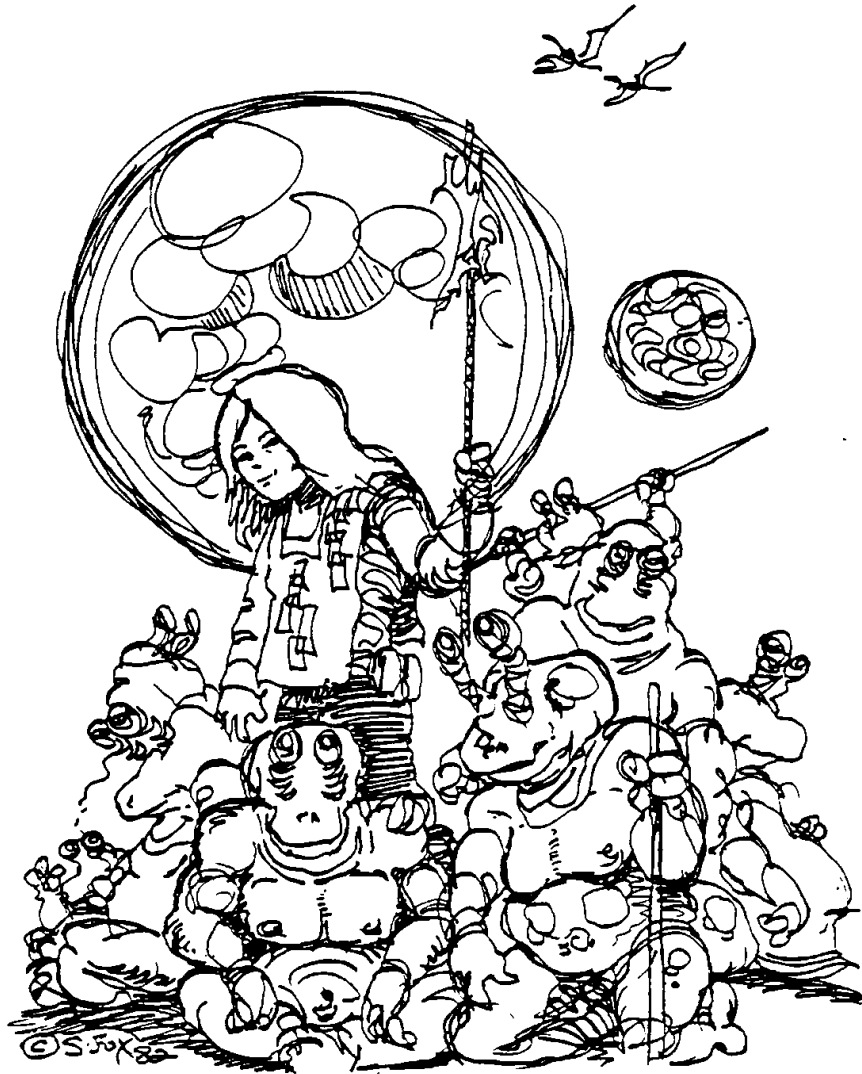
"And I suppose you want me to write this up as a story and send it to 'INSIDE JOKE', right?"

"No," he said, starting to stuff his collection of refuse back into the battered shopping bag. "It's too soon after the tape you transcribed, and besides, this is a local affair. Send this one to that new 'zine in Toronto, 'CAREFULLY SEDATED'. Besides, I love that title" and he looked pointedly at the guy across from us who was still staring at the half-eaten burger with an expression too dull to call baffled.

I saw his point.

Without a further word, Bjorn walked away. The cameras, however, kept their cold glass eyes trained directly at me.

I put on my coat with deliberate calm, then returned the unblinking stare for as long as dignity required, before leaning over and saying directly into the sugar dispenser, "I never saw that woman before in my life."



# Exterior Decorating

Barb Dwire

If you feel like throwing up every time you pass that sexist ad, or you no longer can sleep nights due to the Armed Forces recruiting ads around the corner - or you just can't handle the fact that your bank loans money to South Africa anymore and you've got your spray can in hand, you might as well do it right!

The purpose of this article is not to encourage you to break the law (that would be illegal) but to provide you with information so that you can make up your own mind, as well as information on how to do it right. More and more we find ourselves in situations where if a given activity isn't illegal, it's required. You don't need anyone else trying to tell you what to do - you're probably old enough to make up your own mind.

For all of you environmentalists - remember that most spray paints contain freon, which attacks the ozone layer. The ozone layer -O<sub>3</sub>- protects the Earth from solar radiation. Without the ozone layer people would get 3rd degree burns from just a few minutes exposure to the sun's rays. Note that Sheffield Finishing Touch, Sheffield Dazzle, and Tremclad Rust Paint probably won't damage the ozone layer.

Anyway, assuming that you're an anti-social type and you just have to go out and break the law, and insist on spraypainting (and probably shoplifting as well) you might as well steal buy the best.

Makers of spray paint tend to charge the same prices for all colours of paint even though the ingredients cost different amounts. They skimp on the reds and yellows (as many artists will already know) because of the higher cost of the ingredients. Blacks and greens cover with less spraying, and correspondingly less risk, as well as a more professional look.

According to C.R., the very very best is Rust-Oleum Stops Rust, series 7700 (of the paints that they tested). For those to whom price is no object - C.R. lists the price as \$4.10 U.S. a can. Not only does it appear to cover almost anything, but it helps to protect unprimed metal from rust! (As if you cared!)

Some spray paint manufacturers have started using a new type of spray pattern. The fact that one can just appears to be harder to use than another is not your imagination. C.R. claims that this makes it "hard to scrawl foot-high letters". Anyway, the offending types are: Benjamin Moore Utilac, Dupont Lucite Spray Enamel, Flecto Le Spray, Pactra Latex Plus, and Chroma.

Note that the following are water-based and probably wouldn't be good to use in the rain (others may give you problems there too): Flecto Le Spray, Pactra Latex Plus, and Chroma.

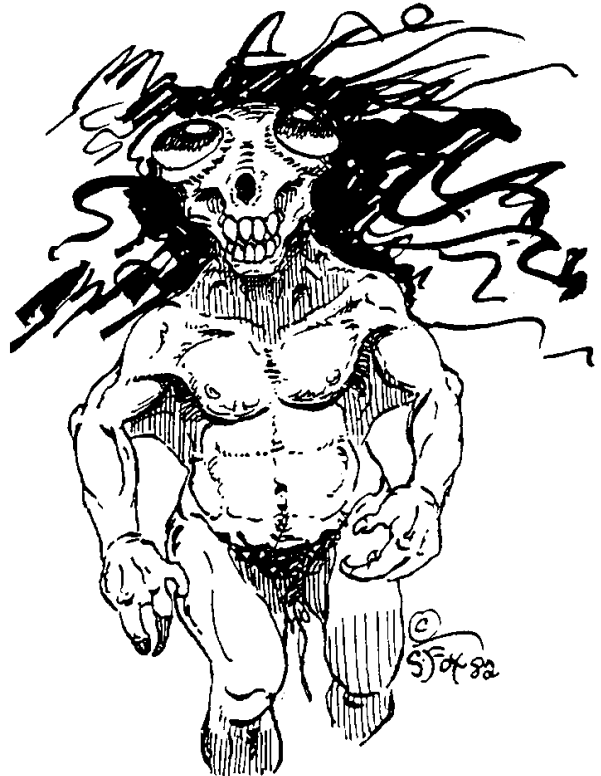
If for some reason, it's got to dry fast try Lucite Spray Enamel or Krylon Interior-Exterior Rust Majic, both of which dry fast according to Consumer Reports.

From personal reports and according to C.R., note that gold/silver/chrome just don't have the durability of more basic colours. These might best be left alone except for specialty jobs. Here's a list, in order, of how well different colours cover: black, blue, green, white, yellow, red.

Remember that even if the price tag is higher, a spray paint might be cheaper per square foot than another. Rust-Oleum Stops Rust series 7700, and Flecto Varathane are generally cheaper to use per square foot, despite their higher tickets.

Some spraypainting tips - carry the can upright, it's quieter. After leaving your message, tilt the can upside down and spray briefly to help prevent clogging. Go in pairs so that one person can be lookout. Carry only one can, so that, in an emergency, you only have to get rid of one can. Do it fast and leave. Do all writing in "Schoolboy" script - the Police can trace handwriting. Remember the telephone number of CIRPA (Citizens' Independent Review of Police Activities) 960-6318 - they are okay. Better write the number on your arm. As far as what clothing to wear, Kick It Over's fashion consultants advise Anarchy Black.

If you are arrested for some reason, you have the right to remain silent, though you must identify yourself. Under some circumstances that might be hazardous to your health. You have the right to call your lawyer, if you are rich enough to have one. 519 Church Street Community Centre has a legal aid clinic at 923-2778.





Mike Glicksohn  
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It was a pleasant surprise to receive your first issue which is the first new Canadian fanzine I've seen in quite some time. That it was tastefully designed and carefully produced was a delightful additional bonus. I wish you both luck in maintaining your publishing schedule: if you get a fraction of the sheer enjoyment that I've had from producing fanzines over the years then you'll probably still be working on your ish a decade from now.

You ask what you're doing wrong but let's first look at what you're doing right. First, you're publishing and that's very right. (I may be infrequent but I occasionally still publish: some copies of *ENERGUMEN* 16 are still available, all 100 pages of it, for \$4.50 in the mail or \$3 at a Baskon if you call me first and tell me to bring some. Plug, plug. All proceeds to the Susan Wood Scholarship Fund, of course.) Second, the zine shows considerable evidence of thought having gone into the design and the printing and that's excellent too. There are far too many ugly and/or illegible fanzines around even in this period of doldrums and dearth we're in. CS is both attractive and eminently readable and for that you are to be thanked and congratulated. And third, you've created a fanzine that reflects what you're interested in and doesn't attempt to be a minor-league copy of a prozine and that bodes well for the future of the zine. (As part of "Second" one might single out the artwork of Roldo for special mention: he's clearly the best artist in the issue -- or she is but the style is very masculine -- and a resource to be guarded and utilized in the future. His style is reminiscent of people like George Foster and Dan Steffan and that's pretty good company to be in. I'm looking forward to seeing what he does as he refines and develops his obvious ability.)



As to what you're doing wrong...well, I wouldn't be so arrogant as to say it was "wrong" but I personally found most of the material in the issue on the boring side. I could have done with a lot more personal background on both of you (age, background in fandom, current activities, interests etc.) for example and could easily (and did) skip most of the summary of the space race. It isn't that I have no interest in the conquest of space but rather that there wasn't anything new in the first page or so and a simple listing of facts and figures doesn't strike me as proper fanzine fare. One of the things I've always enjoyed about fanzines is that they give me the chance to read the sort of material I couldn't read anywhere else. Biographies of Catherine Crockett are rather rare: summaries of the various satellite launchings fill whole shelves in most libraries.

I read the lycanthropy article even though I'm not a D&D fan. Once again, it didn't have that special spark that makes for memorable fanzine writing. Too dry, too factual, too dull. (You did typo badly half way down page 13, though, when you used NN instead of nn to represent a lycanthrope in the exercise left to the reader. Stuff like this is what editors are for...)

The closest thing to interesting fannish material you had was Alan's article on the fagghead faction of fandom but it shouldn't prove all that controversial since we all agree that there is an unfortunate lunatic fringe to fandom who gain their shaky identities by over-indulging in quasi-military fantasies. Most fans I know have no respect for and little interest in these maladjusted jerks (or "realists" if that's how they see themselves) but they do tend to clutter up conventions and even the occasional fan party. Happily fandom has become large enough that we can avoid them. They probably won't go away but at least they needn't get in the way. (Alan was completely wrong, though, in suggesting that fandom has always been free from left-right political squabbling. I'm sure Harry Warner will tell you all about how fandom started out of left-right political squabbling. If not, see "Michelism" and "Exclusion Act" in a good volume of fan history.)

TV is mass culture and mass culture is always lowest-common-denominator oriented, so it isn't surprising that there's so much crap on the air. And let's be honest, we all need a little mindless blather every now and then. There's still plenty of good entertainment and good programming to make TV worthwhile if properly used. (I turned off the open-heart surgery -- because I'm turned off by it -- and cursed the non-airing of the classic film "The Third Man" which was supposed to be at that time but I consider that an excellent use of the potential of television. TV news coverage, on the other hand, frequently leaves everything to be desired for just the sort of reasons Cathy documents. Except, of course, for 60 Minutes, the popularity of which is a stunning contradiction to the longevity of programs like "Laverne & Shirley".

Keep up the good work, and improve as you learn!!

Harry Andruschak  
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91011

I have received CAREFULLY SEDATED #1, and thanks. I've noticed a drop-off in the number of zines sent to me since I was forced to stop publishing my own genzine, INTERMEDIATE VECTOR BOSONS, due to lack of money.

And of course as an old apa-hack I immediately noticed the plug for APALOOSA. I was wondering when that name would be used again. Back in the 1970's there was a monthly apa working out of Boston using the name APALOOSA. I was in it. It folded with its 49th monthly mailing, the fifth annish.

This brings us to Andre Lieven and his article on Soviet Deep Space Activities.

Well, this is certainly in my back yard, since I work at JPL on the Deep Space Program, or what little is left. However, he still has to be ticked off for some mistakes.

"In the mid 1950's, the US satellite program was in a muddle, as the civilian VANGUARD project was underway, plus each branch of the armed forces was developing missiles that could be used as launchers."

WRONG! The satellite program was not in a muddle, it was proceeding on schedule. The Navy (not civilian) VANGUARD was supposed to put up one satellite during the International Geophysical Year, and on 17 March 1958 it did just that. The other branches were not developing satellite launchers. True, they came to be used that way. But the army was developing the JUPITER, the Air Force the ATLAS, THOR, and TITAN, and the Navy the POLARIS. All were Ballistic Missiles, not launchers.

By the way, the VANGUARD TV-3 did not blow up six inches off the pad, as Andre states. It had an engine failure at six inches, fell back on the pad, and there exploded.

Accuracy, please.

Andre should know that the reason the US had no deep space launches in 1963 was not because of "reflection". It had to do with lack of good launch windows to Mars and Venus. As for the moon, the US was going frantically ahead with RANGER 6, re-designing it in the wake of the failure of RANGER 5.

The rest of the article seems to be OK, but is mostly a repeat of books already published. In fact, I'm sure Andre used RED STAR IN ORBIT as a prime source.

And now, some updates on the article. The USSR probe to Venus in 1984 is now called VEGA, which stands for Venus-Gallei. (Russian has no "H" sound). The United States may return to Venus in 1988 if we can get a new start this year on what is now named the VENUS MAPPING MISSION. It is a cheaper and less able version of VOIR.

By the way, I think Andre will be proven wrong about the Russians returning to Mars. At the moment they are in dialogue with the French about another trip to Venus in 1989 or so. If this comes off, they will have no capacity for another deep space project until the 1990's. And why return to Mars? After VIKING, anything the Russians do will seem second rate. As such, I predict that Mars will not be visited by the Russians for the next 15 years or so.

The moon is another matter. There have been persistent rumours that Russia wants to land on the backside of the moon and return a soil sample.

Alan Rosenthal is quite right about the chances of civilisation surviving an all-out war. If he wants to have more information, a good book is THE FATE OF THE EARTH, by Jonathan Schell, published as an Avon paperback. I'm lucky in this respect, that JPL will be nuked in the first minutes of the war. The Russians are jealous of what we can do, not to mention our communications with Spain, Australia, and Vandenburg AFB.

By the way, just re-read Andre's article, and noticed that after 1963 he says nothing about the RANGER, or other Lunar Missions flown by JPL. This is a mistake as it distorts the level of activity of the two countries. And surely the failure of RANGER 6 was a notable event.

Another point. To date all Soviet Deep Space craft have been stabilized like our Pioneers, by spinning. VEGA, however, will be 3 axis stabilized like our Mariners. That should be included.

By the way, some comment should have been inserted about the PIONEERS and their use in the 1960's space race. After 17 years we are still tracking PIONEER SIX, a record for spacecraft longevity.

About "puny" VANGUARD ONE. I resent the use of that word by Andre. Sure, it was small. But look what it did as compared to the SPUTNIKS. How much scientific information did we get from the SPUTNIKS? Not damn much. VANGUARD ONE, on the other hand, showed that the atmosphere extends very thinly up to its altitude. Its orbit was tracked and led to the discovery of the "pear-shaped" Earth. Also, it was the first satellite to use solar cells for power.

And I might add that we continue to use the VANGUARD upper stages in the DELTA rocket, which has just completed its 167th launch.

Andre Lieven  
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Mr. Andruschak's LOC on my Soviet Deep Space article states that I have "to be ticked off for some mistakes". Well, on reflection, I will cheerfully admit to two, one of which nobody noticed. That was, that, missile development in the USSR in the 1950's was under the military department of the Rocket Brigades. The Strategic Rocket Forces were not instituted under that name until 1959. The other error was the VANGUARD TV-3 explosion, which happened as Mr. Andruschak describes. However, when the rocket lost thrust, a flame emerged from its side as well. Thus, engine failure was not the sole cause, but a fuel tank leak was primarily responsible.

Now, on to the rest of Mr. Andruschak's comments. VANGUARD was run by the Naval Research Lab, which is a part of the Office of Naval Research. However, funding came from the National Science Foundation. The Navy managed the project, but did not control it. That power was in civilian hands.

VANGUARD was supposed to launch the US International Geophysical Year satellite in 1958. The only VANGUARD satellite launched during that time was VANGUARD 1 ( March 17, 1958 ). The launcher was VANGUARD TEST VEHICLE 4. VANGUARD 1's only instrument was a solar powered beeper. To quote Willy Ley, in ROCKETS, MISSILES, AND MEN IN SPACE ( page 387 ) "Since this satellite would NOT ( his emphasis ) be the American IGY satellite, the fact that it would have no instrumentation was not important." The first IGY class VANGUARD satellite to make it into orbit was VANGUARD 2, launched on February 17, 1959, by SATELLITE LAUNCH VEHICLE 4. Four earlier attempts ( TV-5, SLV 1-3 ) failed. Thus VANGUARD missed the IGY.

My statement that the US program was " in a muddle " was meant to point out that US resources were spread out on all the missile projects that Mr. Andruschak mentioned. The resources ( human and material ) needed to build an ICBM or IRBM are almost identical to those needed to build a satellite launcher.

"...plus each branch of the armed forces was developing missiles that could be used as launchers." Then, Mr. Andruschak states that the named missiles were developed as missiles, not launchers, although they came to be used that way, later on. Fine. How does that differ from what I wrote?

Also if one reads pages 375-385 of the previously mentioned Ley book, one gets a bit of an insight into the confusion surrounding the VANGUARD program.

Of course my article " is mostly a repeat of books already published ". There's a word for that: history. I don't pretend to be a junior James Oberg or Willy Ley. I merely wanted to bring to some small notice a space program that is rarely heard about in the popular media. Mea Culpa!

Red Star in Orbit was a subsidiary source. Anyone who has read the book, knows that its major area of coverage is Soviet manned orbital flight. There wasn't a cosmonaut to be found in any of the probes that I was writing about.

Regarding Mars: Anything that the Soviets do there would be second rate, -compared to VIKING? How about a USSR Mars version of Lunakhod, which worked twice on the Moon in the early 1970's? The prediction of no USSR Mars flights until the 1990's sounds awfully like the American bluster that the Soviet Union would not have the A-bomb until the 1960's, and we all know how that turned out.

I didn't mention US lunar flights after 1963. True. Nor did I mention USSR lunar probes after that date. So where's the imbalance? Read the title. It says "Soviet Deep Space Activities", not "US Lunar Flights".

For the same reason, I didn't mention the PIONEER craft of the mid 1960's. Not being planetary probes, they were outside the scope of my article.

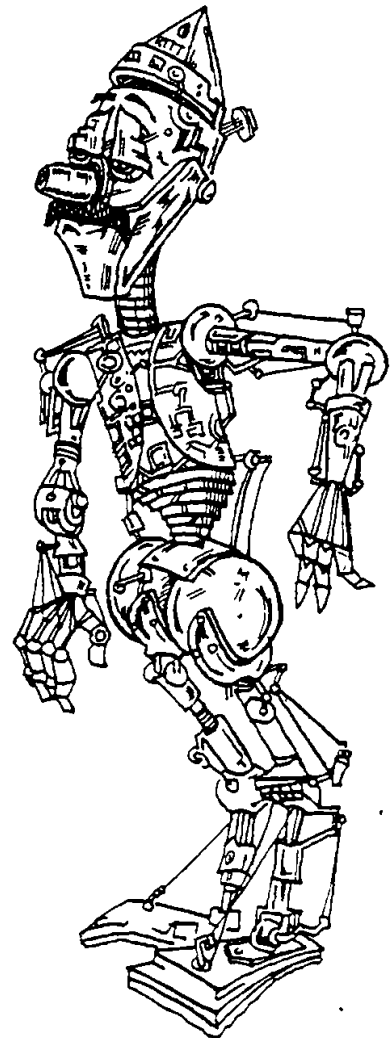
How much information came from the early SPUTNIKS? Leaving aside the fact that the Cold War was in full swing, precluding a full exchange of information, the first spacecraft flown with a complex life form, a dog, in SPUTNIK 2, must be considered not insignificant, hm?

Also, while VANGUARD 1 had the first solar cells in orbit, within two months ( May 15, 1958, to be precise ), SPUTNIK 3 went into orbit powered by solar cells. Unlike the simple beeper onboard VANGUARD 1, the instruments in SPUTNIK 3 were more complex, as it was an orbiting geophysical laboratory ( very apropos for the IGY, no? ). It explored the ionosphere, the Earth's magnetic field, cosmic rays, and more. It operated for 692 days, until orbital decay brought it down on April 6, 1960.

It would be more accurate to say that the DELTA launcher uses offshoots of VANGUARD technology. The VANGUARD second stage ( Aero AJ 10 ) became the AJ 10-118D for the DELTA B, and D models, and the DELTA 1000 C 1913, and 3920 launchers use a similar stage, with a different fuel. The VANGUARD third stage was an ABL X-248 Altair. The last DELTA to use a similar stage was the 1965 DELTA E, which had a Hercules X-258 third stage.

Still, there's nothing uncommon about this. The DELTA was built up on a THOR missile, and the ATLAS and TITAN 2, in updated forms, still launch satellites. On the Soviet side, the SS 6 became the SPUTNIK / VOSTOK / SOYUZ launcher, along with several other former missiles, which got a new lease on life, lofting satellites.

I didn't mention the stabilization system change in the next USSR Venus craft, as I didn't have that information. Oh well, no one's perfect.



Harry Warner, Jr.,  
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Your first issue was a pleasure to read. None of the material was totally out of my orbit of interests, something I can't say for every fanzine that arrives nowadays. The generally good reproduction helped prejudice me in your favour, too. My vision isn't what it used to be and so my idea of legibility has tightened up considerably from the way it

used to be.

But even before things started to be so fuzzy when I look at them, I suffered from the same sort of eye treachery that inspired your title. There have been two amateur publications entitled The Trumpet in my memory, one of which was a fanzine published by Tom Reamy and the other a monthly journal issued by inmates at a nearby state prison. Every time I received a copy of either publication, I looked at its cover and there as big as life I saw its title as The Strumpet. To this day I have a different sort of misreading, when a television network promotes its programs and puts lettering on the screen telling everyone to watch this or that series weeknights at a specified time. Every blessed time I see the word on the television screen, I have a mental image of lots of six-inch-tall men in armour instead of succumbing to the propaganda and deciding to turn on my television set at the recommended time every evening except Saturdays and Sundays.

Andre Lieven's summary of what the Russians have done out in space was informative. But I wish he had added a page or two of speculation about the whys and wherefores behind all these unmanned missions to Mars and Venus. Was international prestige the only motivation for such a lengthy and difficult attempt to make those spacecraft land safely on Venus and transmit some data back? It quickly became apparent that Venus is out of bounds for manned landings, at least for many decades to come, and it's hard to imagine the USSR spending so much money and effort to add knowledge about conditions on Venus which would have no practical value to their nation. On the other hand, I still think there's a good chance the Russians may attempt a manned flight to Mars before long, either orbiting the planet and returning, or actually landing on its surface. Such an intention would explain both the extremely long stays in Earth orbit for Russian cosmonauts in the past few years, to gain experience on surviving the long journey to Mars, and the unmanned missions to that planet.

I liked David Szablowski's deadpan contemplations on the genetics of werewolfism. (Idle thought: should a werewolf feel insulted if someone calls him a son of a bitch?) It's undoubtedly proof that I'm no longer Up To Date that I don't know what the DM's Guide may be or the words for which DM stand.

Those individuals who are preparing to take over after a nuclear conflict are acting out a fantasy world. If conditions after a nuclear war permit survival for a fairly large number of persons, there will be anarchy. Small gangs will dominate over small areas until destroyed by other small gangs, and what leadership will exist will be determined by strength and ruthlessness and luck rather than training and planning before the conflict. Police equipped with the best of weapons and fitted by much training are barely able to keep the mobs from taking over when a serious flood or fire devastates part of a city today. A uniform in the closet and some target practice isn't going to guarantee effective rule after an atomic holocaust, when the mobs will be completely out of control, communications will have broken down, transportation will be hopelessly clogged, and the only way to get food is by stealing it from someone else.

I can think of several excuses for the television crew's failure to rush to the aid of the man who set himself on fire. One is the factor that discourages most people from the Good Samaritan impulses that they feel: the high probability that well-intentioned efforts to help save a life will result in a nasty damage suit on some legal pretext or other. Then there's the fact that an excellent precedent for non-intervention was established when President Reagan was shot in Washington. None of the media who were on hand when the assassination attempt occurred did anything in particular to intervene. Even if you consider a welfare recipient a more important life than a President, the situation was an attempted suicide in one case, an unprovoked assault in the other. Finally, in the end it's not the television crews or the news department managers or the television station owners who deserve the main blame for the way televised news is presented. The television newscasts are the way



they are because that's the way the bulk of the public wants them to be. More people watch sensationalized and inadequate newscasts than the intellectualized, detailed news programs like those on the United States' public television network. If the bulk of the public had the decency to refuse to watch bad newscasts, ratings would drop so sharply that the stations would do them differently.

The covers are fine, except for reminding me a bit of what I see when I tune for a moment to the HBO channel on the local cable, which isn't decoded because I don't subscribe to HBO.

Anne Laurie Logan  
P. O. Box 191  
East Lansing, MI  
48823

Thanks for the copy of CAREFULLY SEDATED number 1, and congratulations on your first fanzine. I've enclosed a copy of HARLOT 3, the most recent issue -- not all that recent, obviously, but we're hoping to have the next one out in a couple of months. ( As typist for another co-edited genzine, I give you one warning: Beware Creeping Giganticism! If you decide to include everything that either of you wants to print, the size of your zine will increase geometrically -- and that can be, shall we say, daunting. )

Don't recognize the names of any of your contributors -- is this an all-Canadian content issue? My favourite article was David Szablowski's piece on "The Genetics of Lycanthropy"... one can have all kinds of fun elaborating quasi-scientific theories like these. In fact, I think David may have oversimplified the potential problems of figuring out where werebeasts might come from. Since there seem to be several time-honoured methods of becoming a werewolf, ranging from simple Mendelian inheritance as he discusses it in this piece to contamination from an infected carrier, perhaps lycanthropy is more like diabetes than it is like hemophilia.

There are ( the current scientific theory runs ) two totally different kinds of diabetes. Juvenile diabetes, which usually develops in people under 21, seems to result from simple pancreatic failure; it is inherited as a straightforward Mendelian recessive, and before the development of artificial insulin substitutes it was almost invariably and rapidly fatal ( today, it is "merely" slowly and progressively crippling ). Adult-onset diabetes, however, seems to be a sort of immune-system disease where the victim's body gradually loses the ability to use the insulin the pancreas produces; it is thought to be caused by the inheritance of a greater or lesser percentage of individually insignificant genetic factors working in combination with various strains on the organism. Someone who inherits only a few of these "diabetic factors" may never develop diabetes at all, if he or she lives a simple, unstressed life, doesn't overeat, gets plenty of exercise, and dies at the age when most people in pre-industrial societies dies -- around 40. Someone who inherits a greater number of "diabetic factors" is more likely to develop the condition before they die... particularly if they're overweight, sedentary, during pregnancy, or after a serious injury or the onset of some other chronic disease. And yet most Caucasian adults have inherited at least a few of these damaged chromosomes -- possibly, it's been speculated, because "pre-diabetic" bodies use every available calorie more efficiently, so that carriers were more likely to survive the periodic famines and "hungry seasons" that have always been a part of most human lives. ( Even today, starvation kills more people every year than obesity. )

Similarly, one could speculate that there are two kinds of lycanthropy. Some people will inherit the simple recessive from their parents, and automatically grow up to be werewolves ( or wereboars, or were-whatevers ). This can have certain advantages, of course, but since most of their non-were neighbours are probably severely prejudiced against lycanthropes, it doesn't make for a quiet life -- or a long one.

Other people might have inherited one or more "werewolf factors" from ancestors who might not have had any reason to suspect that they were carriers. Presumably these hidden genetic "errors" confer some small advantage on their possessors -- faster wound healing, maybe, or increased disease resistance? Most of these people would never become werewolves... unless they were exposed to some unusual stress... prolonged starvation, maybe, or magical assault -- or being bitten by an "active" werewolf! Perhaps, in fact, one cannot become a werewolf unless one first inherits the right genes and then is exposed to a Lycanthropy-Virus from an infected individual's saliva -- in which case the genetic predisposition might be quite common even though very few actual werebeasts survive for long after their initial infection.

Anyway... thanks again, and I'll look forward to the next issue of CAREFULLY SEDATED.

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Anyway... thanks again, and I'll look forward to the next issue of CAREFULLY SEDATED.

Mind you, I don't think that you can say that fandom has been free of political bias. Wasn't it the left wing - right wing thing that resulted in some people being barred from the very first WorldCon?

Personally, I don't mind people playing assorted war games. It's just not to my taste, and I wouldn't consider joining in... especially after watching a game of Runner in High Park, where the Police turned up because someone reported that there were people with real guns in the park.

By the way, I note that Australia is leading the way this time. We've just elected a mildly left-wing government, and have gotten rid of Malcolm Fraser who was sort of a watered down version of Maggie Thatcher or Ronnie Reagan. Not that it'll do much good I dare say. The last time we had a Labour Government, they rigged a way for the Governor General to dismiss it. But hell, I'm not here to discuss Aussie politics. It's almost as bad as real politics...

I agree too that the teev is a right royal pain in the arse. I've spent quite a lot of my life without one, but my parents, in a last ditch effort to "normalise" me, keep giving me television sets. Initially I decided to just use it to watch the British soccer, the cricket, and Warner Brothers cartoons, but the thrice accursed thing expands to take up time that one cannot afford to give it.

Sigh. I used to type a lot more fanzines and letters before I got the teev. (Would you believe it's on in the background at the moment? Aaaargh! Addiction strikes again.) Personally I don't really give a damn about teev news. I hardly ever watch it. But I do get disturbed when the one eyed monster interrupts my fanac.

Anyhoo, hope you like the enclosed Q36. Others will follow, but by seamail. I'm afraid that the airmail costs are somewhat prohibitive.

Yours' antipodeanly, Marc



ZINES RECEIVED

Sticky Quarters 4  
Brian Earl Brown  
20101 W.Chicago #201  
Detroit MI 48228

The Shadow-line 12  
Michael T. Shoemaker  
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Alexandria VA 22302

Lines of Occurrence 7  
The Dillinger Relic 28  
Arthur D. Hlavaty  
819 W.Markham Ave.  
Durham NC 27701

Holeir Than Thou 16  
Marty & Robbie Cantor  
5263 Riverton Ave., #1  
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Telos 5 & Izzard 6  
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Small Friendly Dog 21  
Skel & Cas  
25 Bowland Close  
Offerton, Stockport, Cheshire,  
England  
SK2 5NW

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New York NY 10159

W A H F: Lynn Hansen, Dan Parmenter, Chris & Diana Nillson,  
Ed Meskys, and John Berry, who would like to know  
if any faned is interested in publishing the humourous  
account of his recent visit to the USA and Canada. To be  
called THE LIMEY RUN, the article will run at least  
fifty pages. If interested, write to John at 4, Chilterns,  
S.Hatfield, Herts AL10 8JU, United Kingdom.

