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# Galileo

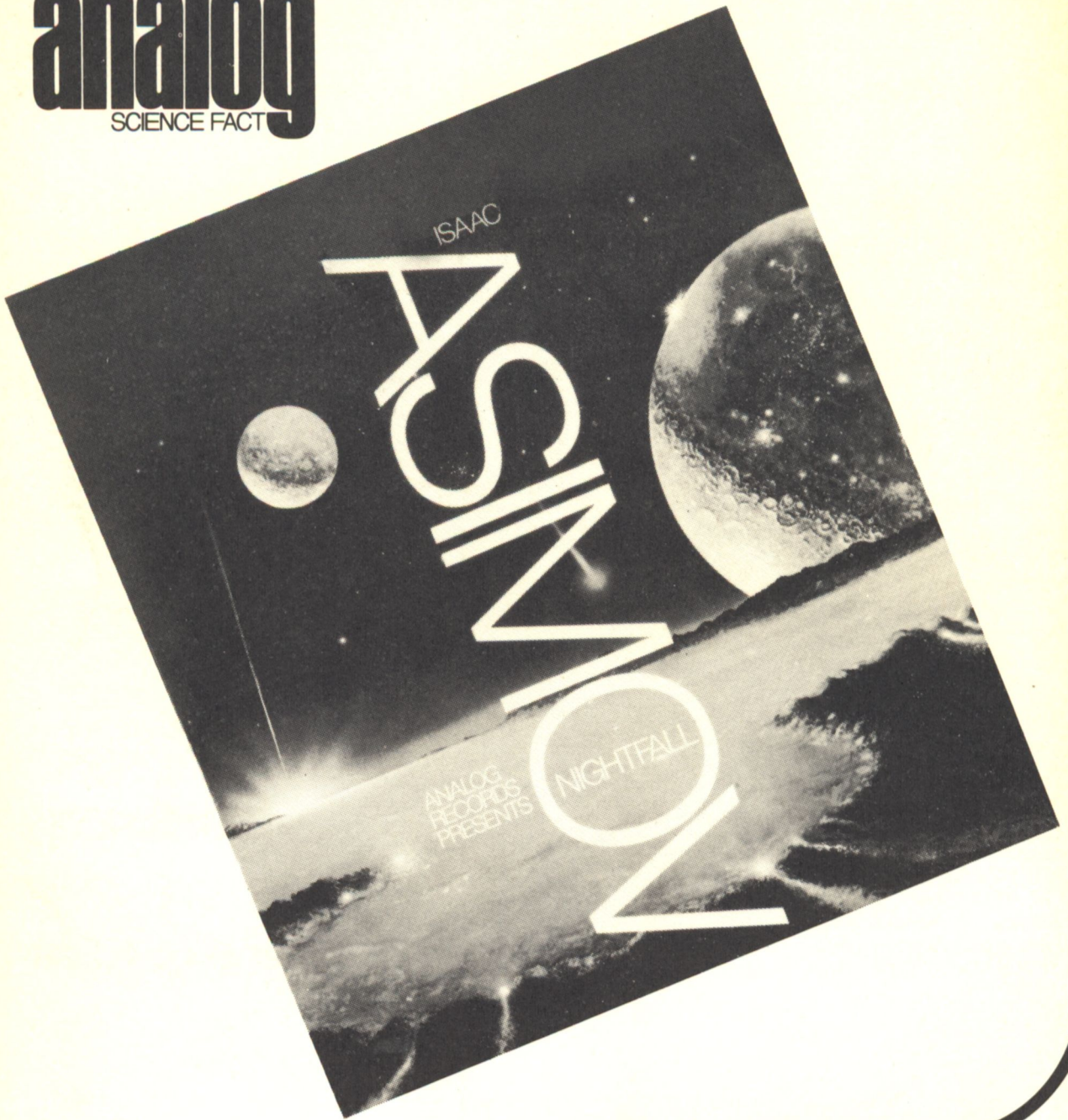
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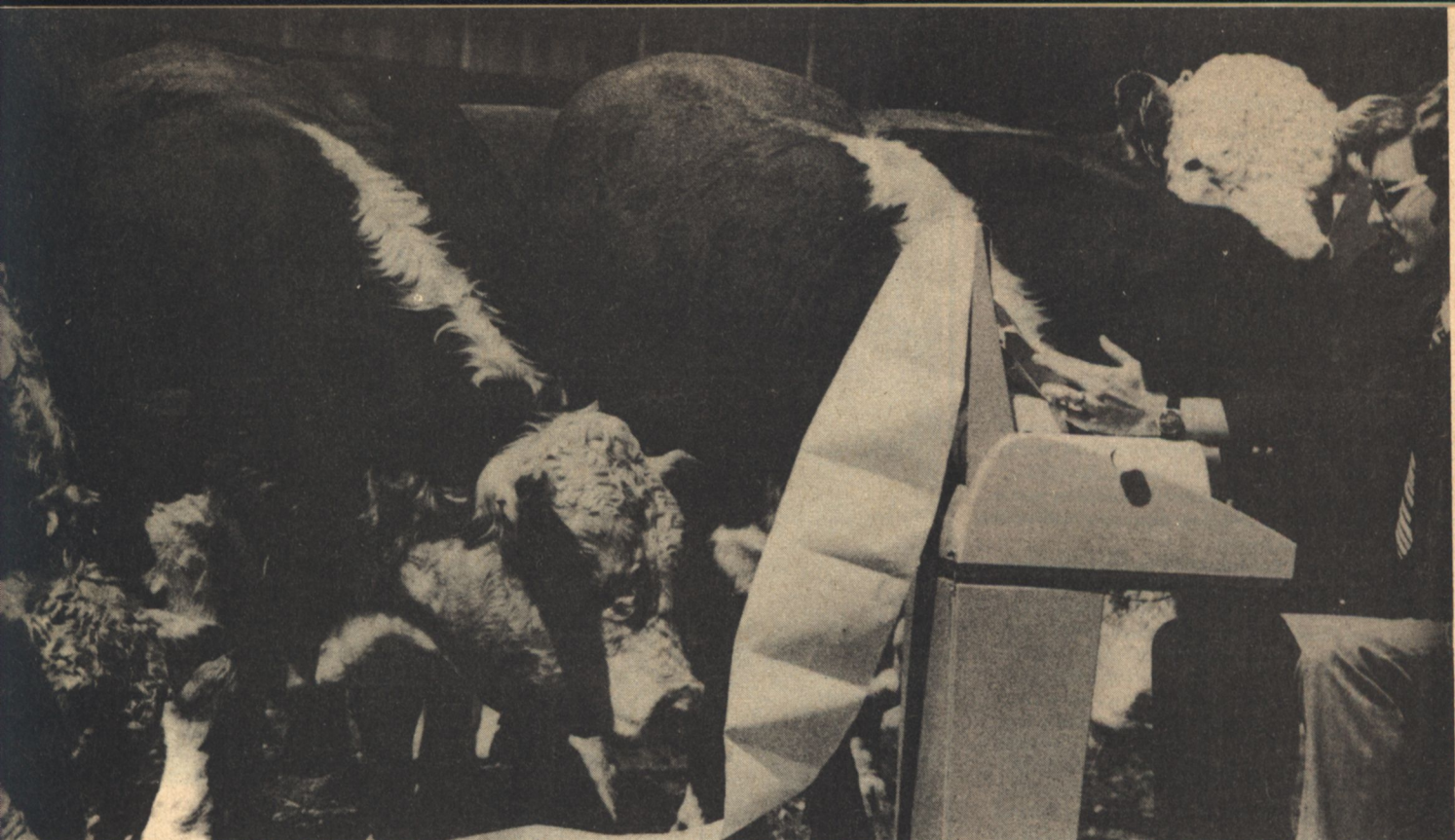


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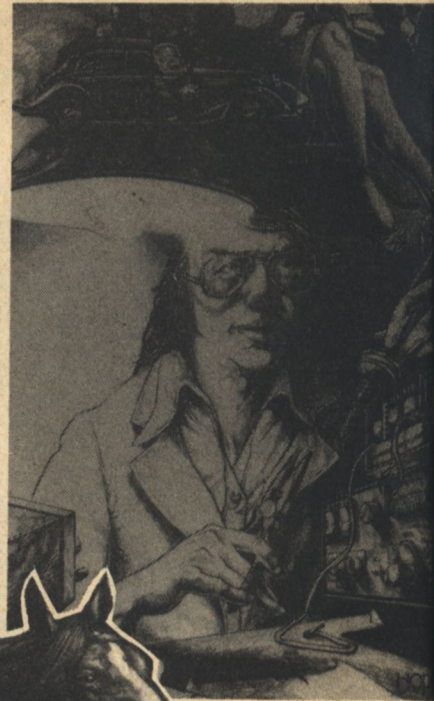
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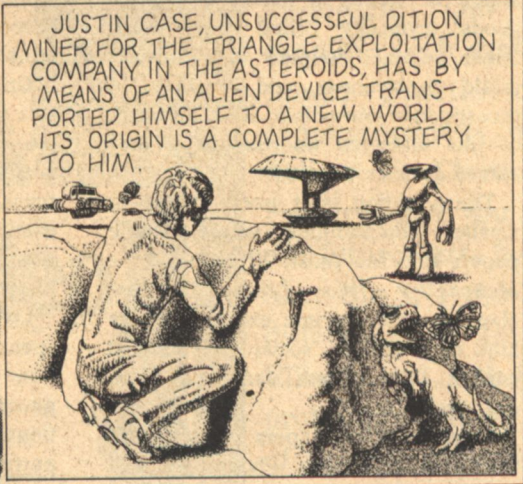
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# Editorial

Charles C. Ryan

**I**MAGINE YOURSELF on a future space colony with only two sources of news, one owned by the government and the other controlled by a corporate conglomerate. Advances in computer software have eliminated the need for reporters or editorial staff. Government, corporate, and individual press releases are simply transmitted from one terminal to another and subjected to software editing designed to provide the correct "slant." If anything contrary to corporate or government policy happens, it isn't reported. Aside from a few subscription-only newspapers on earth which receive no advertising, these two agencies decide what you know of the world and what you should think about it. The radicals who subscribe to the remaining "news" papers are on surveillance lists and considered to be "subversives."

Impossible? Contrary to the First Amendment? Don't bet on it.

Each year, the news is controlled by fewer and fewer people. Back in 1930, 43 percent of the daily news circulation was owned by chains. By 1977, that ownership had leaped to an amazing 71 percent—and it's still growing!

Compounding the problem is the fact that most of the nation's dailies rely on only one or two sources for their national and international news—UPI and AP, which primarily act as conduits for news reported by member papers. UPI is owned by Scripps-Howard which operates its own chain of newspapers and has diversified corporate holdings. AP, though a non-profit cooperative, has owners of chains sitting on its board

of directors.

Now that most of the independent dailies worth buying are gone, the chains are buying other chains, reflecting the philosophy of the late Canadian-born Lord Thomas of Fleet, who once said, "I buy newspapers to make money to buy more newspapers to make more money. As for the editorial content, that's the stuff you separate the ads with."

To make things even more complicated, the geometric growth of bureaucracy at the corporate and governmental level (see the March issue) has given rise to a new generation of news managers. The primary job of these public relations experts is to generate an unending stream of press releases and news conferences designed to convey the correct "image" of their clients.

The presidency itself has become a four-year stint of deliberately staged "media happenings" and fireside chats aimed at selling a particular bill of goods (cynically called re-election). Sheer volume, coupled with bureaucratic evasiveness and a lack of investigative journalism, sees to it much of this managed information is presented as news.

The situation isn't much better in smaller communities where single papers rule the roost. William Loeb's *Manchester Union Leader* in New Hampshire is a prime example of the kind of economic, social and political control such papers can—and often do—exert.

Even smaller papers aren't safe from gobbling chains. Whopping inheritance taxes make it uneconomical for families to retain ownership at the death of the owner; the proliferation of advertising shoppers, which are distributed free and have no news content, reduces available revenue; and, competition for readers from nearby urban papers, all point toward either collapse or eventual acquisition by chains as the future for small papers.

Even now, there are serious problems with news reporting. In too many instances, reporters are simply not trained or educated in the areas they are required to report on. Science, economics, local, state and federal government, international politics, and business are just a few topics where expertise is either thin or non-existent.

Wilbur F. Storey, who founded *The Jackson Citizen Patriot*, claimed, "It is the duty of a newspaper to print the

news and raise hell." Since then, the *Patriot* was bought by a chain, which in turn was bought by a chain. Hell is now a much cooler place.

There are many good journalists, but their ability to get at the news has become increasingly hampered by veils of public relations and indifference, or outright censorship, on the part of newspaper owners. It is also unlikely the chains will report disturbing news about other facets of their corporate holdings.

As the chains grow, they more and more fulfill the function of the "Ministry of Truth" in George Orwell's *1984*. Either through indifference or calculation, the news is being shaped to suit the ends of the few. They decide what news we see (and *don't* see), how it is slanted and, through their immense lobbying power, what is done about it.

Thomas Jefferson once said that given the choice between a government without newspapers or newspapers without government, he would take the latter. Given the same choice today, it is unlikely he would take either.

Unless there are some drastic reversals of current trends, by the time that colony is orbiting above us, there may not be a choice. Recent history clearly reveals that the current trend will eventually put the control of all newspapers into one or two corporate hands—and *1984* isn't that far away.

Like all small businesses, newspapers spend a disproportionate amount of time and money simply complying with government, postal, and tax regulations. Inheritance taxes impose a particular burden on smaller firms that corporations avoid. The conglomerates can continue to swell and extend their amoebic pseudopods because their size and earnings make them more than a match for government red tape.

Oddly, one clear solution is to deregulate government rather than to legislate against corporate growth. While a limited amount of control still rests in our hands, it should be exercised to pull the fangs of bureaucracy before it and the conglomerates devour democracy from the inside out. If we don't, the future will be theirs and not ours.

[To Be Continued]

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# Pro-File

## Our Authors



CLOCKWISE:  
Jeffrey Elliot, Rich Brown,  
and David Gerrold  
FACING PAGE:  
D.C. Poyer and John Kessel

**T**HIS ISSUE brings the final installment of "The Masters of Solitude," and so the Pro-File bids a fond farewell to authors **Marvin Kaye** and **Parke Godwin**. (We also breathe a sigh of relief—just one more installment and we might have asked them to tell us their favorite color or what they did last summer.) Godwin and Kaye claim that they are "genuinely in love" with the world they created in "Masters"—so much so that they have drawn up a working plan for a tetralogy. According to Kaye, "The Masters of Solitude" will be Book One; Book Two, tentatively titled "Wintermind," will be shorter than the first. But "Book Three will be both prequel and sequel, and will be massive. Book Four will be brief and autumnal." At least that's the way things look now. Kaye adds, "Actually, I

have little patience with those authors who don't know when to get offstage, and things may well change as the story grows and develops." "The Masters of Solitude" will be published by Doubleday in July; the paperback rights have already been acquired by Avon Books.

**Kevin O'Donnell, Jr.**, should be by now no stranger to *Galileo* readers: "Far From the Madding Crowd" is the fourth story of his we have published. The third, "Do Not Go Gentle . . .", was awarded second prize in *Galileo's* Short-Short Story Contest. O'Donnell finished at Yale with a major in Chinese Studies; he speaks both Chinese and Korean, and has lived in Hong Kong and Taiwan. At present he lives with his wife in New Haven, and reports that he has recently become an "avid indoor gardener. My windowsills are cluttered

with fifty pots of varying shapes and sizes; my vocabulary is sprinkled with words like 'drainage' and 'loam.' It's a very enjoyable hobby—cheap (I've spent maybe \$15 in two years), convenient (you don't have to walk a philodendron, or empty a coleus's litter box), and best of all, quiet."

It is hardly surprising that the subject of **D.C. Poyer's** story "Three Soldiers" should be a military one: Poyer himself has just turned to full-time writing after ten years in the U.S. Navy (four of them at Annapolis). He admits that the decision to make the switch was a drastic one—something he is "still shivering about"—but that so far things have gone well. What prompted this particular story, Poyer says, is that "The basic idea of Earth being a weapon development center is one way



of explaining the warlike propensities of man. Why did he evolve that way, when most gregarious animals are peaceful? One answer could be that he is the subject of an enormous experiment—which would have to be checked occasionally, as in 'Three Soldiers'."

**Richard C. Brown** was clearly unimpressed with the Pro-File Questionnaire, which we send to all *Galileo* authors, so he supplied us with answers and suggested we provide the questions. Here are a few samples: "Aquarius;" "Yes, it is my first one;" "Someday;" and "It was called 'Battle of the Planets' and it was a complete rip-off of a Classics Illustrated comic edition of *War of the Worlds*." Otherwise, Mr. Brown offers only that he is a twenty-seven year-old steelworker from Youngstown, Ohio; that he started reading sf over his brother's shoulder; and that John Collier influenced "Cultivation."

**John Kessel's** first appearance in *Galileo* is a double one: he is author both of "The Silver Man" and our new comic strip, "Crosswhen." Kessel has just completed a one-year leave from the University of Kansas to write full time; he expects to be back there in the fall, working on his Ph.D. in English. On that subject he says, "Despite my literary studies, I do not sneer at sf—but neither do I sneer at Professors of Literature. I like science, and fiction." That claim is supported by his double major in English and Physics as an undergraduate. It was, in fact, this background which inspired "The Silver Man"—that and his disillusionment with university politics, about which he merely says, "Ivory tower my foot!"

For someone twenty-nine, **Jeffrey Elliot** has produced an amazing amount and range of material: he is the author of over 150 books, reviews, articles, and critiques, the latest being his interview with A.E. Van Vogt printed here. Presently, he is collaborating on the *Autobiography of Sara Jane Moore*; just published is *Keys to Economic Understanding*, a textbook. In addition, Elliot is a full professor of Social Science, associate editor of the *Negro History Bulletin*, and a contributing editor of *Starlog* magazine. Asked, however, which of his accomplishments he took particular pride in, he answered, "Being a loving, caring teacher, a sensitive, giving person, and an interested, involved citizen."

The subject of *Galileo* publisher Vincent McCaffrey's interview is **Mark**

**Frazier**, Executive Director of the Earthport Study. This project was initiated in 1976 by the Sabre Foundation "to help open space to a maximum variety of uses." Frazier himself is Harvard-educated; he is a former managing editor of *Reason* magazine, and has contributed articles to the *Reader's Digest*. He has worked for columnist Jack Anderson. His latest publication is *Economical Orbit*, a book he co-edited on the feasibility of single-stage launch vehicles with a plug nozzle configuration.

**Gary C. Hudson** is author of a three-part article on the Foundation, the first of which appears this issue. Hudson is Chancellor of Foundation, which he describes as a "non-profit, futures-oriented research foundation." Specifically, he is responsible for projects dealing with commercial uses of space; he has designed spacecraft hardware, systems, and launch vehicles for commercial use. Recently, Hudson has become something of a spokesman on the future of space exploration and settlement; both the BBC and National Public Radio have interviewed him extensively on the subject. In 1975 he appeared before the House Subcommittee on Space Applications to testify on the future of national space policy.

Finally, there is **David Gerrold**, who is, it seems, becoming *Galileo's* Hollywood correspondent. A Gerrold article in Number Five assessed the current status of sf in TV- and Movieland, but he reports that "nearly every show discussed has altered its format or production crew or production plans in some way." Now he has contributed a

piece on the recent press conference held at Paramount Pictures to announce that the proposed *Star Trek* movie is, once again, underway. And *Star Trek* is a subject Gerrold knows well—after all, his professional career began as author of the well-known *Star Trek* episode "The Trouble with Tribbles."

#### ABOUT THE FOUNDATION

Organized as a non-profit corporation in 1971, Foundation has pioneered the conceptual development of many facets of space industrialization, including the design and economics of single-stage chemical orbital spacecraft and nuclear boosters. The organization publishes a monthly newsletter on commercial space topics, which is available for \$20/year (\$15/year for students) from Foundation, 85 East Geranium Avenue, St. Paul, MN 55117.

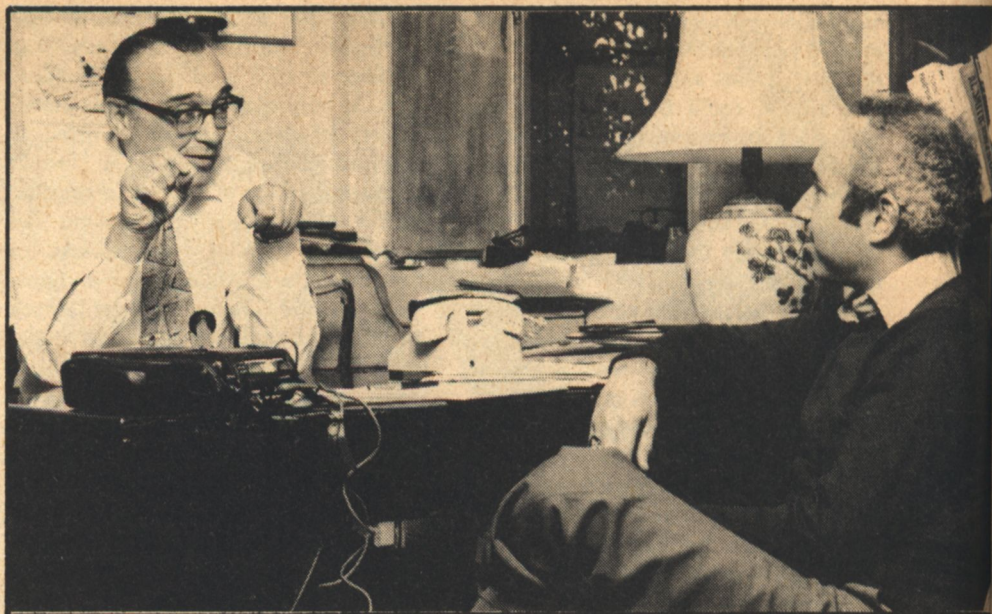
The essay appearing in this issue of *Galileo* is one of six in a book to be published by Foundation. Titled *Beyond Earth: A Personal View of Space Civilization*, it will be published this summer. Illustrated with 45+ full color paintings by Foundation Staff Artist David Egge, it covers both the technological and humanistic sides of our space future. To be kept informed about the progress of the book and its availability, send a SASE to Foundation, 85 East Geranium Ave., St. Paul, MN 55117.

—G—



# Interview: Van Vogt

Jeffrey Elliot



**T**HERE IS no question that A.E. Van Vogt has suffered an unkind fate in the science fiction world. Despite the fact that he is readily acknowledged as one of the premier writers in the field, he has yet to receive the critical acclaim which he so richly deserves. Although most science fiction fans extol his contributions, for some unexplainable reason he is viewed as a symbol of the "old school," as an author who is an anachronism among today's "new wave" writers.

A.E. Van Vogt, born in 1912, was reared in Winnipeg, Canada, and currently makes his home in Hollywood, California. In addition to the hundreds of magazine articles which bear his name, he can boast nearly fifty books to his credit, many of which have become classics in the science fiction world. The include such works as *The Weapon Shops of Isher*, *Slan*, *The Universe Maker*, *Destination: Universe!*, *The Winged Man*, *Mission to the Stars*, *The World of Null-A*, *Rogue Ship*, *The Worlds of A.E. Van Vogt*, and *Children of Tomorrow*. His latest book is *The Anarchistic Colossus*.

The interview which follows was conducted at Van Vogt's home in Hollywood, where he has penned so many of his famous works. Van Vogt is a tall man, his voice resolute, his tone often professorial; occasionally, given the opportunity to comment on a matter which excites him, his voice rises with febricity. His responses that day were characterized by something akin to cosmic force. We sat in his cluttered living room (which is teeming with

Chinese art and rare antiques, most of which were collected by his wife, Mayne).

**Elliot:** Is there a salient theme which characterizes your work?

**Van Vogt:** I have two themes and several rigidities. I like systematic thought—meaning science. I am what might be called a "thinkingness" person. If I don't have a systematic thought about something, and it comes under discussion, I will actually say to people: "That's a matter about which I merely have an opinion, but I'll be glad to expound at length." (They are usually willing to forego the privilege.) In a story like *The Anarchistic Colossus*, I tried to develop a systematic thought about what kind of technology it would take to make an anarchistic society work. All of the ingredients I dealt with are widely recognized phenomena. Human beings have been confronted by human nature from the earliest days, and everybody has had the same problem to overcome: how to deal with individuals who hit or take or use force and/or will not do their share of the world's work. In the *Null-A* books, I examined this problem from the viewpoint of trying to change human nature by a system. In *Future Glitter*, I explored the dictatorship problem by visualizing an invention whereby the dictator's every move, day or night, was visible on all the walls and houses and buildings of the world, and his every word was audible everywhere. In other words, there was total communication. No propaganda was possible. The *Weapon Shop* stories analyze the

subject from another point of view. Would purely defensive guns solve the problem of tyrannical government? As I try to show, these are genuine problems, not just something I made up. The proposed solutions, being science fictional in nature, reach beyond present-day science, but I am quite willing wherever possible to have them serve as extrapolations of science; and, in fact, in spite of my second theme—which I shall now come to—I am known as a hardcore science fictionist. Let's take for granted that in the foregoing I include the phenomena of what happens when one of these people—any one, any human being who suddenly realizes there are no restrictions on what he does—achieves a position of political ascendancy. Currently, we see these tiresome types operating in the Third World and in systems of monolithic government.

My other theme goes back a long way. When I first read, as long ago as the early 1940s, that Robert Heinlein was constructing an entire future science, projecting it several hundred years, I asked myself what I could do that would be of equal value—and realized that I was already doing it. (However, it could not be revealed until it had run its course.) I had the theory that every grain of sand, every rock, every living cell contains within it a record of its ancient origin. The theory postulated that if we could but "read" that record, we could know the beginning of all things, and their subsequent history. Obviously, science has long attempted to use its methods to comprehend this record. My method,



Photo credit: Christian Gemignani

however; was more exotic. At a certain point in each science fiction story, I would let my subconscious mind freely associate within the frame of the ideas of that story. My hope was that, as time went on, as more stories were written, my subconscious would progressively spew forth ancient images; and that a picture of the truth of the universe would gradually emerge.

In a small way, I revealed this idea at a symposium on science fiction at the Second Annual Film Festival in Rio de Janeiro, Brazil, in 1969. (Some twenty-five science fiction writers and editors were invited to their—to our—total amazement and delight.) This event called for something special, so, without suggesting that this was a lifetime interest of mine, I explained my idea, and cited several examples. The response of the audience was exactly right—I later read several ridiculing comments, and realized that I had made my statements perfectly for my purposes; however, I was not then ready to analyze the data, if any, which may have emerged from my lifetime systematic approach.

This year, for the first time, I have proposed as a panel subject, the following: “The Meaning of Life, The Meaning of the Universe—Are There Any Clues in Science Fiction?” My role in each panel was to set forth the hypothesis, and then I would listen as the other panelists expounded at length. It’s not a bad method. In fact, several astounding answers have emerged from this approach.

Anyway, taking into account my age, it’s about time for me to sift the material

I’ve written over the years, and attempt to discern if anything coherent and meaningful can be evoked. (If any fan knows of stories by other writers which point in this direction, I would certainly like them to write me, giving titles, authors, and, if possible, page numbers.)

**Elliot:** What impacts do you hope your writing will have?

**Van Vogt:** My early stories were written by a series of systems. It was my belief that form and ritual were as important as content. If this theory is correct, then my stories (particularly from that period) will have an ongoing impact that will continue to astound—and disgust—my critics. Being an experimenter, in my more recent novels I deliberately didn’t employ some of the rituals, and depended more on content. I personally enjoyed writing and reading all of these books. But if a composer of classical music were to omit, as an extreme example, the concerto format in writing a concerto for piano and orchestra, the reaction of the audience would be that something was missing, but they wouldn’t quite know what. Back in 1948, in an article on writing science fiction which was published in Lloyd Eshbach’s *Of Worlds Beyond*, I described what I called my 800-word scene, with its five steps. No piece of music was ever more rigidly organized than the five steps of these scenes—the wordage could vary slightly, but not much. In my naivete at the time, I thought I was revealing one of my precious secrets when I gave this account, and that other writers would leap to follow the method. So far as I

know, only one writer—and I may have misheard him—subsequently told me that he had found the method valuable. In the years that followed, I read a variety of comments on my 800-word scenes. Without exception, everybody had misread the description. An English professor, quoting an American critic, wrote in *Foundation*, an excellent science fiction publication issued quarterly in England, that I changed the entire direction of my story every 800 words, and that no doubt this was the reason that I was known as the master of confusion.

Another one of my techniques was to write a hang-up into every sentence. The reader who tried to skim, as critics tend to do—they just want to get an idea of what the story is about—would quickly bog down, because he was not making the contribution to each sentence that the method required. My regular readers don’t get confused, because they are able to make the contribution. There’s much more, some of which I’ll discuss in the next several years. The hang-up in each sentence was, by my theory, the science fiction “fictional sentence.”

A science fiction “fictional sentence,” as I write it, has to have a hang-up in it, ideally. My first science fiction story—though it wasn’t the first published—“Vault of the Beast,” opened: “The creature crept.” The reader doesn’t know what kind of a creature. That’s the hang-up. Another sentence: “This caricature of a human shape reached into one of those skin folds with that twisted hand, and drew out a small, gleaming metal object.”



There are four hang-ups in that sentence. A nine thousand word science fiction story should have—rough guess—one thousand such sentences. It can't be done, but you try.

When I wrote confession-type stories for such magazines as *True Story*, one of which won a first prize in one of their contests, every sentence had to contain an emotion. (I have often cited the following example of this technique, so readers who have read it or heard it, please bear with me.) In a confession story, you don't say "I lived at 323 Brand Street." You say, "Tears came to my eyes as I thought of my tiny bedroom at 323 Brand Street." If your story has a thousand sentences in it, every sentence should have an emotion in it; but if it's science fiction, every sentence should have a hang-up. I don't do that with absolute determination anymore. I merely aim in that direction, and many of my sentences in current stories actually reveal the whole meaning. In such cases, no contribution is required by the reader. It is my belief that stories written intuitively by other writers, as well as those written consciously by myself, with these hang-ups in every sentence, will endure longer than other types of stories. The reason is simple: readers of each generation will contribute meaning from their own time, their own era, filling in the gaps with data that I don't have now, or didn't have when I wrote the story.

**Elliot:** Why did you gravitate toward science fiction as a medium of self-expression?

**Van Vogt:** I refer to this as a middle

period in history. We are just beginning to understand some of the motivations of human beings. But the truth is, no one knows what hidden forces cause one to want to fly to the moon instead of settling down on the seashore. I can recall I was in the middle of writing another confession-type story when, suddenly, I thought: "For God's sake, why am I writing this junk?" I knew why! It was the Depression. The first confession story I sold paid me \$235. This was at a time when a family man earned as little as \$80 or \$90 a month. Anyway, I then wrote "straight" radio plays and became a trade paper representative for eight magazines. I called on business people and wrote up success stories in various fields. But somewhere in that period I happened to pick up *Astounding*, and I read a story titled, "Who Goes There?" As a result, I wrote a letter to the editor, in which I briefly outlined a story idea I had. As I've said before, if he hadn't answered that letter, that would have been the end of my science fiction career. But I learned later that the editor, John W. Campbell, Jr., answered all letters like that. That first story of mine was "Vault of the Beast;" my second was "Black Destroyer." For some reason, he published "Black Destroyer" and its sequel, "Discord in Scarlet," before publishing "Vault." And so, I was propelled into a field, which, because of my immediate success in it, continued to hold my interest. I suppose, now, that if the acceptance of my stories had been lukewarm, I would probably have gone off in another direction. Of course, at this time, Canada was at war, and I was

working in the Department of National Defense in Ottawa, which made it difficult for me to experiment with other writing forms and explore new markets.

**Elliot:** Did you ever expect to see the popular acceptance that has come your way?

**Van Vogt:** My popular acceptance started with my first story, and so I didn't have time to anticipate being popular. It happened immediately!

**Elliot:** What accounts for your tremendous storehouse of ideas?

**Van Vogt:** I read science fiction in the old British *Chum* magazine starting at age ten or eleven. I picked up the November, 1926 issue of *Amazing Stories*, when I first saw it on the newsstand. So I was introduced to the imaginative ideas of the genre at an early age. They must have had some influence on my subconscious. Later, when I endeavored to live off a magazine, *Astounding*—that paid one cent a word—I received \$125 for my story, "Black Destroyer." I used to wake up many times each night, extremely anxious, and try to think how to solve a problem in a current story. I would then go back to sleep, only to wake up, one and a half hours later, anxious again. This went on and on, and since solutions did come by this method, one day I noticed what I was doing. Thereafter, I used an alarm clock to awaken me every one and a half hours. Throughout my career as a writer, I awakened myself by an alarm clock—and later with an industrial timer—about 300 nights a year. Thus, I enlisted my subconscious on another level in my ceaseless search for ideas



Photo credit: Christian Gemignani

and story solutions.

**Elliot:** How do you explain your attraction to science fiction?

**Van Vogt:** I fell out of a second-storey window when I was age two and a half, and I was unconscious for three days, near death. Later, using hypnosis, and then still later, dianetics, in an effort to reduce the trauma of those three days, I discovered that unconsciousness has "on it" (in it) endless hallucinations. The normal part of my brain has probably spent a lifetime trying to rationalize the consequent fantasies and images. This could explain a lot about my bent for science fiction.

**Elliot:** To what extent does your writing reflect your own search for identity and meaning?

**Van Vogt:** I early observed that identity was not an identifiable condition. Instead, I had certain situations wherein I, whoever I was, became disturbed. My therapeutic purposes were aimed at eradicating these things that disturbed me, and I have essentially accomplished that purpose.

**Elliot:** How important is technique in your writing?

**Van Vogt:** At one time, technique was 90 per cent at least. It's more like 50 per cent now.

**Elliot:** Are you concerned with what the critics say about your work?

**Van Vogt:** Apparently, we shall have critics with us from now unto the far future. Let me say, to begin with, I don't mind fan critics at all. I really don't care if a fan likes or dislikes my stuff, so long as he has only a limited fan magazine market to peddle his ideas—in fact, I enjoy reading what he

has to say. However, when it comes to criticism in the national circulation magazines, alas, I have lived long enough to know that a hostile reviewer can do great damage to an author; and great damage has been done to me. There are essentially two kinds of critics: one represents a "new wave," and he has a yen to let the readership know that anything written prior to the new thought lacks true reality—which is what he represents. Most realities in fiction evolve through an up curve and then a down curve in about ten years, after which, unless the author can make a shift, the new "new wave" flows over him. The other type of critic is a person, often resident in New York, who can't seem to make a living at writing science fiction; but he knows everybody, and they want to do something for him. As is often the case, he is given the critic's column to write. If he would be calm, and accept the manna from heaven for what it is, fine! But no, he's angry inside—at what, who knows? He quickly forgets that he is a charity case and begins to act like God Almighty. Can anything be done for him? Will this system ever change? No! Editors in New York are really amazingly strong people. Every day they have to resist buying a story from someone who needs the money in order to eat that day. The wonder is that any stories are bought from out-of-towners. But the editor's soft heart is hardened by one simple reality: the publisher's greed does not allow more than an occasional charitable sale to take place. For this reason—the simple truth of capitalist competition—writers everywhere in the country can

compete fair and square. But the critics are principally residents in or near New York. Let me say that, when there is an exception (which actually does happen occasionally), he doesn't last long, because who wants to read all those books month after month? And as a second reason, he sends in a column or two from the hinterland so engagingly written, and the publisher happens to read it before the editor can hide it, so it somehow gets in.

**Elliot:** Are you driven to work or is it more a question of self-discipline?

**Van Vogt:** Writing is about 50 per cent self-discipline and 50 per cent habit. Once you trust your typewriter to make a living for you, it had better become a habit.

**Elliot:** What gives you the greatest satisfaction as a writer?

**Van Vogt:** Being a writer makes me, in terms of the word itself, free. I may work from 9:00 A.M. until midnight, as I did for years in my early days. I can get up at any time, and go down to the store on an errand for the cook and buy some groceries. The only time clock is in my head. Of course, the kind of writer I refer to is one who can, in fact, make a living at writing. At present, I am still such a person; this means that occasionally checks arrive from publishers, in which the total amounts involved are sufficient to pay my bills without, these days, being anxious. That, also, is a good feeling, because I can remember when it was not true.

**Elliot:** Do you have any fears that as you get older, ideas will be more difficult to come by?

**Van Vogt:** During the years when I was



studying human behavior by means of dianetics, and performing experiments on myself, I started, or wrote bits and pieces of, many stories. As of now, I've only used up about ten of my thirty or so novel possibilities, and about half of my short story beginnings. For example, DAW will bring about a new collection of shorter-length stories (in March, I believe), all except one of which lay around here for years, some of them as much as nine-tenths finished; I finally just sat down and in a three-week period, working around the clock, completed them all. Among them is a story titled "The First Rull." So I can safely say, no, I'm not going to be short of new ideas as I grow older.

**Elliot:** Which science fiction writers have had the greatest impact on your style?

**Van Vogt:** I can cite some of my favorite authors of my early years. They include, among non-science fiction writers, Max Brand, Zane Gray, and a number of detective story or mystery writers. My early favorites among science fiction writers included A. Merritt, Don A. Stuart (John Campbell's pseudonym), and, of course, later on, Robert Heinlein, C.L. Moore, Henry Kuttner, L. Sprague de Camp, and L. Ron Hubbard. What these writers had was vivid imagery, or vivid, crisp presentation. My earliest favorite novel was A. Merritt's *The Moon Pool*.

**Elliot:** How would you assess your own work as a writer?

**Van Vogt:** Apparently, there is a readership for long-winded sentences in this world, but if a sentence in a story of mine gets too long, I get scared, and I

make every effort to break it down. I once said, partly in jest, that I like to keep my sentences at six words or less. That's an exaggeration, but it's not much of one. Some years ago, I was on a panel and the person running it read a beautiful passage from the work of another writer on the panel. The passage had to do with a lovely afternoon, and how the wind was blowing, and how great it felt. When he sat down, he remarked to me that he could just as easily have found an equally beautiful passage in any story of mine. I didn't comment then, but my thought was that he would never find such a passage in any story of mine. My "beautiful" passages are entirely science fictional. They do not talk about the breezes blowing, without also mentioning something science fictional. I don't wish to sound arrogant, or egotistical, but it struck me then, and since then when I read stories, that no one really understands science fictional writing and its requirements as well as I do. Here are all these people writing sentences that could be printed anywhere, meaning printed just as easily in mainstream stories. By the way, I except Ray Bradbury from this. His science fiction is science fictional from the first sentence on.

**Elliot:** What made you want to become a writer?

**Van Vogt:** I grew up in the Depression. There was no place to go, no jobs available. From age fourteen, I was a withdrawn, shy person, who stayed at home and either read or tried to write stories. In a way, I became a writer because there was no place else for me

to go.

**Elliot:** Are you a meticulous writer or does writing come easily?

**Van Vogt:** I'm a very meticulous type of writer. In my early years, I worked fourteen hours a day, seven days a week, and at my very peak turned out only about 300,000 words a year—and that only for one year. When I came to Los Angeles, I met Cleve Cartmill, who could actually only type with one hand, but who was able to turn out 500,000 words a year, using his paralyzed left hand to hit the space bar. (He had had infantile paralysis.) And then I met the incredible Richard Sale who, at his peak, wrote over three million words a year straight onto the typewriter. He sometimes wrote entire issues of magazines in the detective and adventure fields. When I met him he had married Mary Loos, the niece of Anita, and they were writing for the movies. Before I met these two men, my method was to write a story in longhand and then work out the final draft on the typewriter. By this method, I produced short stories and novelettes, and about one novel every two years. In 1969, I converted a dianetic creativity technique to my use, and started to work on several novels at the same time, partly longhand and partly on the typewriter. My production of novels increased considerably after that. I am currently writing four books, three of them under contract.

**Elliot:** Do you see yourself as a moralist or a political commentator in your writing?

**Van Vogt:** I am a moralist. But the fact is, I'm tolerant of the world as it is.



Photo credit: Christian Gemignani

Remember, this is a middle period in history, by my reckoning. I'm not critical in an angry way. It's sad to see the U.S. space program fade away because people don't think. But, then, in this period of history, all there ever is—except in science—is reaction, not action. We could have put up the first rocket into space, but a businessman Secretary of Defense put our big boosters in storage. After *Sputnik*, they were hauled out (we are now reacting) and then we launched our moon program. Since the Russians are continuing their exploration, one of these days something dramatic will happen, and once more we'll get organized. One of our greatest scientists has proposed an interstellar probe, to be launched about 2020 A.D.—but we need to begin our preparations now on a small, inexpensive scale. Will it happen? One of these days the Russians will do that dramatic thing, and then we'll do it. You can't argue with automatons, so you hope that the other side will do its automatic things so that our automatics will get stirred up. As for politics, I don't care who is President of the United States, except—I was disturbed by Carter being a Baptist. But that doesn't seem too significant. I was amused when he told a large group of civil servants: "All you men and women who are now living together without being married, get married!" I was amused because obviously any man with ambition will realize that he's not likely to go anywhere in the Carter administration if he's living a life of sin. As a result, Washington has had a lot of brides in

**Interview**

the last six months. At least that's my guess.

**Elliot:** Do you find that you enjoy working in one environment as opposed to another?

**Van Vogt:** I live in the Hollywood Hills, with a view of the city below me—a narrow view along a canyon, but on a clear day, it's beautiful. When I get up in the morning, my Samoyede dog and I step out of our front door and immediately start up a steep hill road. I come home and have a little breakfast and then sit down to work. That's what I've been doing for years. I have no impulse to travel, and in fact do so only when I have a speech to deliver somewhere or for some family emergency—of which there have been several in the last few years.

**Elliot:** Do you work with a blueprint in mind or does your writing take shape as it develops?

**Van Vogt:** I get one small wedge into a story, and work it out as I write the piece. Such a method is unacceptable in Hollywood, where the outline is King—you must know your story before you write the script. So that's a method of thinking that I still have to acquire. And I shall try—after I finish the four novels on which I'm currently working.

**Elliot:** Is there a specific philosophical basis to your work?

**Van Vogt:** My philosophy is that it's better to be alive than dead; that it's better to be working than just sitting. Therefore, I always have several experiments going—on myself.

**Elliot:** Do you set goals for yourself both as a writer and a human being?

**Van Vogt:** As I've said, I'm an

experimenter in life situations. Currently, I seem desirous of writing several more science fiction stories (novels), so I'm not really experimenting as a writer, but just going along as always on the basis of techniques and rituals laid down long ago. One of these days I shall change that.

**Elliot:** What are your ambitions for the future?

**Van Vogt:** I plan to work out methods of writing for film and TV as—I hope—meticulous as those I use for short stories and novels. I want to develop the film equivalent of the 800-word scene, the fictional sentence, and the various rituals I use.

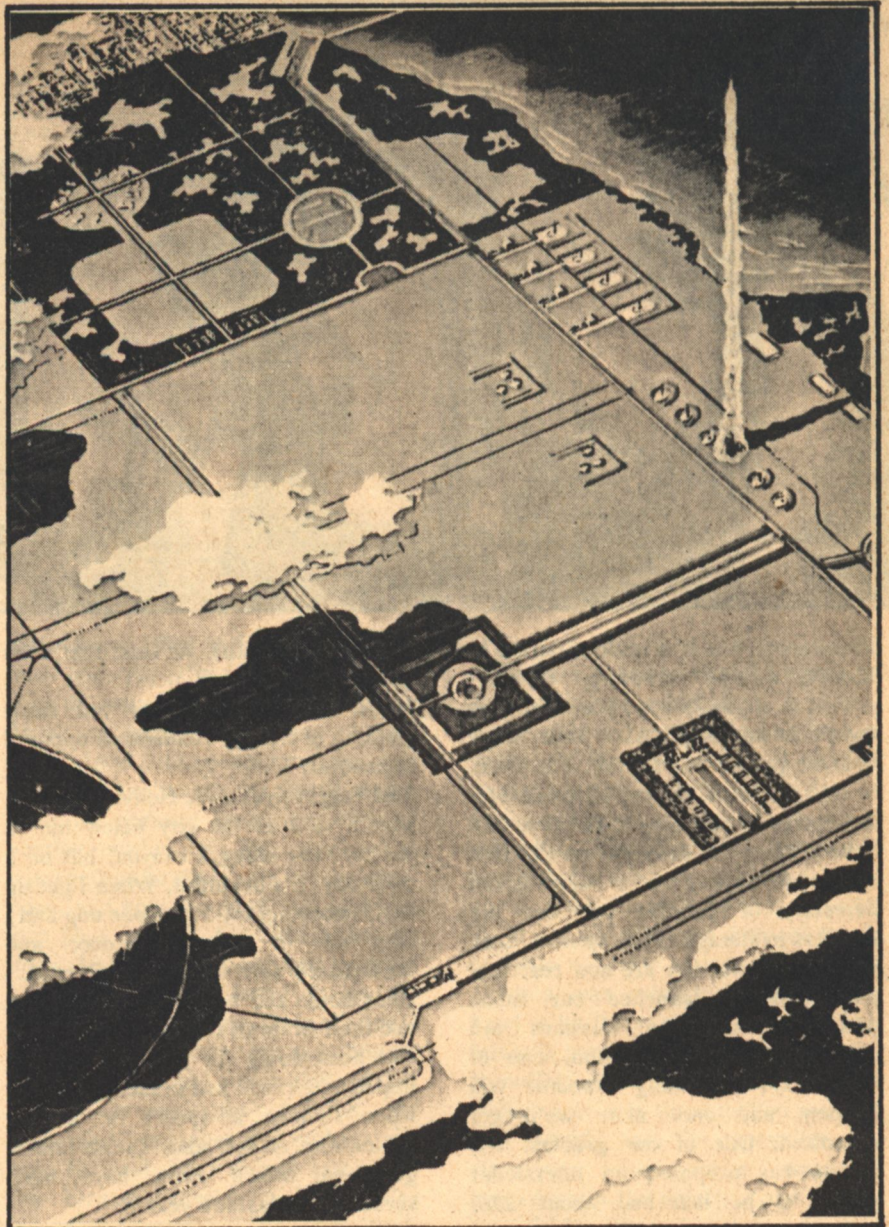
**Elliot:** What do you enjoy doing when you're not working?

**Van Vogt:** As I've said, I'm an experimenter. Beginning in 1968, I did an exercise experiment, using self-psychotherapy. It seemed to work perfectly. Earlier, I had converted my dream method for writing to a method of dream therapy. That works only when there is a minimum of stress in the daily environment, but it did a lot for me during the times it could be used. More recently, I developed an interest in learning languages, for which I've worked out a perfect system. I hope to know and use 200 languages before Isaac Asimov's theory about the limited longevity of human beings catches up with me.

—G—

# Earthport: Becoming Reality

An Interview with  
Mark Frazier



James McMenamin

**Galileo:** What is the Earthport Project and how did it get going?

**Frazier:** The Earthport Project is an attempt to establish an International Space Launching Center near the equator. The idea of an international spaceport near the equator has been around for about ten or fifteen years, but until recently there hasn't been the interest on the part of various launching organizations in establishing one that would be open to all nations. Our foundation—the Sabre Foundation, based in Santa Barbara, California—has decided that the number of commercial launching organizations is going to be increasing to such an extent that it is now, for the first time, practical to begin investigating the establishment of a spaceport for the entire planet. The reason we are looking to the equator is

that you get substantial economies at the equator which you don't get at launch sites at higher latitudes, in part because the Earth's spin at the equator is far faster than at such places as Cape Canaveral or the Soviet launching sites.

**Galileo:** Yes, the Earth/Space article which we ran a few issues ago touched on that subject, but how realistic is such a project? In other words, from the layman's point of view, how tangible are the short term dividends of a project like this?

**Frazier:** Well, the answer to that is a matter of opinion, but we think it is extremely feasible. There are already several equatorial launching sites, one of which is run by a private company, a West German company called Otrag, which launched the first privately-funded space vehicle in May of last

year, from Shaba Province in Zaire. The French operate a launching pad in French Guinea in South America and there are smaller facilities for suborbital rocket testing in Kenya and India. So the virtues of equatorial launch are clear, at least to the sponsoring organizations of those sites.

We think there are definite reasons for going to the equator. The reason we think this is feasible is that we have received, to date, eight letters from equatorial governments ranging from Liberia to Indonesia saying that they want to be considered as hosts for an equatorial launching facility. We have put together an advisory group for our project which includes the head of the Brazilian space program, the Secretary General of Research in Sudan, and a number of representatives of other



countries, as well as such people as Buckminster Fuller and Robert Heinlein here in the United States. We think we can put together a proposal which will persuade some of the existing operators of equatorial launch sites to convert their launch sites into a free trade zone open to users from all nations. Or else we can persuade a nation to establish a free port or free trade zone that would then support an international launch site, a new one.

**Galileo:** Okay, now on a purely mercenary level, who stands to gain most from Earthport, short term and long term? Not just the obvious, but who's going to benefit from this in terms of the big bucks?

**Frazier:** Well, financially it's going to benefit the host country; it's going to benefit any nation that wants to go into space. In particular, it's going to benefit private companies that want to establish some sort of beachhead in space. Right now, the UN Outer Space Treaty has some very, very questionable elements. There is recognition of the right of any organization to use space for peaceful purposes, but at the same time there is a very ambiguous clause which says that all activities must be for the benefit of all mankind. We think that it would be lethal to the commercial development of space to have some sort of overall regulatory body which was making arbitrary definitions of what was for the benefit of all mankind and what wasn't; so what we hope to do with Earthport is establish a framework within which users from both developing and developed countries can undertake the peaceful commercial development of space—in ways which allow any peaceful non-aggressive activity to occur. We think that the framework we're talking about at Earthport would be so beneficial to developing countries that the private activities in space would qualify as being for the benefit of all mankind, provided they were conducted through the Earthport launch site.

**Galileo:** Who is going to manage this?

**Frazier:** We are now incorporating an Earthport authority in Vienna, Austria, which will be a non-profit, non-governmental institution to administer the site. It will operate on a 99-year lease agreement with the host country whereby the host country establishes a free trade zone—an area with minimal taxes, minimal tariffs, and minimal regulations—that would then be a site for both commercial space and non-

space related organizations. The income from leases of land at this free trade zone would go in part to the host country, but also in part to the administering authority, the Earthport authority, where it would be used to provide basic services and to support various humanitarian space activities, to the benefit of the developing countries.

**Galileo:** What kind of benefit are you talking about? In real dollar value, what kind of money are you talking about?

**Frazier:** Well, the free trade zones and free ports now springing up around the Asian basin are phenomenally productive of revenue. Like Singapore, for example. Some of the newer free trade zones are even more illustrative. In Taiwan, a free trade zone has been established which generates between one and three million dollars a year per square mile, just in rental of land. And that is because it is very profitable for investors to locate and invest in a place which has minimal tariffs and minimal taxes. We believe that a free trade zone—Earthport—measuring fourteen by fourteen miles would generate between 300 and 400 million dollars total income per year in rental of land. This is a conservative projection by Alvin Rabushka at Stanford University who is an authority on free ports. It's conservative because he assumes only half of the land would be leased out and that the leasing rates would be no higher than those in Taiwan.

**Galileo:** Now these companies would be using the free ports for launch facilities to make economic use of outer space. These economic uses are all still very, very theoretical. At this initial stage, we all realize the difficulties in getting something like this going. How do you go about selling a potential client on the idea of profits which are twenty to thirty years hence?

**Frazier:** Well, the answer to that is that there are already private companies moving into the market. They've identified short term payoffs from launching satellites. I think the most striking example of this is the case of Otrag, which is a West German company that has spent, so far, about fifty million dollars to establish a launching capability independent of any government agency. This launching corporation is run by the former director of the Kennedy Space Flight Center for NASA. It is a serious attempt. They've identified potentially hundreds of millions of dollars in revenues from various

nations that want to put into orbit communication satellites, Earth resource surveying satellites, and other satellites which they believe would *not* be launched by NASA, or would require enormous red tape and approval to get launched.

**Galileo:** How would all this be safeguarded? What guarantees would there be to prevent some Third World government, after seeing millions of dollars in assets piling up on their property in the form of trucks, conveyor belts, and electronic equipment—prevent them from saying, "Hey, there's more money to be had by just nationalizing all this?"

**Frazier:** There are two answers. First, there are now eight countries, and we expect there are soon to be more, interested in being host—we *do* have a choice as to where to locate. We will not, I assume, have Earthport located in a country with a history of expropriations and instability. Alternatively, perhaps an island somewhere, or a country with a small armed service would be preferable, all other things being equal. The second answer is that a free port is an immensely profitable institution for a country to have. The most striking example of a case where a free trade zone has proved beneficial to a country with the ideology and with the leaders who would by all rights be least favorably disposed to it, is China. The Chinese government could take over Hong Kong any time it wants; but it has proven to be such an enormous source of foreign exchange, and such an enormous market for Chinese goods, that they would sooner have it continue—even though that means having the most *laissez faire* capitalist society on Earth sitting right next to the most collectivist society on Earth.

**Galileo:** What does NASA think about your efforts? Have they responded to any of your current projects?

**Frazier:** We have had very good relations with certain past and present officials of NASA. The former research director of NASA, Dr. Raymond Bilinghoff, has been a member of our advisory board from the beginning. We have also worked closely with NASA officials in Washington and the Ames Research Center in Palo Alto. We have encountered some skepticism on the part of some NASA officials as to the likely impact of Earthport on the number of payloads for the Space Shuttle. They are worried that the availability of com-

[Continued on page 27]

# Beyond Earth

Gary Hudson



ORBITAL ANTENNA FARM—View from behind a large orbital antenna. Large square panels are solar power array, disks are direct broadcast antennas. Station would have links to other platforms in geosynchronous orbits, providing worldwide coverage. Deployment of these huge stations would be facilitated by the use of low-cost nuclear-powered spaceships. Artwork by David Egge; copyright Foundation, 1977.

## INTRODUCTION

**I**F THERE is but one fact that will control whether or not humankind will move into space, it is the cost of doing the moving. Until now, most analysis of whether or not one could go into space has been done by scientists or engineers who were concerned primarily—often exclusively—with the feasibility. Soon, most calculations about feasibility will be done by industrialists who will be determining whether or not they can make money by moving off this planet. This is as it should be. In our society, first comes a theory, usually produced by a single human being or a small group, which defines the limits of the possible. Next comes experimentation, again done by a small group of

individuals defining what is practical. And finally, the banker, the businessman, and the merchant, above all, decide what is profitable.

Before the middle of the 19th century, Alfred Lord Tennyson wrote:

*For I dipped into the future  
As far as the eye could see,  
Saw the vision of the world  
In all the wonder that would be.  
Saw the heavens filled with commerce,  
Argosies of magic sails,  
Pilots the purple twilight  
Dropping down with costly bales.*

At the time, of course, this was a wild fantasy. But Arthur C. Clarke pointed out that what would have astonished Tennyson more than the reality that flight could be achieved was the fact

that our pilots are no longer dropping down with costly bales, but that they are landing with cheap ones. Clarke goes on to say that this is the pattern that must be repeated in space if we are to make any practical application of the space environment. I heartily agree. To paraphrase a cliché, space is too important a place to be left to engineers and astronauts. We must begin to find a low-cost method of moving into space—moving goods and people off the planet Earth and outward to the moon, the asteroids, the planets and, ultimately, the stars. To do so, we must get at the fundamentals. And the first fundamental that we have to think about is *energy* cost. To carry a 170-pound man from the surface of the Earth to the surface of the moon costs about 1,000 kW hours of electrical energy. That is equivalent to

leaving a large toaster running day and night for 20 days. If purchased at prevailing electrical rates from your local utility, it would cost you no more than \$50.00.

Why, then, do we end up spending hundreds of millions of dollars carrying men and their instruments into orbit or beyond? Well, the answer is really quite simple. Let me give it to you by way of analogy. Suppose, if you will, that an aircraft as complex as a 747 jetliner carried only its pilot, co-pilot and flight engineer, and was flying from Los Angeles to New York. Let us further suppose that the airplane costs about \$40 million, and that only 2 or 3 have been built. With a very small number of aircraft and a very small crew size, it's easy to see that the cost per person flying on board the aircraft would be exceptionally high. However, how much higher would it be if, when the aircraft finally made its flight and landed safely, the crew got out and towed it off the end of the runway and dropped it in the Atlantic Ocean and let it sink? This is comparable to the state of the art today in chemical rockets. Hundreds of millions of dollars of advanced aerospace engineering and technical capability now lie littering the Atlantic seabed: dispensed stages of Atlases and Titans and Saturn 5s are rusting on the ocean floor. It does not take great insight to realize that this cannot continue if we are to have economical space transportation.

A short-term solution to this is the Space Shuttle that is presently under development. The NASA Space Shuttle is a semi-reusable vehicle: the Orbiter section, which is shaped like an airplane, will be reused up to 100 times. The solid rocket motors which helped carry it to orbit will be reused perhaps 20 times. And the external tank, which carries the liquid oxygen and liquid hydrogen propellants for the Orbiter's main engines, is to be expended and will fall into the ocean. By doing all this, the cost to transport a pound of payload into Earth orbit can be lowered by a small amount. Right now, it can be anywhere from a thousand to ten thousand dollars per pound. With the Space Shuttle, the price will go down to about three hundred to five hundred dollars per pound. Yet even at that level, for the energy that the spacecraft consumes in its climb to orbit, it is still a thousand times less efficient in its use of the chemical energy in its propellants than is a subsonic airliner carrying

passengers anywhere in the world. Part of this is due to a simple chemical law. Rocket engines operate on the principle of combustion. By burning a fuel like hydrogen with an oxidizer like liquid oxygen, a very hot gas jet can be exhausted from the tail of a rocket motor. As this jet moves backwards away from the rocket, the rocket moves in the opposite direction, according to Newton's third law. But a rocket's velocity is limited by the velocity of its jet. There is a simple physical limitation on the amount of energy that can be obtained from burning two chemicals together in a combustion chamber. A rocket engine, since it has to carry its oxidizer with it and cannot burn the oxygen in the air like a jet engine, is generally as much as six times less efficient than a conventional kerosene-fueled turbofan jet engine.

Without the very efficient new forms of propulsion systems that must be devised to move into space in a big way, there will be *no* large-scale commercial exploitation of extraterrestrial resources; there will be *no* large communities of people living in space; and there will certainly be *no* opportunity for business activities of almost any sort in the space beyond Earth. We can do certain things in low earth orbit with existing chemical transportation systems and with the Space Shuttle. And we will be able to do them reasonable economically. Communication satellites are a good example. On the other hand, it will never be feasible, no matter how hard we stretch our imagination, to believe that a chemical rocket engine can open the space environment to large-scale exploitation. We could not bring back steel and nickel from the asteroids if we have to depend on the Space Shuttle.

### VELOCITY REQUIREMENTS

**S**OLAR SYSTEM spaceships are fast. That observation is of fundamental importance to any discussion of the commerce of the solar system. So that we may adequately examine the potential of the true spaceship, we must understand the two reasons why it must be so fast and so powerful. First, a fast spaceship allows us to use fewer expensive ships, crews, research instruments and so forth in the early exploration of the solar system. Second, the cost of goods transported at any time is important; time is, of course, money. Fast spaceships are needed to

make possible the economic utilization of space.

Until now, most studies of transportation in the solar system have operated on the basis of what are known as Hohmann trajectories. Hohmann transfers are minimum energy trajectories. Hohmann, who was the city engineer of Essen, Germany, did a series of calculations to show that the energy necessary to escape from orbit about a planet, such as Earth, and travel to another planet, such as Mars, is but a small fraction of the energy necessary to attain the orbit in the first place. In other words, with Hohmann trajectories as minimum energy transfers, it is easier to travel between planets once you have achieved orbit than it is to achieve orbit in the first place. Of course, and this is something that has been overlooked time and again by experts in the field, the Hohmann transfers are all minimum energy trajectories. Further calculation will show that a ship moving on these trajectories will require months or years to transit between planets. As an example, it has taken the probes that the United States has sent to Venus and Mars in the last decades as much as eight months to travel between two planets. Going farther out into the solar system, the problem becomes even worse. The Pioneer X and XI spacecraft have taken over two years to reach Jupiter. Farther out, Saturn, Uranus, Neptune and Pluto are decades away at the velocities our ships have been traveling on Hohmann trajectories.

We have been using these minimum energy transfers, of course, because we have not yet learned completely how to adapt nuclear energies to spacecraft propulsion systems. Consequently, we are limited to velocities which chemical rockets can supply.

At minimum energy transfers, about 11,000 feet per second are necessary to leave orbit about the Earth and go to the moon. Another few thousand feet per second (about 9,600 feet per second) are necessary to go into orbit about the moon and land softly. To achieve Earth orbit in the first place, about 30,000 feet per second are necessary. This is just at the limit for a single-staged rocket using chemical fuels. By staging a rocket, as has been done in all U.S. space shots until now, higher velocities can be achieved. Deep space probes often exceed 40,000 to 50,000 feet per second. But even these are moving on basically minimum energy transfers. With the

use of advanced propulsion systems and low-cost nuclear fuel, it will be possible for single-stage solar system spaceships in the near future to obtain velocities in excess of 500,000 feet per second. This will change our entire perspective of travel and exploration in the solar system.

At a speed like this, a ship will move across the gravitational fields of various planets, and even the gravitational field of the sun, so that their trajectories will be practically straight lines at high speed. Additionally, these ships for practical consideration can be understood to be "outside" the solar system, dynamically speaking. That is to say that while they will still travel between bodies in the solar system, they will be moving faster than the velocity necessary to escape the sun. Even close in at the orbit of Mercury, solar escape velocity is only 222,000 feet per second. Consequently, at 500,000 feet per second and more, trajectories of fast solar system spaceships will be almost straight lines without perturbing effects by the gravitational pull of either the sun or the planets.

Up until this time, it has been generally assumed that the major problem in exploring and exploiting space has been getting off of the planet surfaces into orbit because then, once you were there, small amounts of energy can move you slowly between the planets. Well, this truism now is shown to be false. With the advent of very high velocity spaceships, the 30,000 feet per second necessary to reach orbit about the Earth from its surface is a small portion of the total velocity capability of the ship. Whereas previously, with chemical rockets, that 30,000 was a factor two or three times greater than the velocity necessary to leave orbit and go to another planet.

With such high velocities, what will be the travel times between bodies of interest in the solar system? Well, the planets inward from Saturn—Saturn's moons (including Titan, the largest moon in the solar system), Jupiter (including its cluster of 13 moons), Mars, Venus, Mercury, the asteroid belt, and of course, the moon—are all within travel times which will never exceed 100 days. In fact, among the planets of the inner solar system—Mercury, Venus and Mars—travel times will never exceed 30 days, and often they will be on the order of 10. The moon will be accessible in 4 to 8 hours, as opposed to the 2½ days Apollo crews

spent on their exploratory missions to the moon.

Calculations have shown that velocities from 50,000 feet per second to 500,000 feet per second will be adequate for the large scale commercial utilization of the solar system, provided they can be obtained at costs under \$10 per pound payload. The question now becomes what type of propulsion systems are necessary to achieve both the high velocity performance as well as the low cost?

#### PROPULSION SYSTEMS FOR FAST, ECONOMICAL SOLAR TRADE

**R**OCKET ENGINES, as I have said earlier, operate on the principle of exhausting a stream of hot gas through a

nozzle. In the case of the Space Shuttle's main engines, for example, liquid hydrogen fuel is burned with liquid oxygen oxidizer. Temperatures as high as 6,000 degrees Fahrenheit may be achieved in this combustion reaction, generating about 450 pounds of thrust from burning one pound of propellant mixture. To achieve these temperatures, however, requires burning a large amount of chemical rocket propellant. Compared pound for pound with nuclear processes, it is not very efficient. For example, nuclear fission reactions (the same principle which is used in atomic reactors and atomic bombs) release 17 million times more energy per equivalent weight than chemical fuels. The nearly 3,000 tons of propellant in a Saturn 5 rocket could be replaced by a few pounds of fissioning



GAS-CORE SPACESHIP OVER MERCURY—A five hundred ton spaceship, powered by gaseous-core nuclear engines and using water as a propellant, begins its descent from 70,000 feet over the surface of Mercury. Capable of carrying 200 tons from the moon to Mercury, the ship is calling at a mining site near the crater Hun Cal, on the 20th meridian of the planet. The open pit mine can be seen next to the crater, near processing plants and fuel storage. Artwork by David Egge; copyright Foundation, 1976.

uranium-235. One reason chemical rockets are so inefficient is that actually 99 percent of the fuel in a chemical rocket is used to lift the other fuel, not the payload. If we had a virtually zero-weight heat source to accelerate a jet of gas, we would be very much farther ahead towards economical space transportation systems. Nuclear energy is such a heat source. The difficulty with it and the reason it has not yet seen application in flight-weight rocket engines is simply that present designs of nuclear rocket engines are temperature-limited. Even though the energy from nuclear reactions is nearly free, in a weight sense, there are additional problems and penalties that a nuclear rocket must endure that a chemical rocket does not have. For example, heavy shielding is required because of the very large power release in the rocket engine. Also, the rocket quite often requires a larger physical structure and volume than an equivalent chemical engine. What this means is that nuclear rockets, while they start out to be potentially much more powerful than chemical engines of the same type and size, actually are only a little bit better, or perhaps no better at all in light of the performance penalties one must pay for shielding and structure. The best "solid core" nuclear engines may give 1,000 pounds of thrust from 1 pound of hydrogen propellant as it passes through the reactor. While experimental nuclear engines have been test-fired on the ground, none has ever been flown in space.

If a nuclear engine were run on nothing but fissioning uranium fuel, a very high performance would result. (About 1.7 million pounds thrust from 1 pound of fission fuel "burned.") Unfortunately, at the same time with high performance would come exceptionally high temperatures, so large that we have no idea how we would contain them. A solid core nuclear engine, such as the NERVA type which has been developed by NASA in the past decade, is actually only 1/10,000th as efficient as a pure fission engine. Yet, such seems to be the best that we can presently build with our technology.

One way around the temperature limitations of the solid core nuclear engine is the plasma, gas or gaseous-core nuclear reactor engine. Here, the fissioning fuel is no longer in the solid form (as it would be, say, in a power reactor), but rather in a gaseous form. Though this may sound a bit hair-

raising, it's actually a quite safe way to store fission fuel. A very, very small amount of critical mass would be necessary to start a reactor running at exceptionally high power levels. This cloud of fissioning fuel contained inside a quartz bottle or a quartz container of some type would transfer its energy not by conduction (that is, not in direct contact with the propellant that's being exhausted through the nozzle), but rather by radiation. Very intense light generated by the fissioning plasma of uranium would pass through the transparent quartz bottle and would encounter a propellant like hydrogen, ammonia, methane, or even ordinary water, which would be flowing past the walls of the container. The propellant would be heated to a very high temperature, probably in excess of ten to even twenty thousand degrees Fahrenheit, and then exhausted through the nozzle. In this way, the temperature limitations of the solid core reactor can be overcome substantially.

However, there still is a limitation on performance: an enormous amount of additional waste heat is generated in the fission reaction. While much of it appears as light, which via radiation can be transferred to the propellant, the significant fraction—generally around 10% of the total power of the engine—appears in the form of gamma rays, x-rays, and other particles. These particles pass through the water without hindrance, and finally deposit their own energy in the engine structure or the vehicle structure. If a very powerful engine is being employed in a spaceship, this can be a very serious limitation.

Power and energy are two terms which we must define and keep clearly separated in our mind. Energy is energy, but power is the rate at which energy is used. As an example, let us consider a large nuclear power plant providing electricity for a city. Most nuclear power plants are now built in the 1,000 megawatt range—that is, they produce one thousand million watts of electrical energy continuously. A jet engine on board a jumbo jetliner, when it is running at full power for take-off, can be generating 200 megawatts of power, but it's doing so for only a very short period of time. From the time standpoint, let us consider a naval gun on board a battleship. When that gun fires, its energy level is moderately larger, but its power is enormous. A naval gun can generate as much as

40,000 megawatts of power, but it can only do so for a few thousandths of a second. One of the first stage engines of the Saturn 5 moon rocket will also generate about 40,000 megawatts, but it can only do so for 2½ minutes before its propellant supply is exhausted. A gaseous fission engine, on the other hand, running on fissioning nuclear fuel, could conceivably generate thousands upon thousands of megawatts for hours on end. This is the major difference between a nuclear engine and a chemical one, and it is where the advantage of a gaseous-core engine lies. Gaseous engines have been designed with power levels up to many tens of thousands of megawatts, equivalent to a 16-inch naval gun or to a Saturn 5 moon rocket first-stage engine. But, unlike the naval gun, and unlike the chemical rocket engine on the Saturn 5, the gaseous or plasma-core engine could run for perhaps five or ten hours—nearly continuously. It would accelerate a spaceship to an exceptionally high velocity in excess of 500,000 feet per second, as an example, and would open the entire solar system to human exploration and exploitation on a time scale that is reasonable. However, if we consider a 40,000 megawatt gas-core engine, and we remember that as much as 10% of that power is deposited into the vehicle's structure and walls, we then begin to see where one of the major problems of the gas-core engine lies. Almost 4,000 megawatts of heat energy would be deposited into a vehicle structure perhaps only the size of a small jet airplane. At that level, the equivalent heat energy of 4 large nuclear power plants would be attempting to reduce a small spaceship which may only weigh a few hundred tons to a glowing cloud of gas. We will have to find a way to radiate that energy away from the ship. The way to do this, of course, is via a space radiator. If a radiator was running at 5,000 degrees Fahrenheit (about as hot as the inside of a Space Shuttle main engine), if could, over a nearly 12,000 foot area, radiate away 4,000 megawatts of energy. That would be a plane of metal, 110 feet on a side, glowing white-hot at 5,000 degrees. While such radiators can certainly be designed and built, they stagger the imagination.

Another way around the problem of internal energy release would be to find a means to cause the nuclear reaction to take place outside the vehicle and to shield the vehicle in some way from the

reaction so that waste heat does not penetrate the structure or the engine. An ingenious way to do this was found many years ago by Los Alamos scientist Stan Ulam. In 1955, he wrote a proposal, which is still secret, concerning a means to use nuclear explosives to propel a spacecraft off the planet and into orbit. The project name was ORION, and while such a vehicle was never built, many theoretical tests were undertaken over nearly a decade and small chemical test models were built and flown. Basically, the Orion system involves a "pusher plate" and a "momentum conditioner," plus the payload and a fuel storage container loaded with perhaps 200 small atomic bombs. The pusher plate would be as wide as a football field and weigh many hundred tons. The momentum conditioner would be a large shock absorber. And the payload would be perched on top. At intervals of about 1 second, a small nuclear bomb would be dropped through a hole in the pusher plate and detonated 100 meters off the surface of the plate. The resulting shock, which would be absorbed gradually by the shock absorber momentum conditioner, would impart a velocity to the payload. Now common sense tells us that the first detonation of an atomic bomb only a hundred meters away would completely obliterate your spaceship. Well, tests were run and theories were consulted and computer runs simulated the actual detonation of the bomb and it was found that in some cases no damage at all would be done to the pusher plate if the bomb were designed properly. Even though the Test Ban Treaty of the early 1960s put an end to the ORION project, a few people have continued to think about it. The main reason for this is that it affords a way of taking a very high-powered nuclear reaction, placing it outside a spaceship, and yet still getting nearly the full benefit from it.

**F**USION IS the process by which light atoms, such as hydrogen, helium, lithium, or boron, are joined or fused together to make heavier atoms. During most of these reactions, energy is released once the atoms fuse. But it takes a great deal of energy to get them to fuse in the first place because they tend to repel each other. Several schemes have been advanced for solving this repulsion problem, in getting the right combination of high temperature, high pressure, and a long enough duration of these two

factors to make fusion a practical source of power for the world today. One of the most encouraging and intriguing aspects of this work is the method of using lasers or beams of electrons to implode a very small pellet of fusion fuel, heat it to a hundred million degrees Centigrade, and increase its density enormously. The process works as follows: if one takes a very small pellet and illuminates it equally on all sides by a number of laser beams or electron beams, the outer surface of the pellet will heat very, very rapidly. It will quickly turn into a gas and explode. This exploding gas cloud will move off in all directions from the pellet and, because of Newton's third law which states that for every action there is an equal and opposite reaction, the center of the pellet (which has yet been untouched by the lasers) will be crushed by fantastically high pressures—equivalent to ten to the twelfth atmospheres, or more than 14 trillion pounds per square inch. Under these hellish conditions of high temperature and density, fusion can take place.

There is a limit to how small you can build an atomic bomb, which involves its critical mass and density. Since one of the main disadvantages to the ORION project was the immense size of the vehicle, some propulsion scientists began to consider the possibility of micro-explosions or micro-bombs weighing perhaps only a hundredth of a gram or so, which would be detonated by lasers. As many as 250 micro-explosions could occur per second. This means small spaceships weighing only a few tens or hundreds of tons could be made feasible with performances far in excess of anything that we can presently build. The difficulty with this particular propulsion system is that fusion has not really been achieved in what might be termed "a practical sense." We cannot yet build lasers powerful enough to implode these pellets to the densities that will be required. More importantly, we cannot build them powerful enough to heat the pellet, for 99% of the laser energy must go to heating and only 1% to implosion.

Considering this problem, I and other scientists have had thoughts concerning *fission* fuel. Fission is a well-known process. Basically what occurs is a large atom, such as uranium, is struck by a neutron. This neutron causes the already slightly unstable uranium atom to become highly unstable and to split into two pieces. In doing so, the atom emits

one, two, or three additional neutrons which then trigger fission reactions in additional uranium atoms. Since one neutron can release several neutrons out of the uranium nucleus, the process is known as a chain reaction. This is the mechanism by which both bombs and reactors work, though in nuclear power reactors the reaction is moderated or slowed down considerably. A certain minimum amount of material is needed to make a fission reaction work. This amount is known as the critical mass. In bombs, generally around 20 pounds of uranium or plutonium (another fission fuel) is surrounded by a sphere of explosive charges which, when detonated, reduce the volume of the uranium by a small percentage, generally around 1%. This reduction in volume and subsequent increase in density of the uranium creates a critical mass through which a chain reaction propagates tremendously fast. Since a great deal of energy is liberated during this chain reaction, the entire critical mass explodes with devastating force.

Recently, while looking at the equation for chain reactions and critical masses, I noticed again that the density of the fission fuel is the chief controlling force of the critical mass. In fact, the equation is: critical mass equals one divided by the density of the fission fuel *squared*. In other words, the higher the density gets, the less critical mass is required. Now the reason there is a limitation on the size of nuclear explosives is that there is a limitation on how high the density can be made to go. Chemical explosives are used to crush the fission fuel into a smaller volume. But they are relatively limited in the amount of pressure that they can generate on a very small amount of fuel. On the other hand, the densities in pellets of fusion fuel which are presently explored in laboratories can go as high as 1,000 grams per cubic centimeter, or an increase of more than 50 times in the density of naturally occurring uranium which weighs about 20 grams per cubic centimeter. This enormous increase means that with clever pellet design and the proper application of lasers or electron beams, fission fuel could be detonated by the lasers on a very small scale. Since the lasers increase the density so tremendously above simple chemical explosives, very small micro-explosions of fission fuel can now be achieved. Additionally, the amount of energy necessary to do the compression, as I



**MINING AN ASTEROID**—About 6,000 miles above the Pacific Ocean with the west coast of the United States in the background, a 3,000 ton nuclear-powered factory ship closes in on its target. Two project geologists are removing core samples of the carbonaceous chondrite asteroid, which is about 30 meters in diameter and weighs about 30,000 metric tons. It contains about \$200 million of useful material, which may be sold on Earth or employed in space construction and manufacturing. The factory ship is one hundred meters in diameter with solar furnaces at one end and rotating booms with living and working quarters at the other. Probably three hundred workers would be stationed at the site. Following capture of the asteroid, the ship will return to low orbit to avoid prolonged exposure to high radiation levels in the Van Allen belt. Artwork by David Egge; copyright Foundation, 1978.

have pointed out, is only a small fraction of the amount of energy necessary to heat a fusion pellet. In fact, lasers which are a hundred times smaller than those that are necessary for fusion could trigger fission micro-explosions. What all of this means should rapidly become clear. We could build engines now that would fire very tiny atomic explosions outside the engine as in the case of ORION, but at a fraction of the size. The would make feasible small economical and very, very fast spaceships for solar system commerce. This is the promise of what I call the "Pulsed Fission Engine".

The Pulsed Fission Engine opens up the possibilities of hybrid engines that would utilize both fission and fusion reactions to liberate energy. Conceivably, a very small pellet of

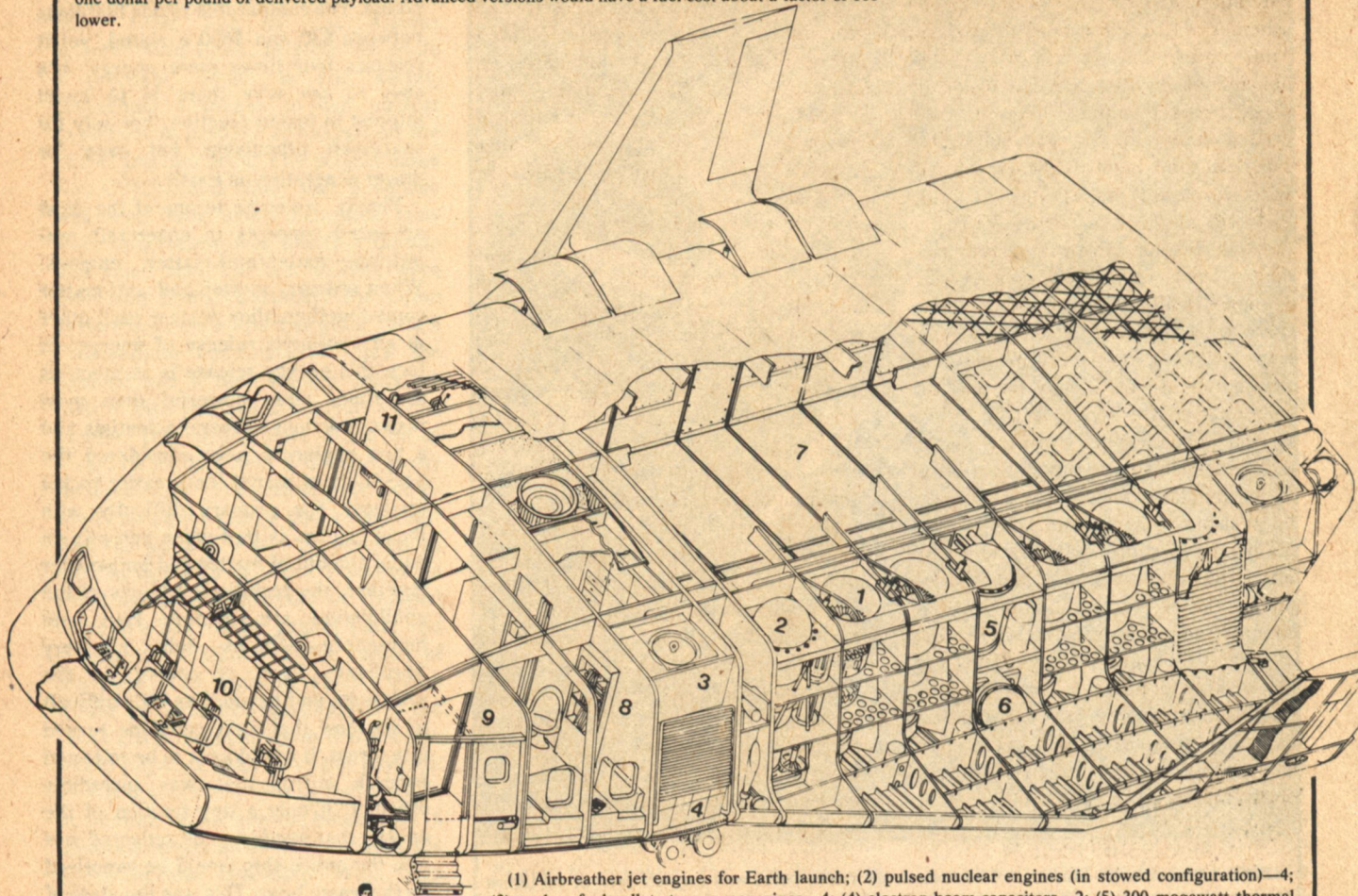
fissionable uranium or plutonium surrounded by a fusion fuel, like deuterium, tritium or even lithium or boron could be first detonated by a laser beam. The resulting fission-produced high temperatures in the millions of degrees Fahrenheit may trigger the fusion reaction to occur, liberating even more energy and making the engine even more efficient. Such designs, I believe, are in our immediate future. Ultimately, when the technology of lasers and electron beams has progressed sufficiently, it will become possible to trigger pure fusion reactions aboard spaceships. At that time, we can begin to seriously consider traveling very far in the solar system, beyond Jupiter and Saturn to Neptune, Uranus and Pluto, and even beyond to the stars. Fusion reactions are about 4 times more

powerful than fission reactions. More importantly, they are much cheaper. Fission fuel today costs about \$20,000 a pound. The comparable fusion fuel costs between \$30 and \$600 a pound, yet it releases four times more energy. It's easy to see why there is so much interest in fusion reaction, not only for spacecraft propulsion, but even for power generation on Earth.

Finally, we come to one of the most advanced concepts in spacecraft propulsion—matter/anti-matter engines. When ordinary matter and anti-matter come together, they destroy each other in an enormous release of energy. In fact, this energy release is as much as ten times more powerful than most fusion reactions. Several scientists and a few engineers have considered the possibility of matter/anti-matter rocket engines. The primary difficulty with these engines is that when you mix an equal amount of matter and anti-matter together, the resulting products of the annihilation are gamma rays and high-energy photons—light. It is very "brilliant" light, of course, in the ultraviolet and beyond, and it's difficult to see how that light could be turned into thrust. It would have to be reflected from a mirror that was incredibly efficient. If only a tiny fraction of the energy that *needed* to be reflected was *not*, the entire ship would be vaporized by the waste heat. This was the state of affairs until a few years ago. Scientists who considered the problem dismissed matter/anti-matter propulsion as a pipe dream and almost delighted in showing just how infeasible it was. However, in 1975, Dr. Robert Forward of the Hughes Research Laboratories in Malibu, California, pointed out that you do not need to mix matter and anti-matter in equal quantities. Ideally, you dilute the reaction by mixing a very large amount of matter and a very small amount of anti-matter. Dr. Forward conceived a starship probe based around such an engine which would use 40 parts matter for every 1 part anti-matter. At the same time, it would mean as much as 700 times more performance than the gas-core and pulsed fission engines that we have been talking about. Further dilutions are feasible, leading to small engines which could be used on board small, fast spaceships.

The two major questions in the use of matter/anti-matter propulsion are: 1) can we generate enough anti-matter? and 2) how can we contain it once we generate it? At the rate that we can

**SOLAR SYSTEM SPACESHIP**—A cutaway view of an early generation solar system spaceship. Massing 167,000 pounds at Earth launch, it would be able to deliver 25,000 pounds to the moon for a fuel cost under one dollar per pound of delivered payload. Advanced versions would have a fuel cost about a factor of 100 lower.



(1) Airbreather jet engines for Earth launch; (2) pulsed nuclear engines (in stowed configuration)—4; (3) nuclear fuel pellet storage magazines—4; (4) electron beam capacitors—2; (5) 300 megawatt thermal reactors for airbreathing engines—2; (6) attitude control momentum wheels—2; (7) cargo bay (16' wide x 28' long x 9' high); (8) wardroom and galley; (9) forward airlock; (10) flight deck; (11) life support.

The vehicle propellant is ordinary water stored in the wet wing and the airframe structure surrounding the engines. (For the technically-minded, the engines operate at a power level of 1,800 megawatts each, with 50,000 pounds force of thrust and a specific impulse of 1,660 seconds. At constant power they can be throttled down to a few thousand pounds of thrust, with a specific impulse of 20,000 seconds. The airbreathing engines are rated at 25,000 pounds vertical thrust.)

generate anti-matter in particle accelerators which are used in the United States and abroad, it would take us one hundred million years to accumulate just one kilogram of anti-matter. This would seem like an enormous stumbling block. However, let me tell you a probably apocryphal tale from the late 1930s, just before the Manhattan Atom Bomb project began. At that time, it was thought that there was no feasible way to extract the uranium-235 isotope from the naturally-occurring uranium-238. The uranium-235 was present in less than 1% of the naturally-occurring uranium in the world, and there was no chemical way that it could be extracted. The only way seemed some process like mass-spectroscopy. The difficulty with this is that mass spectrographs were terribly slow—they produced only a few

millionths of a gram for every day that they ran. A professor lecturing to a class on physics at Columbia University is alleged to have made that statement to his students as justification and explanation for the fact that not a sufficient amount of uranium-235 could be accumulated ever to be used in either power reactors or in weapons. By saying that it takes one mass spectrometer a million years to accumulate enough fuel for a critical mass, he was overlooking a simple solution to the problem which a student pointed out to him from the classroom floor. "Why not build a million mass spectrometers, and in a year you would have enough fission fuel?" While isotope separation was ultimately achieved in a different way, the lesson is clear. Research instruments cannot be generalized to indus-

trial-scale processes. The same sort of logic holds true with particle accelerators. They were designed to explore fundamental particles, such as atoms and sub-atomic structures, and not to produce anti-matter (of which they've produced only a very few particles so far). However, particle physicists in the United States believe that optimization of these accelerators could be done. We could build more of them. We could bring them up to higher powers and do other engineering work which would allow us to produce as much as one or two kilograms of anti-matter annually. That would be enough to transport 25 million pounds (or 100,000 people) to the moon every year.

The second most important question when it comes to dealing with anti-matter is: How can you store it if it



annihilates itself upon coming in contact with regular matter? Various scientists have taken this problem under consideration and they have produced some schemes which could lead to passive, safe confinement of the very small amounts of anti-matter which would be used in rocket engines. Without elaborating on the schemes here, suffice it to say that they involve charging small particles of anti-matter and levitating them via magnetic or electric fields, or in other fashion preventing the anti-matter from coming into contact with container walls. On the other hand, there are a few scientists who say that since we don't know very much about anti-matter as yet, it may be that the colder anti-matter is, the less likely it is to react quickly with ordinary matter and, indeed, there seems to be a bit of logic behind this. In fact, it may actually be possible to come into contact with ordinary anti-matter at room temperature without a complete annihilation taking place—the annihilation will be complete only at temperatures in excess of several thousand degrees. This may be wishful thinking on the part of propulsion scientists, but I can hardly hope that this is the case. It would make engine design very simple and storage of anti-matter no longer a problem.

### SPACESHIP DESIGN

**I**N THE last 20 years of solar system exploration, spaceships have never been built. A great many spacecraft and space capsules and launch vehicles have been designed and flown. But the true spaceship has eluded our grasp. We have already seen the reason for this. Inadequate propulsion systems have been responsible for the designs that have been flown by the United States and other space-faring nations up until this time. Additionally, space programs have been very mission-oriented. This is to say the design of hardware for a specific mission has not even been attempted until that mission was very carefully defined. While this may have served our purpose in the early years of space exploration, it cannot do so in the future. We must begin to think about spaceships as transport craft or transport airplanes. An airplane is not designed around a particular mission as much as it is designed around a specific range.

While aircraft are designed around range requirements, spacecraft will be

designed around velocity requirements. We have already seen that velocities of hundreds of thousands of feet per second are necessary for quick transits throughout the solar system. Without these velocities, reasonable space exploitation may be indefinitely postponed. The true spaceship, one that will roam at will throughout the solar system, faces a variety of different missions.

What are some of the features of the true spaceship? Beyond having adequate propulsion systems, I believe it is absolutely necessary that the ships be easily recoverable and reusable, much in the same fashion as commercial airliners. Second, the ship should operate on the lowest cost propellant as well as the lowest cost fuel available. Let us define these terms. The fuel in the case of the nuclear-powered spacecraft is the nuclear fission fuel. Generally, less than a pound to a few dozen pounds will be expended during any high-velocity mission. The propellant is additional mass which does not take part in the nuclear reaction, but which is heated by the nuclear reaction to a high temperature and exhausted through a nozzle. Often hydrogen is a key candidate as a propellant for nuclear rockets. The low molecular weight of hydrogen produces higher performance than other propellants. This is true, however, only at relatively low temperatures. When one exceeds ten to eleven thousand degrees Fahrenheit, hydrogen loses much of its advantage. Other propellants should be considered. Among the ones that have been are ammonia, methane, and ordinary water. Water seems to be the ideal candidate. It is abundant on Earth, and available elsewhere in the solar system, including on the surface of Mars (as the Viking probes have shown) and out on the larger satellites of Jupiter. Water is easy to handle and will provide shielding mass for the spacecraft, both from cosmic rays and solar flares, and from its own engines.

Besides reusability and the use of low-cost propellant and fuels, an advanced solar system spaceship should be as self-contained as possible. It will spend fairly long periods of time, weeks or months, away from its home base. Its crew will have to see to its operation and maintenance during these missions. The ship will have to operate from unprepared landing sites and must be able to serve as a base from which exploration of a planetary surface can

be conducted.

While the true spaceship may have short wings for entry into atmospheres like Earth, it will not be a true airplane capable of flying long distances. Rather it will be a vertical takeoff and landing device. Equipped with ordinary jet turbofan engines, it will be able to lift off from existing air fields and heliports. At a predetermined altitude, somewhere between ten and thirty thousand feet, its nuclear engines will be deployed and lit, carrying it into orbit or onto a trajectory for another world. Use of air-breathing engines eliminates the possibility of any nuclear contamination of the Earth's surface. Also, air-breathing engines are quieter than rocket engines of the same thrust. This means that the nuclear-powered spacecraft could operate fairly close to city centers.

Preliminary calculations indicate that using a pulse fission nuclear engine, a person with proper instruments could be standing 10,000 feet below the engine and barely notice radiation above background levels. While waste products are deposited in the atmosphere, these are so miniscule that exposure to them could hardly be considered a threat. Further research, of course, is necessary to analyze all potential hazards from the nuclear engines of the reusable single-stage spaceship. But by taking certain precautions in its operation, including ignition at high altitudes or ignition over the ocean, any potential hazard can be minimized to a tolerable level.

Without relating anecdotes about the basic competence of government programs versus private industry programs, let me say that I believe industry-based development could produce this vehicle for a fraction of the projected governmental cost. Merely because this is a fast spaceship with high performance and almost "Buck Rogers" characteristics does not mean that it will cost tens of billions of dollars to build. First, let us consider the engines. They are extremely high-performance nuclear pulse engines. There is reason to believe that the technology which we have in hand, or which will be developed in the next five years, could realize these engines for us. The principle of fission is well-understood. The ignition systems, whether they be lasers or electron beams, are also quite well-understood. The engine seems to be a mechanical design problem, not a pure science

problem as may be the case in a pulsed fusion engine. Air-breathing jet engines for the nuclear spacecraft are no development problem whatsoever. Plenty of designs for vertical take-off jet engines have been brought forward in the past few years and several have been built. The structure and operation of the spaceship is certainly no more complex than the construction of the Space Shuttle, or even of a transport airplane. If anyone thinks that rockets are inherently more complex than airplanes, they should take a look inside a Thor-Delta launch vehicle and compare it to the complexity of a DC-8. The DC-8 is clearly an order of magnitude more complex. Yet we have to wonder at the fact that a few people can refuel it and turn it around at a destination and fly it a thousand miles to another airport with passengers on board—and they can do it several times a day.

The main problem with aerospace professionals today is that they have been conditioned to think in what has been termed an "ammunition philosophy." Rockets have been outgrowths of missiles ever since World War II, and with the exception of the Saturn series of NASA moon rockets and the Space Shuttle, no rocket has ever been built exclusively for scientific or commercial space exploration. Add to this the inherent inefficiencies of chemical rocket engines and we have the present state of affairs. Building a transport airplane or a transport spaceship is a fundamentally different problem than building another large piece of ammunition.

## SOLAR SYSTEM TRANSPORTATION

**T**ECHNOLOGICAL civilizations are built on the foundations of energy, resources, transportation, and communication. The solar system spaceship has implications for all of these areas. Solar system spaceships would allow very low-cost construction of satellite solar power stations in Earth orbit which could beam energy back to the surface of the planet via microwaves or lasers. At the present time, these satellite solar power stations are at the borders of economic feasibility, costing around \$2,000 per kilowatt hour of installed capacity. This compares with \$1,200 per kilowatt hour for most new nuclear plants. A very significant portion of the cost (often exceeding 70%) of the satellite solar power stations is transportation-related.

Solar system spaceships could cut the cost of a pound delivered to geosynchronous orbit about the Earth by as much as a factor of 1,000. Indeed, it makes more sense to spend the money that would normally go to pay the transportation bill to build satellite solar power stations on the development of new low-cost propulsion systems which would make solar system spaceships feasible.

During the next few decades, the prices of many raw materials will continue to escalate and ultimately some of them will no longer be available at almost any price. This will be the situation if we restrict the scope of our industrial civilization to the surface of this planet. However, using low-cost solar system spaceships, we can begin to exploit the material resources of the planets and the asteroids. A single one-hundred meter diameter nickel-iron asteroid brought to Earth orbit would have a value of more than 1.5 billion dollars. It could yield 3.8 million tons of iron, 360,000 tons of nickel, and even 84 tons of platinum. It would supply all of the nickel consumption requirements of the United States for a full year. Several schemes have been brought forward to consider how such asteroids might be moved. Most of them are either impractical or would require very long periods of time. For example, the use of the mass driver engine which has been discussed in relation to the O'Neill space colony concept would mean that 3-5 years would pass merely to go out and get the asteroid, and another 3-5 years to return it to low Earth orbit. This is an intolerable financial burden. No one can wait ten years for the maturation of a project which would yield only 1.5 billion dollars of economic return. On the other hand, using the engines developed for fast solar system spaceships, asteroids could either be mined where they are, or could be transported in a matter of a few months to Earth orbit. In either case, the solar system spaceship makes feasible large-scale asteroid mining by non-governmental entities. While I can see that there might be a possibility of massive international projects to mine asteroids, there is little precedent for such activities on the ground. If billions of dollars are to be spent to mine these asteroids, the question of distribution of their fundamental resources and ownership of those resources comes into debate. I feel that smaller corporations, and existing industrial concerns will be

able to execute financially viable mining activities on asteroids by the use of solar system spaceships. The flexibility of solar system spaceships will allow a healthy, free society entrepreneurial opportunities in space.

Advanced propulsion systems and reusable spaceships will also allow the deployment of large communications systems in Earth orbit. Using massive antennas and large amounts of power, such systems will permit the use of hand-held personal communicators anywhere on the surface of the Earth. This would allow Earth societies, in general, to have nearly unrestricted access to information. It will also permit competition between various communication and information and data processing services, leading generally to an improvement in the quality of life.

Finally, the propulsion systems of solar system spaceships may allow very low-cost travel on earth. Operating on water propellant, a gas-core nuclear reactor rocket engine in a spaceship transporter could carry freight and passengers around the world for less than one cent per ton-mile. Present subsonic jets average 6-10 cents per ton-mile. Additionally, these spaceships would be ballistically operated vehicles and consequently no point on Earth would be more than 45 minutes from any other point. While exploration and exploitation of the solar system is tremendously important, it may be that the real use of the domesticated spaceship will be as a passenger transporter on Earth.

I believe that the commercial utilization of space will require versatile, powerful, independent spaceships. Without them, the cost of doing business and thus the cost of surviving in space will be excessive. With them, we can avoid what Isaac Asimov has called the "slow withering on the planetary vine."

## ACKNOWLEDGEMENT

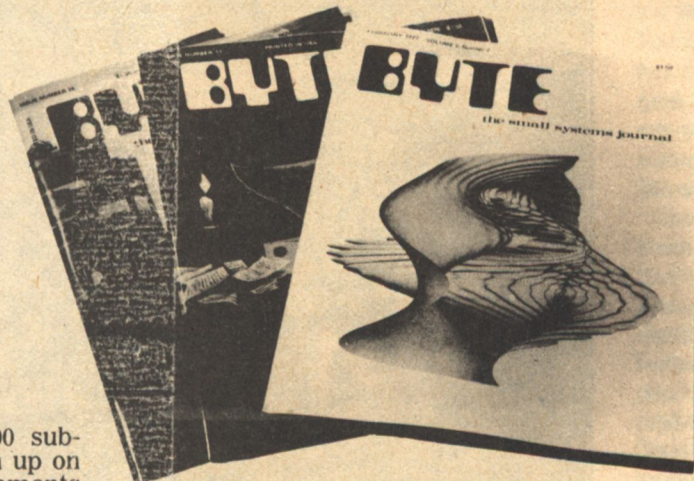
The author owes a great debt to many sources of information and concepts, but none greater than to Mr. Maxwell W. Hunter, II, and his illuminating little book *Thrust Into Space* (Holt, Rinehart, Winston 1966). Interested readers are referred to that work for far more comprehensive discussions of solar system spaceships and the role that propulsion plays in space exploration and exploitation.

—G—

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# Star Trek Alive!

David Gerrold

*Captain Kirk, Doc McCoy,  
Lieutenant Uhura, and Mr. Chekov  
will all be reporting for duty  
aboard the Enterprise.*

**P**ARAMOUNT PICTURES held a lavish press conference the last week in March to announce officially that the on-again off-again *Star Trek* movie is definitely on.

In attendance at the press conference were Gene Roddenberry, creator and producer of the 1966-69 television series and all of the original cast: William Shatner, Leonard Nimoy, De Forrest Kelly, James Doohan, Nichelle Nichols, George Takei, Walter Koenig, Majel Barrett, and even Grace Lee Whitney, who played Yeoman Janice Rand in the first season of the series. Also in attendance were Charles Bludhorn, chairman of the board of Paramount's parent company, Gulf and Western; and Barry Diller, chairman of the board of Paramount Pictures. Michael D. Eisner, president of Paramount pictures chaired the session, making the formal announcement.

Eisner began by tracing *Star Trek's* history as a television series. He gave considerable credit to the fans of the show, citing their efforts to keep it on the air for a third season, as well as the subsequent development of the *Star Trek* phenomenon. Eisner cited a long list of current statistics to demonstrate his contention that *Star Trek* is the most popular television series ever made. The history of the show, the enthusiasm of the fans, and *Star Trek's* worldwide popularity were the factors that convinced Paramount that a *Star Trek* movie would be economically viable. Also mentioned were the more than 70 companies currently involved in *Star Trek* merchandising.

The *Star Trek* movie is budgeted at



\$15,000,000—more money than was spent in making the original 79 episodes. Oscar-winner Robert Wise (*The Day the Earth Stood Still*, *The Andromeda Strain*) is signed to direct, and Jerry Goldsmith (*Papillon*, *The Omen*) will compose an original score for the picture. The entire original cast will be in the film, plus newcomer Persis Khambata, a former Miss India and winner of the Indian equivalent of the Oscar for Best Actress. The *Star Trek* movie will be Ms. Khambata's American film debut.

The script for the picture is based on a story by Alan Dean Foster. The screenplay was written by Gene Roddenberry and Harold Livingston. Dennis Lynton Clark is currently doing a "polish" on the script, which was originally set as the two-hour premiere

episode of a new *Star Trek* series, but is now being scaled up for the film. Because Leonard Nimoy had not been available for the TV series due to other commitments, the *Enterprise* was going to have a new Vulcan science officer, a young full-blooded Vulcan named Xon, to be played by David Gautreaux. Gautreaux was not in attendance at the press conference, nor was there any mention of him in the press releases handed out—apparently, Lieutenant Xon has been transferred off the *Enterprise* now that Spock is returning to active duty.

Both Nimoy and Shatner expressed enthusiasm for the project. When asked why it had taken so long to secure his services for the film, Nimoy first responded that it was because the mail service was so slow "between here and

Vulcan." He later noted that it was as much a question of prior commitments as anything else, but that he did not want to see *Star Trek* without Spock or with someone else playing the role. Shatner also noted that he too had had a "long and complicated relationship" with Paramount before finally signing his contract.

Although no details about the plot of the film were revealed, Nurse Chapel has become a fully-licensed Doctor, and Ensign Chekov has been promoted to Chief of Security. In an earlier version, Kirk was set to be an Admiral and Spock had left Starfleet to return to Vulcan. Whether these latter changes will remain in the story is unknown.

Special effects for the film will be handled by Robert Able—who is best known in the industry for his television commercials incorporating spectacular visuals. Eisner stated that the *Star Trek* film will be using some new technologies that have only been developed in the past three years. Douglas Trumbull was also mentioned as having provided significant aid in helping to set up the *Star Trek* special effects team. (Of particular interest to science fiction fans is the fact that Rick Sternbach, one of *Analog's* top cover artists, will be doing renderings for the Art Director of the picture. Sternbach's delighted comment was: "These people know what they're talking about. There's a three-story tokamak generator in the engine room!")

Sets for the new *Enterprise*, an updated version of the familiar twin-celled ship, have already been built. Constructed for the projected TV series, they are now being scaled up and refitted for the more revealing eye of the film cameras. The new *Enterprise* sprawls across four Paramount soundstages, which are under constant guard. No visitors are allowed on the stages. (Those who have been on the stages report that the sets are nothing short of magnificent; the new bridge is similar to the old one, but far more impressive in its fittings. The new engine room is a totally different design, however.)

The film will be shot in 35mm, with some special effects shot in 70mm. It will be released in 70mm in June of 1979. A special sound system, developed by Douglas Trumbull at Future General Corporation will be used in conjunction with the 70mm release. Trumbull's sound system, developed for use with his Super-70 film process, is capable of cleaner and more accurate

reproduction of multi-channel sound than even the Dolby system that was used with *Star Wars* and *Close Encounters of the Third Kind*. It is also claimed to have a better bass response than Sensurround.

The science fiction community was well represented in the audience of this "media event." Bjo Trimble, William Rotsler and Sharman DiVono, Forrest J. Ackerman, Bill and Beverly Warren, Don Glut, David Houston, and others were in attendance, representing *Science Fantasy Film Classics*, *Famous Monster*, *Cinefantastique*, and *Starlog*. *Galileo's* reporter was David Gerrold.

The members of the cast and observers in the audience as well all seemed to feel that *this time* Paramount really means it. There have been a great many steps in the development of the *Star Trek* revival, but the signing of such names as Robert Wise and Jerry Goldsmith seems to indicate a major commitment. The scale of the press conference (with a catered breakfast from Chasen's) also marked Paramount's commitment to the project. Even so, one fannish observer was heard to remark, "It all sounds terrific, but we've been disappointed so many times, I'm not going to believe it until I see it on the screen."

—G—

### *Earthport*

[Continued from page 15]

peting launch services at Earthport would tend to take away from satellites that would otherwise be launched by their vehicles. We think this is not a major stumbling block, for several reasons. I think the most compelling argument is that the more space activity there is by other nations, the more Congress will be disposed to put funds into NASA. In the long term, I think NASA will greatly benefit by having access to an international equatorial launch site which it presently does not have. And if large-scale space industrialization does get underway, NASA may very well be interested in having access to an equatorial launching site.

**Galileo:** Undoubtedly, you know about Gerard K. O'Neill's efforts to establish space colonies. He is apparently the best-known of the foreseeable-future space theorists, due to two recent books. Have you contacted his group? And has there been any response from Mr. O'Neill to the Earthport Project?

**Frazier:** Professor O'Neill has been in support of the Earthport Project from the beginning. He was instrumental in lining up the participation of Dr. Frank Malina, who is the co-founder of the Jet Propulsion Laboratories and is presently a member of our advisory board. Dr. O'Neill has followed the project from its beginning and believes that it would be a constructive aspect of the commercialization of outer space.

**Galileo:** Then there are other groups, such as the L-5 Society, The Foundation in Minnesota, Otrag in West Germany, which have been involved in associated areas of study and development. Have any of these groups contributed to the development of the Earthport Project?

**Frazier:** All of them have contributed, but finances of the L-5 Society and The Foundation are of a shoestring nature and their contributions have come in the form of assistance in preparing our materials. The Otrag Company in West Germany has also been in a tough financial condition, but they have indicated an interest in contributing financially to the Earthport Project. And we have just received a letter from Dr. Kurt Diebus, their chairman, asking about joining the advisory board.

**Galileo:** Finally, what problems—either political or technical—do you foresee for Earthport?

**Frazier:** The technical problems will be investigated during the course of our study. We anticipate that some transportation problems will arise in shipping boosters to the site. It may be that a free port or free trade zone environment would be congenial enough for manufacturers so that the actual construction of spacecraft would take place at the site. The political problems are, as indicated earlier, finding a country which would not be inclined to nationalize or expropriate the launching area. There might also be a potential problem with certain countries of an ideology that is not compatible with this idea of the peaceful commercial development of space. It might be that those countries would desire to stop Earthport. But we suspect that there will be a broad base of support—not just on the part of aerospace corporations, but on the part of those developing countries that wish to reap some of the benefits of space and that would be able to use the Earthport leasing income, leasing revenues, to further their own national space efforts.

—G—

# Far From The Madding Crowd

Kevin O'Donnell, Jr.

**T**HEORETICAL SCIENTISTS burn out quick and young. The Muse hits them early in life, then darts away, leaving them to be consumed by the fires of their insights. They puzzle them out, publish them, reap their esoteric honors...and for the rest of their long, academic lives, while waiting for Her to return (as if they didn't know that Her policy is one Visit per customer), they support themselves by explaining to the next generation just what phenomena their own generation managed to compress into equation form.

Rodney Liu, a young physicist two years away from his Cal Tech Ph.D., was acutely aware of the dry course his career could take. A bright young man with An Idea, he did not intend to see it buried in an obscure journal. In the entire world, there were at most a handful of people who could understand his theory; their applause would be faint, indeed. It would be decades before the general public began to appreciate him, and probably even longer before someone would turn his theory into practice.

Rodney wanted more, quicker. He had a list, a carbon copy of which he kept in the left-hand pocket of his lab coat for on-the-job encouragement. When constants decayed and his spirits sank, he'd reverently unfold it, and find himself as refreshed as if he'd taken a quick nap and a shower.

The list read, in part:

1. \$, \$, and more \$.
2. Beverly Hills Estate.
3. Rolls & Jag.
4. Women.
5. Syndicated column?
6. Johnny Carson!

Not for him the arid rustle of scholarly papers: he intended to milk The Idea for all it was worth. Rather than breathe chalk dust till an entrepreneurial engineer transformed his elegant equations into hardware, he'd do it himself. Afterward he could patent it, arrange financial backing (shouldn't be hard, not for a gem like his), and put it into production. That way, he would gain not only the Nobel Prize, but the Presidency and Board Chairmanship (not to mention majority ownership) of a company that would prove *extremely* profitable.

Straightening up from his workbench, he rubbed the small

of his back, and brushed his long black hair over his ears. With two more connections, the time machine would be done. It would be a crude little device, hardly representative of more than a fraction of The Idea's potential, but...he took off his glasses and wiped them, unwilling to admit, even to himself, that his excitement was almost uncontainable.

He'd have a ten-acre office with a putting green in one corner. A tall blonde for a receptionist, and a taller redhead for an Executive Assistant. A husky chauffeur for his Rolls, and...

Licking his lips, he bent over the tangle of wires. This one here, just twist it into place, the soldering can wait. Now the last, damn, it's stuck, well, ah, free! tug it gently, slip it into—

A thunderstorm of applause broke out behind his back. He whirled, dropping his pliers, to find that his entire basement was jammed with cheering, clapping people. Where had they come from? The door had been locked—he tried to see if it still was, but his vision was blocked by their beaming, bobbing faces.

Hundreds of them—all races, all ages, all sexes—most with odd clothing, holding strange devices that flashed clear, strong light at the press of a finger—cameras, sure, maybe a new model of Instamatic just came out, and now they were rumbling forward, shouting at him, their hands, a sea of hands and fingers and knuckles and nails, reaching for him, patting him, clapping him on the shoulders—what's this? they're tearing at his clothes, they want souvenirs, he's starting to scream—

A tall, long-haired Asian male, whose aviator sunglasses didn't mask the black pouches under his dark eyes, popped out of the crowd and pushed him to one side. "You fool!" he hissed as he reached for the prototype. "Don't you ever think of the consequences?" Grabbing a handful of wires, he ripped them loose.

And disappeared.

As did the mob.

Rodney sagged back against his workbench, breathing heavily, bruised all over his body. He blinked. He took off his glasses and rubbed his eyes. What had happened?

Putting his fine, keen mind to work, he rapidly analyzed the situation. He had completed his machine. Out of nowhere had

materialized a huge throng of reporters, photographers, and—not out of nowhere. Out of the future. Of course. This was a news event, man's first successful manipulation of the most mysterious force of all: Time. So all those media people had—and yes, of course, the exhausted prototype saboteur had been himself, returning through time to destroy the project because...

Rodney Liu's eyes widened in sorrowful comprehension. Inventing a time machine would make him famous—so

famous that news reporters from all the subsequent centuries would want to interview him, analyze him, occupy all his days and nights for the rest of his life...and his own fertile brain had given them the means with which to do so.

No, no, no. That would be intolerable. If they weren't going to accord him the deference he deserved...what was the point of being rich, powerful, and famous, if you didn't have time to yourself to satisfy your appetites?

[Continued on page 79]



# The Silver Man

John Kessel

**P**ETER WHARTON FIRST SAW the silver man an hour after the argument with his wife, as he walked musing through the evening-deserted halls of the physics building on the way to his office. He turned the corner into the narrow alley that led to his door, and lifting his head, saw the figure at the far end of the corridor, in front of the double doors of the laser laboratory. At first Peter thought it was a bright light, but immediately it resolved itself into a naked human figure, a man half-crouched beside the wall. He was not small or large, and his surface (you could not call it his *skin*, Peter realized) gleamed with reflections of the surroundings: the straight-lined corridor, the lavender doors with tall, narrow windows, the overhead strip of fluorescent light—all twisted bizarrely, all flashing kaleidoscopically from the curves of the man's shoulders and calves and chest and hairless, mercury-smooth skull. Before Peter could move closer, the silver man turned and vanished through the lab doors. The last glimpse Peter caught was of his own image, twisted and tiny, like a dark glass toy, reflected in the man's retreating back.

Peter ran after him down the corridor. The lab doors were unlocked; he rushed inside, but there was nothing. One of Petroski's experiments crouched on the long workbench, but aside from the clutter of stools and metal wastebaskets and a large desk covered with legal-size notepaper and cigar butts, the room was empty. The windows on the other side of the room were locked; it was the third floor, anyway. Peter did not like prowling around his colleague's lab. He felt an average man's disquiet in a dark, deserted building, and the whole thing had been a matter of a second or so, a flash in the distance that might even have been some queer, persistent glint on his glasses from the overheads. His mind had been elsewhere.

Wharton sat in his office and tried to forget about unsettling optical illusions and his teaching and his wife and the things she wanted that he had never considered as possibilities himself. The situation was more strained than he realized if he transmuted reflections and fatigue into the image of a man made of silver. A trick of the senses. He took the printout he had left on the desk in the afternoon and went over the results again. He reread the letters from the machinist on the progress of his cylinder and wondered if there might be a

more efficient design for a gravity wave detector. What he had based on approximations, guesses on the magnitude and nature of the phenomenon he was trying to detect. Suppose gravity didn't propagate that way at all? He'd look pretty foolish listening for something that wasn't there. He'd have a great time with the department and the NSF then, and though he was a politician, no surplus of politics would make up for a deficiency in theory. It just didn't work that way.

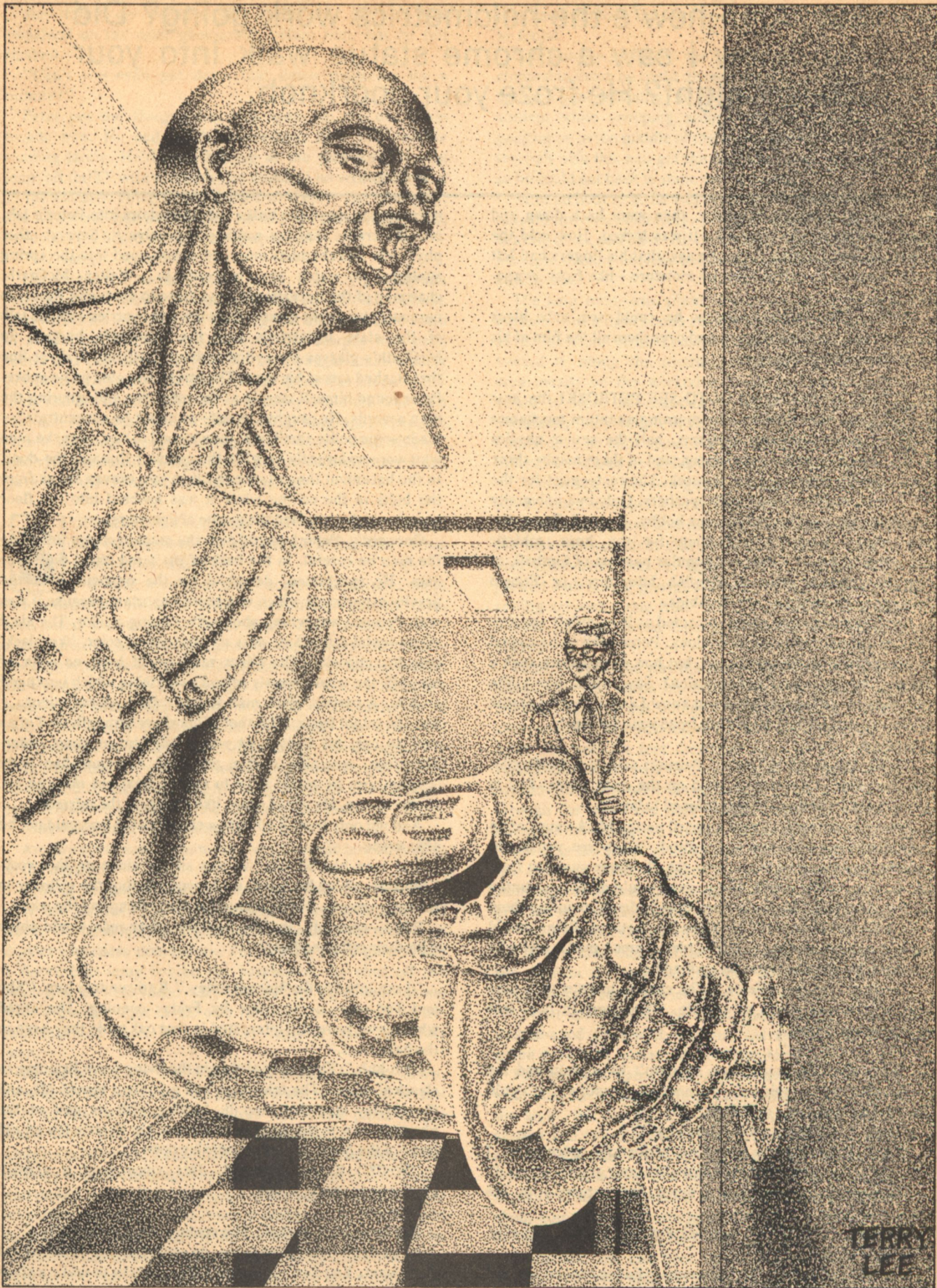
Wharton had just been made a full professor the previous year, and for a time had seemed to be on that fair road to becoming the department's golden boy. A large NSF grant at 31. A successful series of experiments with the much older and respected Letnov at Princeton. An entertaining wife. But complications had developed over the last six months—adjustments of the theory, an embarrassing realization that his first design for the detector had been a simple-minded false start. Difficulties at home: he had thought Kathryn was pleased with her role and the direction his career was taking, but in reality he had been projecting his own feelings onto her quite distinct personality. Even his winning nature, which had enabled him to advance so rapidly in the petty morass of department politics, was, he realized, beginning to fray around the edges.

Peter could take only so much talk. How many times could you explain something to some inept administrator? What do you do with a department full of energetic adolescents who would naturally prefer to have the money themselves, to spend on their own experiments? Peter could understand how they felt. There were professorships on the line, higher paying positions. Even fame, in a field where you'd better get your work done before you were thirty-five, or else resign yourself to a career spent in schooling undergraduates for *their* attempts at the brass ring.

He doodled various diagrams on the yellow notepad centered in the circle of light from the desk lamp. He tried a few order-of-magnitude calculations, ones he'd done since the beginning, over and over again, long since drained of their reassurance. A silver man. He looked at the clock on the filing cabinet. 12:10. He wondered what Kathy was doing, whether she had gone to bed.

When he left the office after one, the building was as deserted and quiet as it had been when he'd entered. He





TERRY  
LEE

# Say, Alan, how's the holometrics work going? Did you know I saw a chrome statue walk into your lab last night? He froze your doorknob.

hesitated after locking the door, then went back down and tried the door of the laser lab. It was locked. How cold the doorknob felt! Looking down, he saw that his fingers had left little prints on it, surrounded by moisture—like frost, evaporating.

Through the narrow window he could see only black benches and hunched shapes, and over them all the film of his reflection in the dark glass.

**P**ETER DROPPED IN TO SEE PETROSKI the next day after finishing the morning quantum mechanics seminar—twelve students, half the senior physics majors in the department, and of them maybe three were capable of doing creative work. The rest—grist for the Ph.D. mill, mathematical bottle-washers. Only in a university could you get paid for doing your hobby. It struck Peter that this was a perfect justification for the huge athletic department: it was either the popular pastime of football, or the less popular ones of English Literature, or French History, or Stellar Interiors. Hobbies.

Petroski was curt as usual; he acted as if he didn't approve of inter-specialization conversations. Peter tried to be casual in his mention of the silver man, but how do you work such a fantasy into a casual conversation? Say, Alan, how's the holometrics work going? Did you know I saw a chrome statue walk into your lab last night? He froze your doorknob.

Absurd.

"Well, Peter, I'll tell you," Petroski said in his infantile, mocking tone. "I'm not so good on the color silver. Red is more in the laser line." Peter refused to laugh.

Petroski nervously tapped a pencil on the black vanes of an amplifier. Something was on his mind. "Of course, you invent a nice silver skin cream and you can eliminate sunburn from the beaches of the world. Then again, you'd eliminate suntan with it. And you'd freeze some people to death, painting them with a perfect reflector." He smiled and stared. Peter should have known better than to talk to him, a smug mediocrity who wouldn't let any weakness he spotted be.

"Let's cut the crap, Peter." The change in Petroski's tone was sudden and sharp as a knife. "You were in here last night, weren't you?"

"Ah... well, yes."

"I thought as much. You shouldn't have disturbed my desk—that was stupid. If you needed something, it could have waited until this morning."

"Look," said Peter, "I just told you—"

"Sure. I didn't know you went in for idle speculation. I thought you dealt in hard realities—like your gravity waves."

Wharton forced his anger down and returned to his basement lab.

He was *sure* he hadn't touched Petroski's desk. Someone else must have been there.

Later that afternoon the aluminum cylinder arrived and the workmen maneuvered the truck around the parking lot,

preparing to move the bulky rod downstairs into Peter's lab, into the cradle that lay waiting to receive it. Several other physicists and chemists emerged squint-eyed into the spring sunlight to watch the proceedings. Walter McGrath, chairman of the department, was there to chat with Peter, to nervously break the ground for a few new worries with his talk of the state legislature and the university budget. In McGrath's glasses the cylinder drew itself into a silver line that slashed across his eyes. The image wagged as he spoke. Peter found himself staring at the reflection and ignoring the man's words. He caught himself—couldn't he concentrate?—made some polite small talk, then turned to fuss over the men who were awkwardly lugging the cylinder through the door. In the basement they suspended it in two canvas slings from the bolts in the ceiling while it was lowered into the floor trough which contained the cradle of detectors.

Outwardly, Peter hovered over the maneuverings, insisting the men be careful. In the back of his mind stood the silver man. He speculated, detached for the moment from the gravity experiment which was more important because it was real. Petroski was wrong about silver being a color. The ideal silver—total reflection—was an absence of color, like black, only the opposite. The silver man would have no color of himself—he would merely reflect everything which impinged on him. A perfect silver man would reflect *all* radiations... true, he might freeze. But then if his silver skin reflected in as well as out, his body heat would kill him in short order. Therefore, assuming such a man had a mammalian body temperature, he would have to radiate heat out *through* his silver coating. He would glow, like a man, in the infrared.

And not only that! If all light were reflected he would not be able to see.

The men had all left; he was sitting alone on the workbench. He shook his head, set to work mating the cylinder to the instruments. But he thought of other things all the while.

Blind—certainly. But oh, how the silver man would shine with their reflected light!

"I ran into Phyllis Spiegel today," Kathryn told him. "She and Ted want us to come by Friday evening. She asked whether we were still interested in that oak table they have in the basement."

"Uh-huh." They were sitting in the living room listening to classical music. The television had just been turned off, and the cat lay sprawled atop it, batting with its paw at the phantom paw in the dead gray screen. On Peter's lap an old issue of the *National Geographic* lay open.

"Well?" Kathy persisted. Her voice held a skittish challenge in check, barely.

"Yes?"

She turned in her chair. She spoke quietly, unsteadily.

"You don't ever listen to me, do you? You don't care what I do or want. You don't even have the courtesy to make a show anymore."

She didn't cry because she never did. Peter's eyes remained on the color photograph before him, but he felt flushed.

"Can't you even put down that damn magazine for a minute?"

Peter put the *Geographic*, still open, on the end table beside him. He had not been reading; he'd had trouble reading lately. He'd been looking at the pictures. The cat leapt off the TV with a thump and attacked its scratching post in the kitchen. Peter finally turned to Kathy, but strangely, she would not look at him. She rushed up, stumbling, to the bedroom. He heard the door close upstairs.

"I'm sorry," he said.

His glance fell on the picture again, a glossy photograph from an article on an archeological find in mainland China. Excavators for a new public building had unearthed the tomb of an ancient Chinese noblewoman. Her corpse had been found in a two-thousand year old sarcophagus, marvelously preserved. Her skin was still soft and there was blood in her body and the doctors who ran an autopsy could tell what she had had for breakfast on a day so long, long ago, when the Orient morning breeze had sparkled through wind chimes, and spring blossoms fell gently to pools which embraced and gave back the rising sun like lucid mirrors.

**S**UPPOSE YOU COULD PUT A FIELD of total reflection around a man without killing him. What would be the use of it?

If such a second skin—mirror membrane, force field—could be made to reflect everything—gamma rays, ultraviolet, visible light, radio, heat—and particles, too—alpha particles, fast neutrons, accelerated protons, electrons—the man would be absolutely immune to many killing forces. He could walk unharmed through a reactor core—if he didn't breathe. A silver man would be a void in the universe of radiation. Totally indifferent to everything! He would be indispensable in dealing with high-energy technologies. He could, for instance, travel at speeds near that of light and be unaffected by the flux of high-energy particles and radiation to which such a passage would naturally give rise.

This was Peters's reasoning.

And if a silver man were to survive, he would indeed radiate in the infrared.

Feeling slightly foolish, Peter slipped the goggles down over his glasses. The office became a dream-duplicate of itself. The desk lamp still glowed, illuminating the room with a paler whiteness than before. The heating pipes glowed like a fluorescent lamp behind the baseboard. He shut off the lamp and its heat faded very slowly. His right hand shone with a ghostly light of its own. It was three o'clock in the morning, and Peter Wharton was ready to stalk the silver man.

He started on the fourth floor and worked his way down, turning off the corridor lights before he entered so that he saw only by the heat from ventillators and water pipes in the walls. They had used a more sophisticated form of these goggles in Vietnam, Drake had told him that afternoon in the military science building. They had hunted men in the jungles and picked them off at long range while they crouched under what they thought was the cover of darkness. So Peter hoped to catch the silver man—if he existed. He would not be distracted this time by the man's astounding reflection of the light around him. Peter used the passkey he had coaxed from Sally Barker, the department secretary, to get into the offices

that lined the hall. He disturbed nothing in the vacant rooms he found.

Occasionally he heard the sound of steps, but when he stopped to listen he could discern nothing clearly. It would be damned embarrassing to be caught by some nosy grad student while snooping around with a ridiculous pair of goggles on in the middle of the night. But he felt he had to go through with this and get the nagging image out of his mind, so he could get back to some serious work.

After an hour or so he had reached the basement and stood outside his own laboratory. In spite of himself his heart was beating quick and hard. He clamped his mouth shut and drew a couple of slow breaths before he turned the doorknob and swung it in.

The long room was silent and empty. Everything looked normal—but a light shone around the corner from the alcove at the other end of the L-shaped room. Peter moved uneasily toward it, along the instrument cavity, resting his hand occasionally on the worktable along the south wall. Half-afraid to look, he cautiously peeked around the corner. Something very bright shone in the top left corner of the empty desk he kept there! He had a moment of sharp panic before he realized it was his coffeemaker. He must have left it on. Grimacing at his own girlish fright, he flipped the switch off. So much for supernatural intruders.

He turned to leave and almost stumbled in shock. Behind the rack of equipment that Peter had been working on that very afternoon stood the figure of a man. His naked body glowed with strong phosphorescence, like certain fish whose rotting corpses shine from the sea's surface at night. His nimble fingers played among the leads and open circuit boards.

Peter swayed and put his hand out to touch the wall. He closed his eyes, shook his head. When he opened them the man was running out through the opened door. Peter raced after, saw the man turn left at the end of the corridor. He ran down the hall, his feet thudding softly on the carpet, and turned the corner just in time to see the figure disappear behind closing elevator doors. Grinning tightly, Peter rushed through the metal fire door to the stairs. The elevator was notorious for being the slowest on campus. His steps rang hollowly in the stairwell as he took them two at a time. When the elevator doors opened on the ground floor he was standing out of breath in front of them. He lurched in and grabbed the man by the arm. The man struggled to get away.

"Let go of me! Goddamn it, let go!"

Peter realized then that the man was fully dressed, and did not glow in the way the intruder had. He pulled off the goggles as his captive twisted out of his loosening grip.

"What the hell do you think you're doing?" the hefty, middle-aged man said, rubbing his shoulder through his green work shirt. It was one of the janitors.

The janitor's name was Arthur Baldwin. Normally, he would not have been in the physics building in the middle of the night, but on this occasion a problem with the heating system and two pints of Southern Comfort had kept Arthur and his colleague, Willis Ivy, up late in the mechanical room. Willis had left earlier in a belated attack of conscience at the memory of his wife. Arthur had no wife. He could care less about going home to stare at his cluttered apartment's walls, but he couldn't sleep on concrete.

So Arthur, too, had been on his way out when, stepping into the basement hallway, he discovered that somebody had turned all the lights off. Damnfool energy savers, not saving

“Peter... please say something. Don't just sit there.” Her voice was timid, afraid. Kathryn, his Kathryn, was a strong woman.

a damned thing. He pulled his flashlight from his belt and headed for the elevator.

It was then that he caught a flash of something in the beam of his light. He didn't know what it was; it was almost as though someone had flashed a light at *him*. Or maybe the flashlight beam had bounced off the stainless steel doors of the elevator. But hadn't it moved?

He wasn't about to worry at it. He got on the elevator; when the doors opened on the first floor, he was grabbed by some one of those professors who cluttered up the building. Like he was some thief! He was frightened, and the liquor burned in his gut. The guy wore goggles, like a space man.

Arthur was just ticked off enough to tell off one of the office secretaries the next day. Damnfools—couldn't tell what they were looking at, when they were looking right at it.



**THE EXPERIMENT WAS GOING BADLY.** If theories were reality, it would work like this: the long, solid cylinder, a column of absolutely motionless matter, resting in its cavity in the bowels of the physics building. Twice a day the earth, in her rotation, would orient the cylinder in a direction perpendicular to a line drawn from Peter's device to the Sagittarius arm of the galaxy, 0° galactic longitude, the direction of the galactic center. Gravity waves, presumably strongest from the galactic core, would impinge on the dead column, causing it to resonate in time to the disturbance. The periodic vibrations would be registered by sensitive detectors. And so, over a period of time, data would be accumulated to demonstrate that gravity did propagate in waves.

It didn't work.

The problem was extraneous vibration. A truck would rumble by on the highway, the classes would change upstairs and a hundred students would walk through the hall, a sparrow would fall somewhere in the continental United States, and each time the detector would record the vibration. Peter had hoped that sinking the device in the ground would solve that, but it did not. At first the upset had destroyed his free, openhanded manner. But he was somehow able to gain a new detachment in the face of the gentle chiding of McGrath and his colleagues, and Petroski's suggestion that Peter sell his contraption to the Geology Department as the most sensitive seismometer ever created by the hand of man.

He tried various means of cushioning the device. He considered immersing the entire detector in a tank of silicon lubricant, but after a few tests realized that even this would not seal the system off from all noise. He considered the theory of interference. What he really needed was something to generate vibrations exactly the inverse of the ones which were disturbing the experiment, which would then cancel out the incoming wave and create a dead space inside. Certain surfaces had the property of vibrating so readily in response to incoming electromagnetic waves that they turned them back on themselves. Mirrors.

Peter called on Butler in engineering and working together, after several months, they constructed a “mirror” for mechanical vibrations.

The incidence of recorded signals was thus greatly reduced. Peter's hopes rose, but still he occasionally detected impulses at times he should not have, when the detector was not oriented perpendicular to any source. Perhaps he had discovered some new astronomical phenomenon? He consulted the astronomers. The random signals could not have originated with the sun, or any of the planets, or even with some distant galaxy. They had to be some further interference.

Through all this, instead of growing more frenzied, Peter grew less so. Sometimes he would not meet his classes, and when he did he did not teach well. He ignored the students. At the end of the summer session, before the fall semester began, he went to visit Letnov at Princeton. He did not take Kathryn with him. They didn't go anywhere together anymore. Kathy would occasionally visit their friends alone and try not to act worried. Her stiff-upper-lip routine was transparent to all but Peter.

Letnov was old and curiously remote, and Peter had worked under him as a graduate student. Peter felt they had much in common though he could never really talk to the old man. Letnov was friendly, to be sure, but like some pre-revolution Russian patrician he did not mingle well with brash young men. You spoke to him, and he responded exactly the way you expected every time, as true as a billiard ball bouncing off a cushion. Letnov had been working on a similar detector. Peter suggested they harness their machines in tandem, over long distance, so that they could coordinate their results as they came in and eliminate impulses that registered on one detector but not on the other. In this way they would filter out any local terrestrial disturbances.

The machines were connected. The two scientists, young and old, listened through the declining months of the year. Nothing was heard. They had filtered out all the noise, and there was nothing left.

McGrath began to offer fumbling advice whenever he saw Peter. Wharton didn't care. In the evenings now he often did not go home. He did not work. He slept on a cot in the lab; he drank coffee and prowled the halls of the building at night.

*The silver man was tampering with his experiment.* And he was beginning to suspect that the subtle influence of this creature on his life did not stop there. Peter struggled, however, not to let the suspicion show, for on certain days it seemed the whole thing was mere disappointment and paranoia, and the world around him would climb back onto its well-ordered tracks.

But Peter had *seen* him. He had *seen* the silver man lurking at night about the darkened building, present in the salt sound of metal on metal heard in an adjoining corridor, in the occasional smell of ozone near the elevator. In liquid glints of light caught unawares by the corner of his eye.

Suppose a race of beings exists on another world in our galaxy. Suppose they are not quite human in the way that we are human. They do not think as we think. They do not consider contact with others, whether of their kind or another, to be necessary. They are remote and aloof. They are subtle. They possess technologies of which we can only dream. Of *their* dreams we can know nothing.

This was Peter's reasoning.

Indian summer had just failed that afternoon: the wind had shifted from the south to the northwest, bringing with it clouds and cold air and the threat of a freezing rain. Peter listened with satisfaction to the rustling of dry leaves on trees and in the gutters, as he walked home from campus late that evening. The moon, full and high, was visible only occasionally through breaks in the clouds. His footsteps tapped dryly on the sidewalk. Halloween weather.

The living room was clearly visible through the latticed window at the front of the house; as usual, Kathryn had forgotten to draw the drapes. He remembered how he'd chided her about that when they'd first started living together. How trivial it seemed now! The recollection drew him momentarily out of his musing, and when he unlocked the door and entered the room he was almost grinning. She was sitting in one of the armchairs, doing needlepoint. She looked up nervously as he entered, then bowed her head once again. Her fingers worked the needle and thread with tight, angry jerks.

The room was cold, so he sat down in the chair opposite the window without removing his jacket.

"Hello," he said.

"It's late." She didn't raise her eyes.

"I guess I lost track of the time."

The needle jerked more furiously.

"I've been working pretty hard," he continued when the silence grew too ominous. For the first time in months he felt like trying to break through the ice between them. "You've been working on that bedspread for a long time," he said. "It seems like years."

"I'm almost finished now." She spoke very quietly.

Another silence.

"The experiment's still not going well." His voice sounded absurdly loud to him. "I think I know what the problem is, though. I want to re-calibrate—"

Kathy clenched the bedspread tightly in her fists and sat upright. "Oh Lord, Peter! I don't care about your machines. Tomorrow I'm... going away." She sounded very tired.

Panic began to constrict Peter's throat. He twisted his head from her and looked at his broken reflection in the rectangles of the dark window. He looked the same as always. It was when he forced himself to face her again that he first saw, behind her tears, the strangeness of Kathryn's eyes. He held his breath: was she the same woman?

"Peter... please say something. Don't just sit there." Her voice was timid, afraid. Kathryn, *his* Kathryn, was a strong woman.

"I think I'll go to bed."

She pulled her legs up into the chair, huddled with her face pressed into the bedspread. He went upstairs, undressed, put on his pajamas, brushed his teeth. He noticed in the mirror that he hadn't shaved for several days. The bedroom was, if anything, colder than the downstairs.

He lay awake in bed, listening after Kathy, trying to make out what she was doing. She was not acting normally. Through the darkness and the rustling of the trees outside his

window, he heard small metallic taps that might have been the ticking of the furnace, that might have been the sounds of something infinitely stranger moving through the rooms of his home.

**O**NCE A MONTH the Committee on Departmental Research met. In his earlier, activist days, Peter had sought a position on the committee; now he merely attended meetings, sat mutely, and voted rather arbitrarily whenever questions were called. The other members undoubtedly had noticed this, and knowing of his marital and professional problems, ascribed the change in his behavior to worry about his possible failure. Only Peter himself knew the real reason: his search for the silver man.

It was late November and the windows of the conference room were tightly closed against the whiteness outside, but still Peter felt a chill. He thought he might be coming down with something. He looked at the minutes of the last meeting and the agenda that lay before him. It looked boring. For some reason the light at his end of the table was dim, making the reading difficult.

"The first order of business," said McGrath, the chairman, after the polite chatting had died down, "is that eligibility matter of last month. Paul Glass was going to check up on that for us, so we'll listen to his report first." McGrath nodded appeasingly to Dutton, the aggressive low-temperature man on his left, "We'll get to the matter of the budget after this preliminary stuff is cleared up, Willy. Hang on."

Peter was not paying attention. He regarded the entire meeting as a phenomenon, like a solar eclipse or a change of state, which was strictly predictable and therefore trivial. He wondered why he'd ever taken it so seriously.

But the silver man! Peter had almost cornered him the previous night near the cryonics lab, Dutton's lab, but the fool had shown up for some reason and his throwing on the lights had washed out everything.

Glass droned on. Peter decided he'd have to quit the committee. Even though they no longer asked him to do any work, it was too much bother.

McGrath was speaking again. "...the apportionment of departmental research funds for the coming state fiscal year. Note the table of last year's appropriations on page three..." More of the same. Peter couldn't read page three; the light was too dim. Overcast outside.

Where did the silver man come from? Why and how did he interfere?

Dutton had the floor now. "...some of these items should be dropped. They can undoubtedly subsist on their NSF funds, if they can continue to justify them—" People were shifting in their chairs. Perhaps they were cold, too. "—but we should not spend money on research that has proved fruitless and which threatens to remain fruitless, when there are better projects—I'm sure we all agree on this—" Dutton looked around the table like a lawyer in summation, "—which deserve the funds."

Peter realized they were all looking at him. Something about irresponsibility. Uncooperativeness.

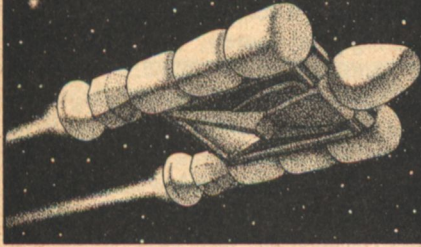
Dutton looked down the table at Peter. His face was growing more flushed—the man would have a heart attack one day, it was clear—and he struggled for words. Peter felt completely calm.

"Peter, don't give us the old excuses," Dutton said defensively. "How do you explain your meddling with every

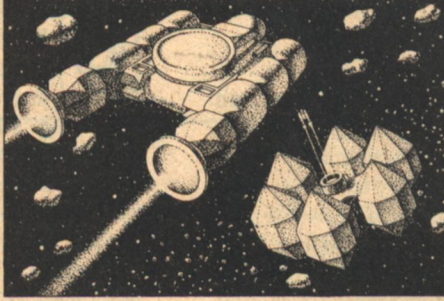
[Continued on page 46]

# CROSSWHEN

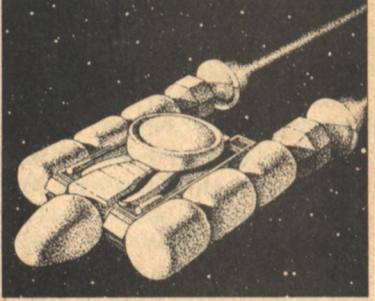
by John Kessel  
and Terry Lee



2130. SPACE IS CONQUERED. THE GARGANTUA, CENTRAL STATION OF THE TRIANGLE MINING COMPANY, FLOATS WEIGHTLESS AMID THE RUBBLE OF THE ASTEROID BELT.



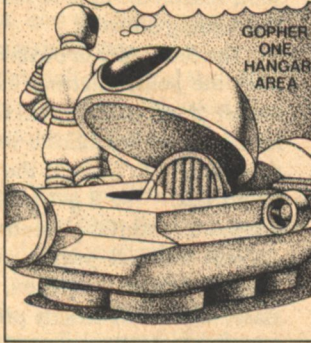
FROM THE GIANT STATION MINING CRUISERS RADIATE TO THE CORNERS OF THE BELT, SEEKING PRECIOUS DITION, DENSEST OF THE TRIPLE CENTURIAN ELEMENTS.



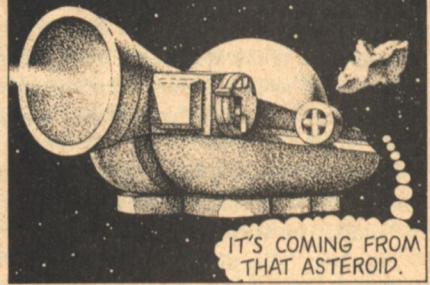
WELL, CASE, ONE MORE EMPTY CARGO HOLD AND THEY'LL BE SENDING YOU BACK TO PEORIA.



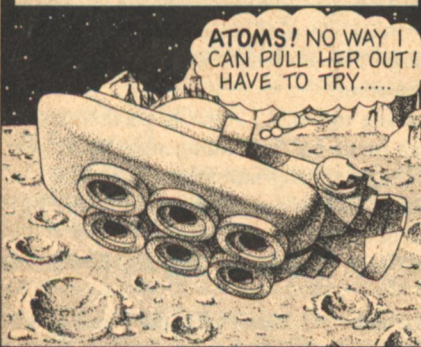
BUSTED AGAIN. OUT OF ALL THESE ROCKS THERE OUGHT TO BE SOMETHING FOR ME.



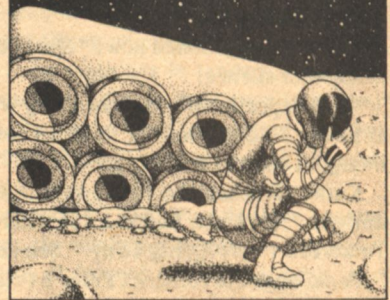
THIRTY HOURS OUT, 200,000 KILOMETERS DISTANT, JUSTIN GETS A STRONG E AND M READING ON HIS INSTRUMENTS.



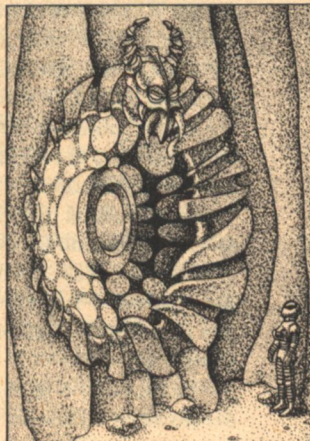
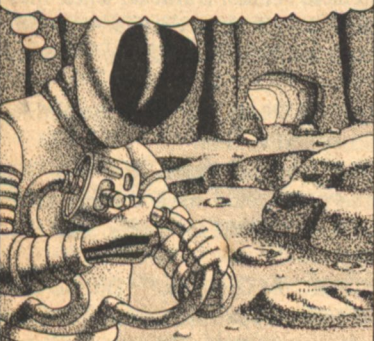
THE DISTURBANCE GROWS RAPIDLY, AND SUDDENLY THE GOPHER'S STARBOARD IMPELLER FLAMES OUT!



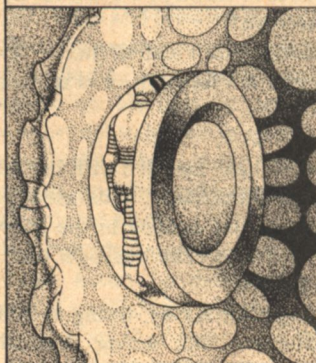
SUIT LEAKING MICROSCOPICALLY, RADIO BUSTED, JUSTIN CASE, ON AN AIRLESS MICROWORLD, AWAITS ONLY DEATH!



THE LAST READING WAS FROM THAT CAVE. NO CHANCE FOR OXYGEN THERE. BUT MAYBE I CAN FIND OUT WHAT KILLED ME.



WONDER SUPPLANTING FEAR FOR HIS LIFE, JUSTIN SLOWLY ENTERS THE ALIEN CAVE.

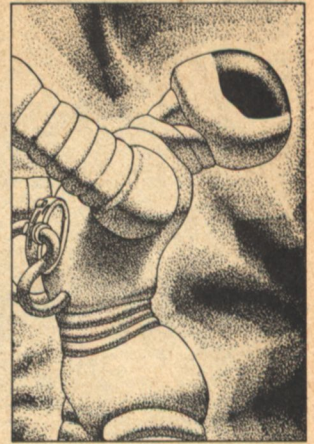
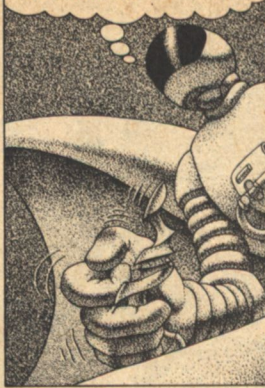


MAD COPERNICUS WITH A STROKE OF HIS PEN THREW THE HEAVENS INTO A FRENZY. DIVINELY MAD SCHLIEMANN UNEARTHED TROY. AND NOW A FAILED ASTEROID MINER, DRIVEN NEAR MADNESS WITH DESPERATION, CONFRONTS THE MACHINES OF AN ALIEN RACE, UNTOUCHED FOR GEOLOGIC AGES, PERHAPS SINCE THE EXPLOSION OF THE ANCIENT FIFTH PLANET THAT CREATED THE ASTEROID BELT. THEIR BUILDERS ARE VANISHED NOW, GROUND EXCEEDING FINE BY THE PITILESS FORCES OF TIME AND FATE, AGAINST WHICH ALL ASPIRATION MUST EVENTUALLY COME TO DUST.

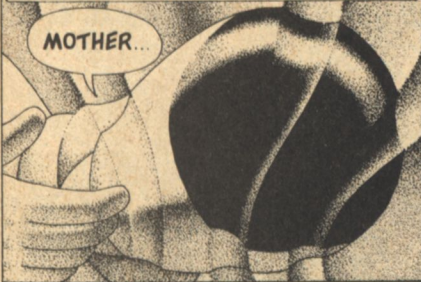
NO HUMAN COULD HAVE BUILT THESE. THEY MUST HAVE REMAINED UNTOUCHED FOR MILLIONS OF YEARS.



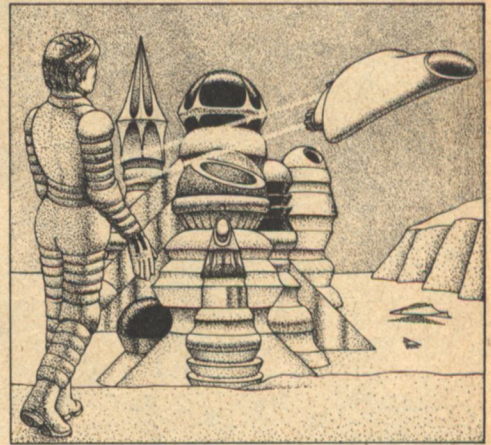
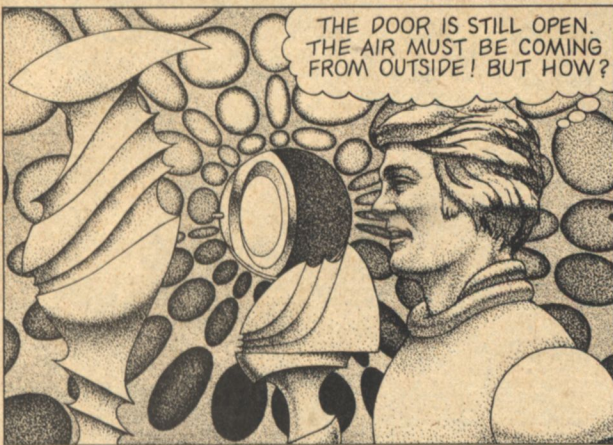
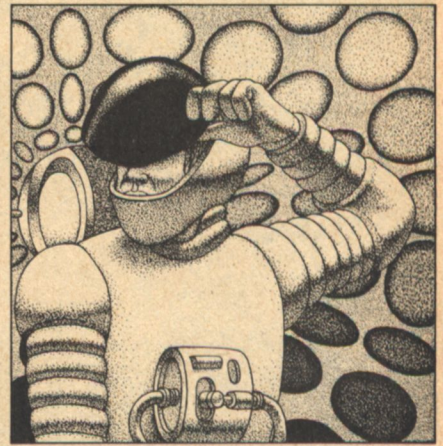
...AND I WON'T LIVE TO TELL...



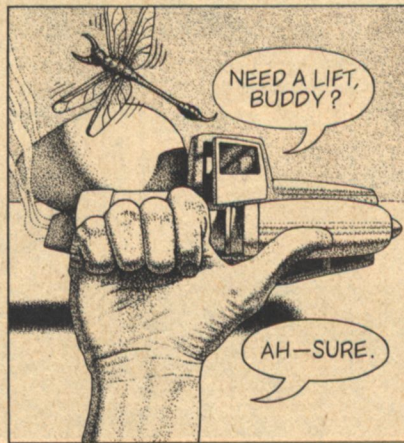
IMAGINE FORCES SO GREAT THAT THE FABRIC OF THE UNIVERSE CAN NOT SUSTAIN THEM. IMAGINE PAIN SO SEVERE THAT THE THREADS OF CONSCIOUSNESS ARE TWISTED OBSCENELY BEYOND ENDURANCE. IMAGINE JUSTIN CASE—IN FLUX!



I CAN BREATHE! I MUST HAVE ACTIVATED A LIFE SUPPORT SYSTEM! ..... BUT THE GRAVITY IS TOO GREAT.



A STRANGE WORLD CONFRONTS JUSTIN—ITS ORIGIN A COMPLETE MYSTERY. LEAVING THE CHAMBER AND CAVE, HE DESCENDS TO THE DRY PLAIN BELOW. HE IS NOT WITHOUT BOLDNESS, FOR HE HAS NOTHING TO LOSE.









D.C. Poyer

# Three Soldiers

D.C. Poyer

**T**HE BLACKNESS OPENED, and von Rheydt swam up through inky velvet to a consciousness that he had never expected to see again.

He did not move, not even opening his eyes.

Von Rheydt remembered falling face down in the snow, fingers clutching the sudden wetness in the pit of his stomach, hearing the soft crunch of millions of six-pointed ice crystals as his face sank toward the Russian earth.

Hauptmann—Captain—von Rheydt noticed, without surprise, that he did not feel particularly cold, nor could he feel anything where the bullet had struck him. He was waiting, eyes closed and mind blank, for a Russian bayonet.

The white-coated troops who followed the tanks always checked the fallen Germans for signs of life. That, he thought remotely, must be why he was now face up. One of the Red troops must have turned him over while he was unconscious, to check on the seriousness of his wound.

*It must be bad if they hadn't bothered to use a bayonet, he thought. Maybe that was why he couldn't feel anything in his stomach.*

Minutes passed. Von Rheydt waited. It was very quiet.

Too quiet, he thought suddenly. He could hear nothing but his heart. No machine-gun fire, neither the *tap-tap-tap* of the Degtyarevs nor the high cloth-ripping sound of the German guns. No grunting of tank engines, no shouts of 'Ooray!' as the Red Army charged. Not even—and this was the strangest of all—not even the sighing of the wind over the plains of Stalingrad in this year of struggle 1942.

He opened his eyes, tensing himself for the bayonet. Above him was a gray ceiling.

A *hospital*, he thought. German or Russian? That was easy to answer. The Soviets did not waste hospital space on wounded enemy officers. So he was in friendly hands. A smile creased his thin, blond-stubbed face, and he sat up without thinking. And stared down at the crisp, unstained gray of his battle dress tunic. No holes. No blood. After several seconds he touched his stomach with one hand. He was unwounded.

Captain Werner von Rheydt, German Army, thirty years old, educated at Göttingen. . . *memory's all right*, he thought confusedly, still looking down at his stomach. Had he dreamed it, then? His brow furrowed. The University. . . the war. . . the draft. . . the Polish campaign, then France, then Yugoslavia, and so to the Russian Front. To Stalingrad with the 44th Infantry, Sixth Army, after four years of war. To the madness of Stalingrad in winter, an entire army surrounded, abandoned, but still fighting. . .

No, it was not a dream, von Rheydt concluded silently. Line 'Violet' had fallen; and in the fighting retreat to 'Sunflower' the Soviet tanks had broken through. He had led a counterattack, and had fallen, badly wounded, on a snowy battlefield two thousand miles from home. And he was now—here.

He swung his boots over the edge of the bunk, and noticed it for the first time. It was a plain Reichsheer issue steel bunk, standard thin pallet mattress, with a dingy pillow and a gray wool blanket.

He stood up, and the momentary sense of reassurance the familiar-looking bunk had given him disappeared. He stared around at a room that was far too strange for a dream.

It's gray, he thought, but the gray was strange. Not a painted color, but a hard shininess like the dull sheen of polished metal. But the shape—it was the shape of the room that was different. He stood at the bottom of an octagon, and at the center of one; the room had eight walls, and its cross-section was an octagon as well. He counted, came up with a total of twenty-six facets.

A pile of what looked like military equipment was stuck oddly to one of the eight vertical walls. Von Rheydt walked forward to investigate, stepped up on a slanted facet of the room to reach up—and found the pile on a slanted face just in front of him. He looked back at the bunk. It too was on a slanted face, and looked as if it should come sliding down on him at any moment.

And there was no question but that the facet he had stepped up on was now at the bottom of the room.

Queer, thought von Rheydt. He walked on, stood next to the pile. Now that facet was the floor, and the bunk hung ludicrously on a vertical wall.

Feeling a touch of nausea, he bent to the heap of equipment. It was not his own, he saw, but it was all standard Army. Helmet, battle, one, white-painted for winter wear. Canteen. Pack ration. An officer's dress dagger, which he examined closely, scowling as he saw the double lightning strokes of the SS; the Army and Himmler's thugs had never gotten along, and of late there had been rumors. . . shadowy

but horrible rumors. A dress sword, plain, but of good Solingen steel. At the very bottom of the heap he found what he had been hoping for: a Luger. A quick investigation revealed six cartridges in its magazine.

Von Rheydt smiled as he buckled the pistol belt on. Having a weapon made him feel much more confident, *wherever* he was. He buckled on the dagger, too, and began walking again, continuing around the room. His boots clicked arrogantly on the hard surface.

Halfway around—the 'floor,' inexplicably, still underneath his feet—he noticed a grille set into its surface. He bent to look into it.

A black, grimacing face, horribly furrowed with scars and paint, stared back at him, teeth bared. Von Rheydt recoiled, drawing the dagger. At his motion, the face disappeared, drawn back from the grille.

Beyond wonder, he walked on. In the next facet of the room was a door, or hatch, set flush with the gray surface and of the same material. There was no knob or handle, and he was unable to get the point of the dagger far enough into the seam to pry it open. He went on, and had almost reached the bunk again before he saw anything else on the smooth sameness of gray.

It was another grille. This one he approached with dagger drawn, but there was no one at it. He bent and peered through it, seeing on the other side another room like his own.

"Anyone there?" he called loudly.

The quick pad of footsteps came up to the grille, and a moment later a hard-looking, tanned face stared out. A second or so passed, and then the man barked out a question.

It took several seconds for von Rheydt to realize that the strong-jawed, dark-haired man on the other side of the grille had said, "Who are you?"—*in Latin*.

Von Rheydt searched his mind for the moldy words he had struggled over at Göttingen. "*Ego sum*. . . von Rheydt," he said haltingly. "Ah. . . *sum miles Germanicus*. . . *amicus. Amicus*, friend. *Et tu?*"

The other man spoke rapidly; not classical Latin, but a rough, corrupt-sounding tongue with a Spanish rhythm. Von Rheydt caught a word here and there, enough to piece the sense together: "Roman soldier. . . Nineteenth Legion. Into the forest, the battle against Arminius. . . spear wound. . . slept." The Roman passed a hand over his close-cropped dark hair, looking puzzled, as if trying to remember something. "Slept. . ."

Von Rheydt started to speak in German, stopped, said in Latin: "You are a *Roman soldier?*"

"*Centurio*," corrected the man, showing a massive gold ring on his powerful-looking hand. "Junius Cornelius Casca, centurion second rank, Nineteenth Legion, General Varus commanding."

"Centurion Casca. . . what year is this?"

The other man—Casca—frowned through the grille. "Year? What year? Why, 762, *ab urbe condita*, and 38th year of the principate of Augustus." His heavy brows drew together. "Where are we, German? What prison is this?"

Von Rheydt did not answer immediately, for he was chasing a phrase down dusty corridors of his mind. *Ab urbe condita*. . . literally, from founding the city. . . yes, he remembered. The legendary founding of Rome, 753 B.C., the date used to reckon time by the Empire. This man Casca, then, could be. . . almost two thousand years old?

And then something else clicked in his mind. P. Quintilius Varus, leading the Nineteenth Legion into Gaul. Sent to crush

Von Rheydt smiled as he buckled the pistol belt on. Having a weapon made him feel much more confident, **wherever** he was.

the Chirusci revolt under Arminius. *Surrounded and massacred without a survivor, late in the reign of Augustus Caesar...*

"*Non certe scire*—I don't know," he said slowly, trying to match stale school Latin to the cadence the other man used. The Roman laughed, a short, bitter sound.

Von Rheydt looked up from the grille. He looked at the bunk that stuck to the wall like a fly, at the strangeness of the gray metal walls, at the light that filled the room without visible source. He remembered the gravity that followed wherever he walked.

He had been wounded in 1942, on the frozen plains of Stalingrad. Just as this Casca, this Roman, had been wounded in the forests of Teutoburgium in nine A.D. They had been snatched away. *But to where?* He asked himself. *And what year is it in this strange cell—9, or 1942 A.D.?*

The Roman had left the grille, and von Rheydt slowly stood up. He looked vacantly around the room, and then walked back to the bunk and sat down.

Fifteen minutes later he got up and went to the first grille, the one at which he had seen the black man. He was there again, big hands wrapped around the gray metal bars that separated the rooms. Von Rheydt wondered whether the other man was kneeling too, and if so—where did the room's gravity come from? From the gray metal of its walls?

"*Verstehen Sie Deutsch?*"

The man looked back at him without expression, and von Rheydt sat back on his haunches and studied him. The face was broad, thick-lipped and strong; though the paint stripes were obviously meant for adornment or intimidation, the scars looked like battle scars rather than tattoo or ritual mutilation. The man's hair was done up in a doughnut-shaped ring atop the wide skull, and his eyes, dark and intelligent, were studying the German with every bit as much interest as they were being given. Von Rheydt tried Latin after a time, and then French, of which he had picked up a few words during the 1940 campaign.

No luck. The man was listening intently, though, and when von Rheydt paused, he placed his outstretched fingers on his broad, bare chest and said several words in a guttural, clicking language:

"*'Ngi wum' Zulu.*"

Von Rheydt tried to understand, but ended by shaking his head in frustration. Did *ngi* mean "my name is"? If only they had a few words of *some* language in common!

"You... are English?"

Von Rheydt started. His roommate at school had been English; he had picked up a fair amount of the language. "No. German. Who are you?"

The warrior placed his hand on his chest again, and said slowly, "Mbatha. Of... the Zulu. This is... gaol?"

The language lesson lasted for about an hour.

**B**Y THE TIME HE WAS FULLY AWAKE von Rheydt had rolled out of the bunk, and had the Luger in his hand—safety off; Stalingrad reflexes. He scrutinized his surroundings from a crouch before he stood up, holstering the pistol. The room was as empty, the light as steady as when he had gone to sleep. Only one thing was different: the door had opened.

He approached it cautiously, one hand still on the butt of the weapon.

As far as he could make out, the door had disappeared. There were no hinges, and the inside of the jamb was smooth and featureless; it could not have slid inside the wall. He remembered how impressed he'd been with the automatic doors he'd seen before the war in Berlin department stores, and grinned humorlessly.

Feeling a little like a cautious ape, von Rheydt stepped through the door. He looked to either side, down a long, narrow, gray-lit corridor, with four welcome right angles to the walls. To his left the corridor fell away into darkness; to his right it was lit with the same sourceless brightness, stretching away into the distance.

There was a high, almost musical note behind him... the sound, he realized, that had awakened him. He turned, and found the door in place, locked. He could see no way to open it.

Shrugging, he loosened the dagger in its sheath, placed his hand near the pistol and walked down the corridor to the right. He passed the outline of another door, and then another. A thought struck him, and he tried to step up on a wall; no good. The every-wall-a-floor device wasn't used in corridors, then.

Octagonal rooms... doors... square corridors... the layout of the place came into focus as he walked. Von Rheydt visualized a grid of octagons, side to side, their corners forming four-sided longitudinal corridors. The corridors would lead the length of... what? The arrangement was an inhumanly efficient utilization of space, so space must be at a premium here. He walked along, staying alert, but thinking as well.

As a boy he had read Hermann Oberth's and Willy Ley's books about interplanetary flight. Read them avidly, until his father had thrown them all away and forbidden him to read such trash. Was he aboard such an interplanetary rocket? Or... and von Rheydt felt uneasy at the thought... was he, and the Zulu and the Roman, trapped in something as far beyond his imagination as Stukas and Konigpanzer tanks were beyond Casca's?

He came to an open hatch, stepped in, and snapped to rigid attention, a look of surprise flashing across his face.

The room was gray and octagonal; but in the center of it sat a desk, and at the desk stood a man. A hard-looking man of middle age, dressed in the high-collared tunic and red-striped trousers of a general of the O.K.W.—the General Staff. A man with sharp eyes and a rocklike chin, who nodded to von

Rheydt's astounded salute and motioned to a chair.

"Sit down, Captain," he said, in clear, Prussian-accented German. "Smoke?"

Von Rheydt sat, shook his head. "Thank you, no, Herr General."

"Well," said the general, studying him for a moment while taking a long cigar from a box on the desk, lighting it carefully, and exhaling a puff of aromatic smoke. "You are a bit confused, no doubt."

"That is an understatement, Herr General."

"I suppose so. We expected that you would be—you and your two companions. We owe you an explanation. You are here, Captain von Rheydt, because you are a brave man."

"For Leader and Reich," said von Rheydt automatically.

The man in the general's uniform glanced at him sharply. "Yes. Of course. But tell me, Captain. Would you fight as bravely as you fought at Stalingrad—surrounded, outnumbered, abandoned by your Leader—if, say the future of your species was at stake?"

"I beg the general's pardon?" said von Rheydt.

"How did you come here, Captain?"

"Here... I don't know, Herr General. The last thing I recall is leading an infantry counterattack against Soviet tanks..."

"Against tanks?"

"Those were my orders, Herr General," said von Rheydt. "And then a strange thing happened. I thought that I was wounded."

"That is not quite correct. You were killed."

"Killed... but I am alive!"

"Are you, Captain?"

Frozen, von Rheydt stared at the general's face. He felt his heart beating, felt the breath that rustled in his throat and the hunger that was beginning to stir in his bowels. "Yes, Herr General, I am alive."

"You died at Stalingrad in 1942, Captain. I am sorry."

Von Rheydt gripped the arms of his chair. "Explain yourself, Herr General. This is going beyond a joke!"

The older man chuckled. "This is not a joke, Captain. And I am not a general. Those of your time would not even consider me a man. Especially—you will pardon the emphasis—am I not a German."

"Not a German..." began von Rheydt, presentiment growing in his mind. "You are not of my time."

"Nor of your species," said the general. "But—just as one stoops down when addressing a child—I am addressing you in a form that you can understand, one that, to your mind, embodies authority and command. As a general officer of the O.K.W."

"What do you want?" asked von Rheydt harshly.

"Simply this," said the officer, rising from the desk. His chrome leather boots clicked on the floor as he paced back and forth, hands interlocked behind his back, a cloud of cigar smoke trailing behind him. He began to speak, looking sharply at the seated captain each time he turned. "You are familiar with war, Hauptmann von Rheydt. As are your two comrades. Well, envision, if you can, a war that encompasses a galaxy, and that has lasted for well over a million of your years. A war in which entire races are developed, deployed and used as weapons, as you develop new tanks or rifles."

In spite of what it meant, von Rheydt knew that the man was telling the truth. He shook his head. "And the fact that, as you say, I am dead?"

"You were dead," the general corrected gravely. "Until we intervened. But we are offering you, and your

companions, the chance to return."

"How?"

"By fighting."

"Fighting for you? In this war of yours?"

"Not quite. Let me explain a little further." The general stopped pacing, crossed his arms and looked down at the captain. A wreath of cigar smoke gradually encircled the hard features. "Your race has always been puzzled by its own killer instincts, plagued by its own love for war. To you it was tragic, inexplicable. It seemed contrary to all the laws of evolution, for it killed off not the old and weak but the young and strong. Correct?"

"Yes."

"Your race, Captain, has been, shall we say, in development. Forced development. To forge a warlike race one must have wars."

"That is obvious, Herr General. The Fuhrer has said that himself."

"Yes," said the general, looking at the ceiling. "The Fuhrer... we will have to recall him soon, and cover his disappearance in some convincing manner... but back to the subject at hand. Your species has developed very promisingly. It can be very useful, to us, if..."

"If?"

"If you prove yourselves to be an effective weapon in a test. Tell me, Captain, if your army had developed two types of hand grenade, and wished to determine which of the two would prove a more effective weapon, how would they go about it?"

"Well, the answer would be to conduct a comparative evaluation," began von Rheydt, and then he saw it. "There is another race of warriors," he said flatly. "Another one of your 'weapons projects'."

"Very good!" said the general, smiling. "Correct. Please go on."

"Somehow, I don't know how, you've been able to... go back in time, and pick up the other two men, Casca and Mbatha. Roman and Zulu and German—your choice for the most warlike races of earth's history, I suppose. And now you will match us against the others, I suppose."

"Exactly," said the general, raising his eyebrows in pleased surprise, and perching one leg on the edge of his desk. "An intelligent species as well as a warlike one. Very good, Captain."

"But why pick us?" asked von Rheydt. "Front-line soldiers, all three of us. If you had all history to choose from, why not Napoleon, or Caesar, or Frederick the Great? They were true men of war."

"Not quite," said the general. He tapped the cigar into a glass ashtray and examined the glowing tip. "The men you name were leaders, not soldiers. Since, in this war, we will provide all necessary leadership, they would be of little value to us. No, what we value in our weapons is different. Take the three of you. Stalingrad, Teutoburgium, and Ulundi—all battles in which a body of professional soldiers, abandoned, almost leaderless, and greatly outnumbered, stood and fought to the death *because they valued obedience above life*."

Von Rheydt sat motionless. The general went on: "We need soldiers like that. So far in your history your three cultures have shown us what we can expect from the human race at its most disciplined, most obedient, and most unthinking best."

"As you say," said von Rheydt slowly. "We are soldiers, then. But what good will our victory do for our race? Make

“We must fight soon, Mbatha. You, me, and Casca, the other man with us. We must win. If we lose, we die.”

mankind a pawn in a struggle we know nothing about?”

“It is that or extinction,” said the general quietly. “To put it in Army terms, Captain, the Human project is at the crossroads. It must now either be put into full production, or it must be liquidated and the resources shifted to another project. I’m sure you realize, Captain, that in total war there is no other way.”

Von Rheydt stood up stiffly, put one hand on his dagger, and clicked his heels. Right hand shot out in a quivering salute.

“You will find us good soldiers,” he said.

“I hope so,” said the general. “Tell the others, Captain. Ten hours from now, the three of you will fight. I suggest that you all get some sleep.” The high-pitched note of an opening hatch came from behind the rigid German. “Dismissed!”

Von Rheydt pivoted smartly and marched out. Outside, in the corridor, he turned. The door was not yet closed, and he caught a glimpse, not of a stiff O.K.W. general at a German Army desk, but of something that sent him, mind reeling, stumbling down the corridor.

**V**ON RHEYDT’S SCHOOL LATIN seemed to be coming back; Casca, listening at the grille, nodded slowly and frowned as he finished his explanation of the upcoming test. “I have been thinking, German. The *framea* (spear?) could not have healed like this.” He drew up a dirty tunic and showed von Rheydt a smooth, unmarked chest, covered with curly black hair. “When will we go into battle?”

“About nine hours from now.”

“I am ready,” said the centurion. “I found some arms in my room. I will sleep, I think, before the contest of the gods.”

“The gods? . . . Yes,” said von Rheydt, realizing the inadequacy of his Latin to explain alien races and galactic wars to a man who thought the earth flat. “Yes, sleep well, Junius.”

Mbatha was not at his grille. Von Rheydt drew his dagger, stuck it through the bars, and rattled it to attract the Zulu’s attention.

An instant later he froze as the point of a broad-bladed, razor-sharp *assegai* touched his throat.

Von Rheydt smiled as he let go the dagger, which the African took and examined critically, at last pulling back the *assegai* and returning the knife to the German.

“We must fight soon, Mbatha,” said von Rheydt in English. “You, me, and Casca, the other man with us. We must win. If we lose, we die.”

“Fight English? Fight you and Casca?”

“No, you do not fight us,” said von Rheydt desperately, thinking that the three of them might have to act as a team in a very few hours; having one man suspicious of the other two might kill them all. The Zulu had fallen fighting white men; to him all whites were the hated English. “I am not English. Casca is not English. We three men fight three . . . devils.”

“Devils,” said the African.

“Spirits. Ghosts.”

“Ghosts,” repeated the Zulu, deadpan. “Warriors cannot fight ghosts, u-Rheydt.”

“We don’t have a choice, Mbatha. We fight in the morning—in one sleep.”

“I sleep now, u-Rheydt,” said Mbatha, and left the grating. A scraping sound came from his room for a few minutes, and then silence.

Von Rheydt went back to his bunk and sat down, eased his boots off. He had a light meal of tinned sausage and biscuit from the ration pack, and found what tasted like vodka in the canteen. When he had finished his meal he lay back on the bunk, placed the Luger under his pillow, and fell into a heavy sleep.

“Captain von Rheydt,” said the voice in his dream, and he jerked awake. “It is time,” said the voice, and as its meaning sank in he came slowly back to reality.

He went to the grilles and made sure that Mbatha and Casca were both awake. They were, looking around their rooms; they must have heard the voice as well. As von Rheydt pulled on his boots he wondered, *in what language had it spoken to them?*

He stood up, stamped his feet into the boots, and walked to the pile of gear. He buckled on the scabbard of the dress saber over his pistol belt and stuck the dagger under it. He tightened the belt of his uniform trousers and tucked the cuffs into his boots. Finally, he walked back to his bunk, took the pistol from under his pillow, checked the chamber, tucked the gun into its holster and buttoned the leather flap over it.

He was tightening the leather chinstrap of his helmet when the door banged. With a last look around, he picked up the canteen, slung it from his shoulder, and stepped out into the corridor.

Mbatha was already there waiting, and von Rheydt’s eyebrows rose.

The Zulu was big—muscular as well as tall. His broad, bare chest was criss-crossed with dark puckered scars. A short skirt of animal pelt fell from waist to mid-thigh, and at elbow and knee blossomed fringes of white feathers. The African was carrying a short thrusting spear at his waist, a slightly longer one in his right hand, and an oval cowhide shield on his back. A necklace of yellow animal teeth clicked against his chest.

Before von Rheydt could speak, there was a rattle of metal, and the German turned to see Junius Cornelius Casca raise a hand in greeting to the Zulu.

The centurion’s dirty tunic was gone, hidden by a burnished corselet of horizontal hoops of steel. Leather padding showed under half-hoops of deeply-gouged metal protecting the shoulders; the swelling muscles of his arms were bare. A coarse brown woollen skirt or kilt fell to his knees, and he wore heavy sandals. One big tanned hand

rested on the sheath of a short sword, and the other was curled negligently around a square shield, embossed with a wing-and-thunderbolt design. A short, plain dagger rode at his waist, and in spite of the Roman's short stature the plumes of his centurion's helmet nodded above the taller men. Casca reached out an arm and gripped their hands solemnly, one at a time.

Von Rheydt looked at the two of them, the tall Zulu and the stocky Roman. "If it is the fate of a soldier to die," he said aloud, in his own tongue, "to do it with such men as you is honor."

They did not understand his harsh German, but they understood that it was a compliment, and they nodded grimly. At that moment, one end of the corridor went dark, and they began to march three abreast in the direction of the light. The clang of bronze and steel echoed away in front of them.



HE HATCH CLOSED BEHIND THEM, and von Rheydt whispered, "My God." A low grunt of surprise came from Casca. The three men stared around.

They were in a gigantic amphitheater, and it was empty. Von Rheydt looked back, seeing a high wall without a trace of the door through which they had entered. Firm sand grated under their feet, and a red sun above them cast a bloody glow over empty tiers of gray metal seats, stretched to meet a deep violet sky.

Metal scraped as Casca drew the short sword and balanced it at waist level. "In your country, German, do you have the circus?" he asked, in his strangely corrupt Latin. "That is what this is like. I have seen the gladiators fight in the imperial city. And now, we fight—before the throne of Jove."

Von Rheydt looked at Mbatha, who returned his look without visible expression. "The uFasimba do not fight ghosts," said the African slowly. Then the short spear pointed, with the speed of a striking snake. "But those . . . those are not ghosts."

Across the flatness of sand, through the atmosphere, shimmering with heat, three dark figures stood against the wall of the amphitheater.

Von Rheydt unslung the canteen from his shoulder, took a mouthful of vodka, and handed the canteen to the Zulu. When Casca handed it back to him it was empty, and he dropped it to the sand and drew his saber.

Mbatha started forward at a jog-trot, and Casca and von Rheydt followed, their steps thudding on the hard-packed sand. The figures opposite them swung into motion too, and the two groups, men and Others, closed rapidly.

Fifty meters apart, they both stopped, and von Rheydt's eyes narrowed.

The enemy was not human. From a distance, they had resembled men, upright, bipedal, two-armed. But from this distance the differences were horribly evident.

The aliens were taller and thinner than men, but there was no appearance of fragility. They had long legs, of a brassy color; *Skin tone?* von Rheydt wondered. Thick, small foot pads, like a camel's. The necks were long, leading to a ridiculously small knob of a head. There was no clearly defined face, though he could make out large, dark eyes fixed on the men.

A sound next to him made him turn his head. Casca, eyes fixed on the enemy, had fronted his sword and was murmuring a prayer; when he caught von Rheydt's eyes on

him he grinned, but didn't stop. Mbatha had been silent, scrutinizing the enemy; but then he turned his back contemptuously to them and addressed the German.

"We fight, u-Rheydt?" he said. "You—Casca?"

Von Rheydt nodded. "We fight." Casca finished his prayer and brought the square shield up to cover his breast. Mbatha turned back; and von Rheydt, drawn saber in his right hand, Luger in his left, walked between the armored Roman and the hide-shielded Zulu toward the waiting aliens.

As they closed he could see variations in their equipment and dress. *They must be of different times, too*, he thought. One of them seemed to be sheathed in a blued-metal armor, and carried a long staff of the same material. Von Rheydt nudged Junius, pointed with his saber; the Roman nodded, teeth bared, and fixed his eyes on that one. Another was almost naked, and its weapons were two curved, glittering scimitars; Mbatha was already turning toward it when things began to happen.

In a second, the aliens seemed to shrink, from seven feet or so almost to human size. Von Rheydt blinked, then saw what had happened; the 'heads' had been withdrawn into the deep chests, and the dark eyes peered over the edge of a protective carapace like a soldier peering from a trench. *The brain must be inside the chest*, he thought. Well, a bullet would reach it even there.

And even while von Rheydt blinked, the blue-armored alien had lifted a long arm, and something swift left the long staff and fell toward him, too fast to dodge.

There was a terrifyingly loud clang, and a meter-long blue metal rod quivered in the sand at his feet. Casca's shield twitched back, and the centurion sent a mocking laugh at the being that was drawing another missile from a quiver on its back.

"*Gratias*," said von Rheydt, and then the three men separated, and he found himself face to face with the third alien.

Von Rheydt's opponent stood solidly on two feet, neck stalk slightly extended, large dark eyes fixed on the German. The smooth, brassy-looking skin was bare at the arms and legs, but the trunk was covered with a flat black garment that looked incongruously like carbon paper . . .

But these were details that the captain noted only with his subconscious, for his attention was centered on the short rod that one brassy hand was bringing up stealthily to cover him.

Von Rheydt fired twice, rapidly, from the hip. The nine-millimeter jolted his hand, and the flat crack of it echoed back from the circled walls of the amphitheater. His opponent reeled back, then steadied; shook itself, and stepped forward, one hand going to its chest and the other raising the rod.

Electricity snapped, and von Rheydt's whole body arced in a spasm. He fell heavily to the sand, face up but unable to move. The alien came toward him, towering up into the purple sky, and lowered the rod to point at von Rheydt's chest.

He recovered movement and brought the saber around in a whistling arc. The alien jumped back, but not in time to avoid the stroke, and the German's arm tingled as if he had struck a lamppost.

He scrambled back up, retrieving the automatic from the sand. The alien closed with him again, and the point of the saber grated against the black-jerked chest. The alien backed off a little.

Von Rheydt looked at the saber point. Broken; the tip had gone with that wild slash to the legs. He looked again at his

# Von Rheydt placed the muzzle between the wide eyes, and pressed the trigger. Only at the empty click did he see that the toggle link was up; there was no more ammunition.

opponent, who was still backing away. Most likely it needed a little range to use the rod, which it was training on him again.

Von Rheydt switched the Luger to his right hand, aimed carefully, and sent four bullets caroming off the thing's torso. None penetrated, but the sheer kinetic energy of the eight-gram bullets knocked it back with each hit, and at the last shot it fell, dropping the rod.

Von Rheydt was on the weapon in two bounds, crushing it into the sand under his boot. From the corner of his eye he caught a glimpse of Mbatha and the nearly naked alien, both weaponless, straining in hand-to-hand combat. Von Rheydt reached his alien, placed the muzzle between the wide eyes, and pressed the trigger. Only at the empty click did he see that the toggle link was up; there was no more ammunition.

At the same instant, a grip of iron closed around his leg, and he was jerked off his feet. Dropping the saber and the useless pistol, he fell on his enemy, hammering with his fists on its chest. He had hoped it was the garment that had deflected his bullets, but it was too flimsy; it was the carapace beneath it that was like steel, impervious to his fists and his weapons alike.

He was being crushed in a close hug when he found the ceremonial dagger in his hand, and managed to slice it into the softer flesh of the 'neck.' The grip loosened, and the two fighters sprang apart and circled warily under the red sun.

Von Rheydt panted, wiped sweat from his eyes with the back of the dagger hand. Pain began to throb in his crushed ankle and in his chest. His opponent's sad eyes watched him unblinkingly as they circled, crouched, arms extended like wrestlers. The cuts on his half-extended neck gaped, but there was no trace of blood. The dark eyes flicked away from von Rheydt once, noting the ruin of its weapon, then slid back to follow the limping German.

Von Rheydt, circling to his right, stepped on something hard, stooped quickly and retrieved it; Mbatha's short spear. He held it low, pointed up at those sad, interested eyes.

*This makes it a little more even than hand-to-hand*, thought von Rheydt. He felt quite cool, as he usually did once a fight had started. But the odds certainly seemed to favor the alien; that metal-hard skin, its great strength he had felt in his leg, the lack of an exposed brain. The very deliberation with which the creature moved gave an impression of terrible strength. The deliberation of a tank. . .

Deliberation. Could it be the deliberation, not of irresistible power, but of great mass? Anything hard enough to resist a steel-jacketed bullet *must* weigh more than flesh.

At that moment von Rheydt crumpled, as if his injured ankle had given out. He fell to the sand and groaned.

The alien hesitated for a moment, then strode forward, its camel-like footpads making deep impressions on the sand.

It reached the fallen German, and the quick stride turned to a stumble as his spear entwined itself in the long legs. It began to topple over him, and von Rheydt rolled, bounding

up. The neck extended as the creature fought for its balance; and then the whole frame jerked as von Rheydt swept the short spear around and rammed its butt into the back of the alien's neck.

It hit the ground so hard that little goutts of dry sand flew up. Von Rheydt reversed the spear and leaned the point into the base of the neck stalk; but the creature did not even shudder. Von Rheydt smiled tightly; there had been a major nerve from the eyes to the brain.

He glanced around for the others, and saw Casca grinning at him. The Roman was bareheaded, and blood covered his scalp and the right side of his face; but he was kneeling on the chest of the blue-armored alien, and his short sword was at its throat.

Where was Mbatha? He looked around, and saw, about twenty meters off, the last minute of *that* combat. The giant Zulu, body shining with sweat, had both hands interlocked on his opponent's back in a powerful full nelson. The alien seemed to sag suddenly; the Zulu's back and shoulder bulged with a great effort, and with a horrible tearing sound one of the brassy arms was bent far back.

Mbatha dropped the unconscious alien, fell to his knees, and was sick in the sand, his body shaking with the aftermath of his exertion.

There was a sound of clapping from above them, and von Rheydt looked up at the general, who was sitting alone on the lowest tier of seats.

"Well done, Captain!" he called down, honest admiration in his harsh voice.

Von Rheydt looked around at his companions. Casca had raised his palm in the air in salute; he looked surprised. Mbatha had risen to his feet and extended his spear arm. *What*, von Rheydt wondered, *were they seeing in place of a general of the O.K. W.?*

"Thank you," he said to the general. "And now—your part of the bargain?"

"Of course. Return to life for all three of the victors," the general said. "Finish these three off, and then. . ."

"No," said von Rheydt.

The general stopped in mid-stretch, arms in the air. "What did you say, Captain?"

"I said, no. This—creature—fought bravely. It is not a soldier's way to kill when his opponent, though brave, is helpless."

The general lowered his arms and laughed. "And what do your less civilized friends say to that noble sentiment, Captain?" He said something rapid, something von Rheydt couldn't catch, and they both looked at Casca.

The Roman looked down at the blue-clad warrior, slowly raised his hand, and—turned his thumb upward.

Mbatha spread his hands and walked away from his defeated opponent. Von Rheydt turned back to the general. "You see?"

"This is insane," said the general, angrily. "This primitive

chivalry has no place in modern warfare. Even in your time, Captain—do your enemies give quarter to the wounded?”

“No,” said von Rheydt, then his eyes fell to the sand of the arena, “Nor . . . do some of my own countrymen. But the best among us, the professional soldiers, do. Obedience is not our only code, general. We also have honor.”

“That’s enough,” said the general, who had turned white. “Your last chance, Captain. Finish this matter properly. Now.”

Von Rheydt stepped forward and threw the spear violently to the ground. It stuck there, quivering. “You do it,” he said flatly. “It’s your war.” He turned, motioned to the Roman and the Zulu. They walked away across the sand.

Von Rheydt felt the blackness coming, drawing closer to him, like a velvet curtain sweeping in to end the last act of a play. It reached him, and he sank into it.

*He opened his eyes to the white coldness of snow against his face, and to a warmth that glowed like fire in the pit of his stomach. His eyes blinked, focused on a face. A human face. The face of a white-clad soldier, who shouted something, and who raised a submachine gun. . .*

It had rather enjoyed the role of a General Staff Officer, and It still retained the appearance of one as It sat down to write Its report. The battered Army typewriter rattled as It typed; It paused occasionally to refer to a document from the desk or to take a draw on Its cigar. The gray octagonal room gradually filled with drifting layers of smoke as It wrote:

*. . . the directive embodied in paragraph [4], reference [a], was fully carried out, in accordance with standard testing procedures as set forth in Ordnance Manual, latest revision. . . Evaluating officer personally observed comparative combat testing and was highly impressed with performance of human soldiers. They proved the better fighters in three of three encounters.*

*However, the humans evinced certain undesirable characteristics as far as suitability for front-line use is concerned. The most serious was a refusal to obey orders contrary to their primitive codes of fighting.*

It leaned back in the chair and thought about that one for a while, absent-mindedly blowing smoke rings. In all good conscience, It could not recommend immediate employment of the humans in the Disputed Sectors; they simply wouldn’t do if they couldn’t take simple orders. *But then, It thought, there’s just too much combat potential here to simply close down and start over again with some other design.*

It thought for quite some time, and then stubbed out the cigar, tilted the chair forward again, and typed, *Recommendations.*

*What is needed now for this Project is an intensified, speeded-up program of development. To effect this, it is proposed that two great power blocs be created at the conclusion of the present war, and that a situation of continuous conflict be maintained for as long as is necessary to produce a deployable human weapon. . .*

It nodded in satisfaction. Just the thing. And It could stay on to supervise, in a soft rear-echelon job, far from the Front. . .

It smiled, and began to Change.

—G—

## The Silver Man

[Continued from page 35]

piece of research being conducted in this building? Your own troubles offer no justification. I won’t be the person to tend charges of sabotage, intellectual or otherwise, but who else could have caused—”

“Willy, please!” McGrath interrupted. “I’ve asked you not to bring up any wild, unfounded. . .”

They all looked as though they were sitting a hundred thousand miles away, dead gray, on the moon. Strangely, it did not matter that they might cut him off and leave him apart from them all. He was suddenly excited. The experiment had served well enough: it had led him on to the mystery of the silver man. Perhaps—perhaps that civilization was out there, a civilization of men who knew how to control gravity the way we control electromagnetism and light. Perhaps, Peter said quietly to himself, seated at the conference table while his colleagues voted to discontinue the funds for his research, and their cold eyes in the cold room lay on him alone—perhaps they fear that they will be detected by us—why not?—and so they have sent an agent to me, to prevent me from learning what they have learned, from becoming what they alone have been able to become!

With a thrill of fear and anger and power, he looked up to see, in the darkening room, the shining form of the silver man. He stood silently behind the man at the other side of the table. Peter stared at the absurd tableau. The committee members did not turn: were they hypnotized? The silver man’s sightless mirror eyes were fixed on him; even his eyelashes were delicate silver wisps.

“Look!” Peter shouted. “Will you look!”

Flashing twisted images as he turned, the alien creature of light fled the room.

Paul Glass blinked. “What’s that?”

“What’s what?” Dutton.

“Is it cold in here, or is it just me?” McGrath asked.

The embarrassed men stared as Peter Wharton stumbled from his chair and rushed out into the corridor.

It’s so cold, so dark! Peter thought as he chased the silver man through the halls of the building. Has the power failed? The lights?

It was four-forty, and classes would soon let out, but the hall was empty. Peter heard the drone of lecturers through open doorways as he rushed by. Why don’t you help me? he thought. He’ll escape!

Light from the windows at the end of the corridor glanced obliquely from the polished floor tiles. Polarized. He hit the stairwell seconds after the man, slamming the fire door open with a hollow crash. Two, four steps at a time; don’t fall!

On the basement level a reflection, a quicksilver motion told Peter that the silver man had dashed into the men’s room. How absurd! How clever! The sublime, to the ridiculous—the last, desperately simple hiding place. The alien in the room for men.

His hands and feet were numb. The corridor grew darker as Peter hesitated outside the door, frightened before the confrontation that he knew would answer all questions, remove all doubts. He pushed clumsily through—he could hardly see or even feel the door in its remoteness—and inside he spotted a movement opposite him in the room. He moved forward—it was growing darker, darker, little light, no warmth in the home of the silver man—and as he advanced the creature at last moved toward him instead of away. Peter came to the mirror above the washbowl in the midnight



lavatory, and at the very last, before everything became blackness and separation, he saw the face of the silver man there, reflecting back and forth and back again, and there was no color or substance to him, merely light—trapped and twisted and shrunken duplications of his surroundings gleaming from his totally discrete and inviolate surface, which gave nothing of its cold self back to the objects which it distorted.

Walter McGrath located Peter in the men's room in the basement. He was standing ramrod straight, eyes clenched shut, in the center of the tiled floor. He swayed slightly, and if you looked closely, you could see that he was trembling.

"Peter." Walter stepped forward, hesitating. Should he call for someone else?

"Peter," he said, "What's the matter? Are you ill? I'm sorry about the meeting; I didn't realize how cruel we could be when we all..."

He stopped talking; Wharton's shaking had increased. He was trying to speak.

"Can't you see?" Peter finally gasped, pointing awkwardly across the room.

Somehow Wharton's tension had rubbed off on him; nervously the older man looked where the other pointed.

He saw only their reflection in the mirror above the washbowls.

He put his arm around Peter's shoulders, but the man refused to budge. Eventually he was forced to leave him to go get help. Some people from the university hospital arrived in short order; through the numbers of curious onlookers outside the washroom, they carried Peter out to their ambulance.

McGrath tried to contact Kathryn Wharton, but she was not to be reached anywhere. The department chairman sat in his office on into the evening, brooding over the young man's collapse. Was he in any way responsible? Could he have prevented it? He felt very old.

It was late when he decided to leave. As he locked the door to his office, he was taken by a sudden impulse. With furtive steps, half-amused and half-frightened by his own curiosity, he went down to the basement level men's room. There was no one there. He glanced with embarrassment into the stalls, then, as though saving it for last, as though he could not bring himself to do so without working his way up to it, he turned to the mirror above the sinks. He looked hard. What an old face he had!

Then he noticed that the mirror was slightly warped, and more than that, there had to be something wrong with the silvering on its back—for behind the reflected image of himself, he saw a kind of shadow image of another face. Like two layers of glass, half-silvered. A flaw.

My god, it was cold down there! He shivered, turned out the light, and left.

—G—

**O**NE OF THE SHOCKING FACTS I remember from an introductory biology course is that we cannot grow new brain cells. We are born with a given amount, and that's it. Worse than that, life is hard on brain cells, and we seem to keep losing them as we grow

D.C. Poyer

older. Still, there is some hope, if the theories of Marian C. Diamond of the University of California are correct.

A news release from the *American Scientist* says that Diamond's research indicates that aging doesn't necessarily cause the loss of brain cells—at least in rats—as long as they have a stimulating environment. Put three to a cage, male rats lost no significant amounts of grey matter as they came into the autumns of their lives. This result is different from that of previous aging studies, but Diamond claims that other studies never took the living conditions of the animals into account. Furthermore, she suggests that aging studies on humans could also be guilty of overlooking backgrounds. Structural changes in the brain don't count for much when weighed against environmental factors like role expectancies and psychosocial relationships. "In the absence of disease, impoverished environment, or poor nutrition," she states, "the nervous system apparently does have the potential to oppose marked deterioration with aging."

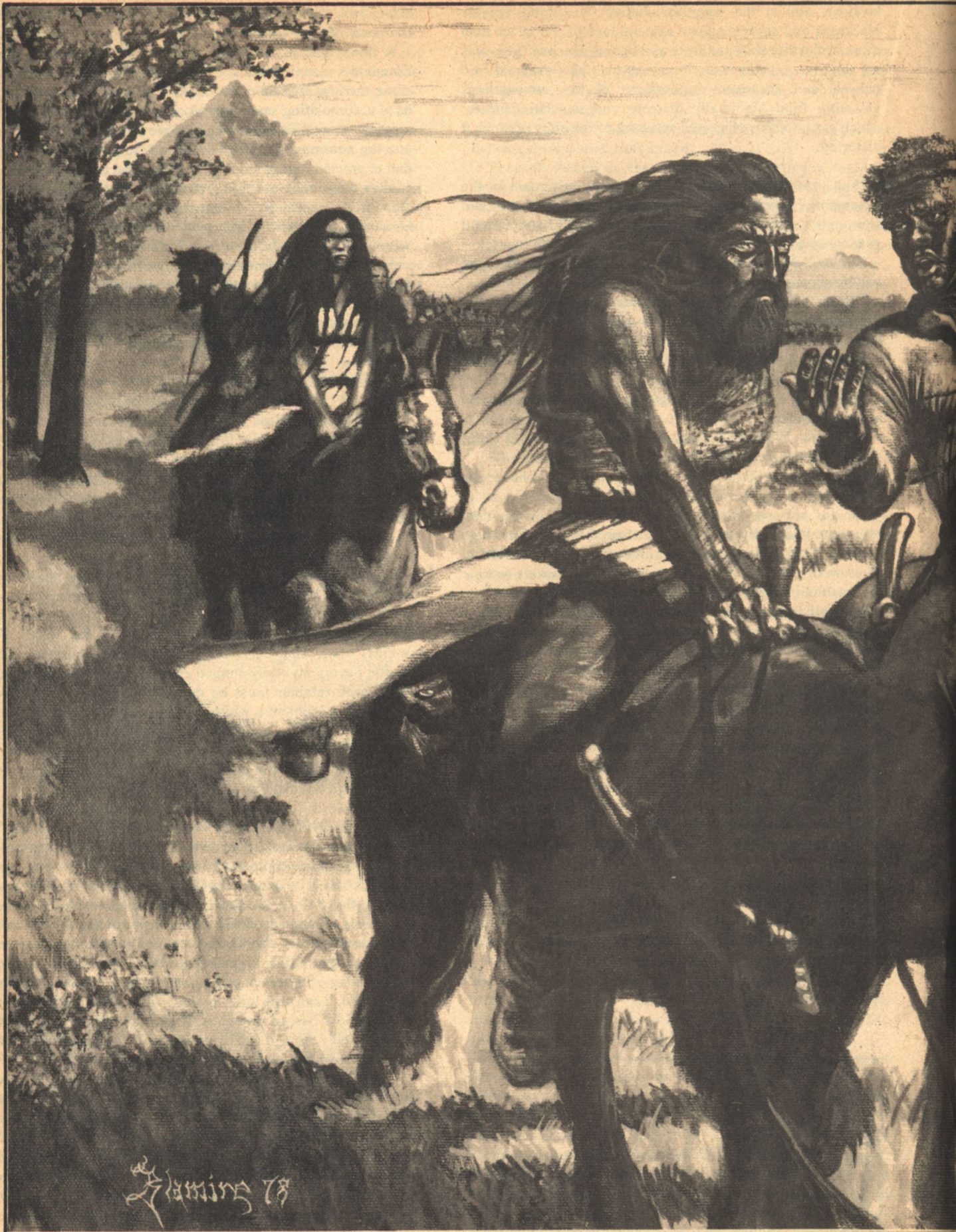
**N**ASA MAY BE REQUISITIONING extra bottles of Windex now that the Space Shuttle is a reality. Corning Glass Works tells us that the shuttle is just about covered with their products. The glass tiles (manufactured by Lockheed) insulating the spacecraft—about 34,000 of them—will be glazed with Corning's glass, which is more than 96% pure silica. The glass will provide additional protection during re-entry and will keep the tile from picking up damaging and weighty moisture while in the Earth's atmosphere.

If you've ever laid tile, you know that trouble spots are plentiful, and the shuttle is no exception. Areas around hinge points, windows, and landing gear doors require special retainers, which must be ceramic to resist the 2,300° F. re-entry oven. And, because the fitting must be precise (the shuttle having an oddly-shaped exterior only a mother could love), each retainer must be uniquely shaped. That would have been a problem a while ago, but not now. Corning has invented a ceramic which they call "Macor"—one that is machinable with metalworking tools. Such precision as that required for the shuttle could have been achieved previously only with special molding and diamond-tipped tools.

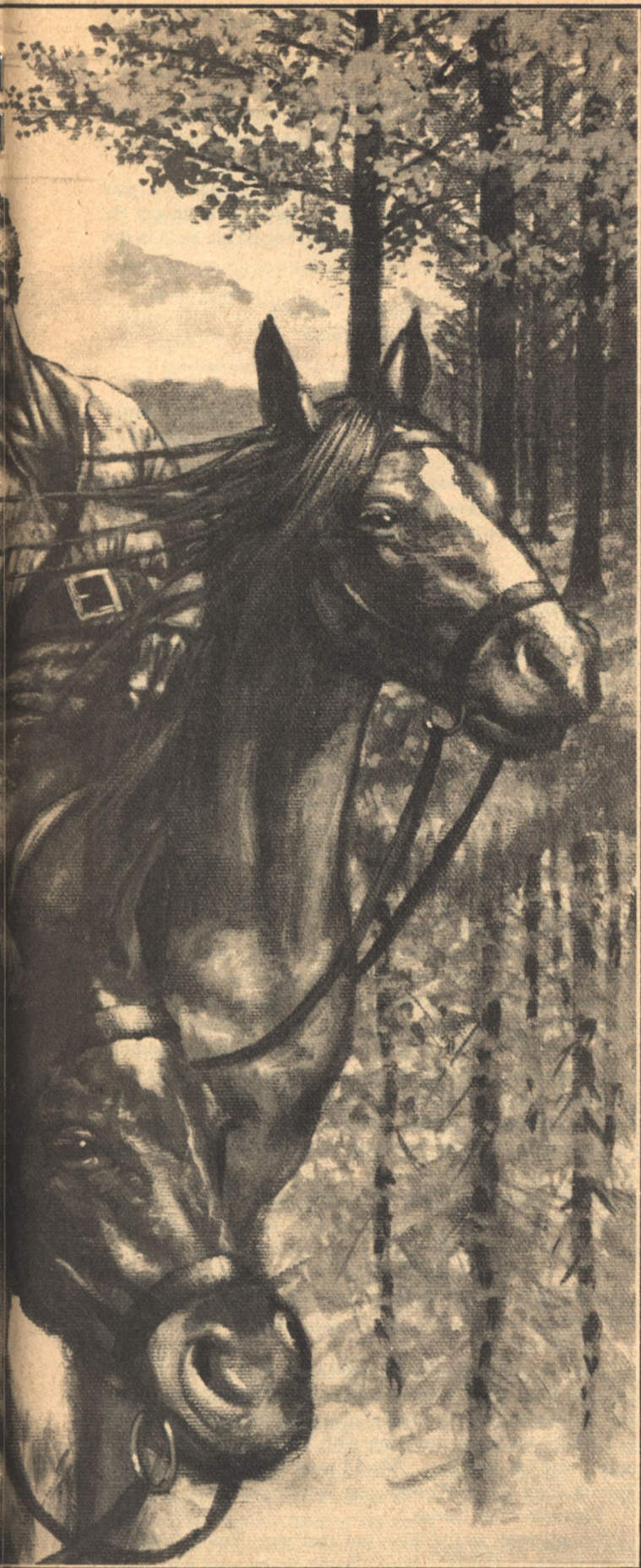
**I**T DOESN'T GIVE SPONGE BATHS, and it isn't much to look at, but the Dialog 117 may be the best hospital companion an immobilized patient can have. Developed by Dialog Systems of Belmont, Mass., the 117 is a small computer that obeys voice commands. Always available and always willing, the 117 can do the practical—control bed motors and room lights, turn on the radio or television, or answer the telephone—and it can do the amusing—play a computer game or type a letter. (That's no mistake, it can type letter-by-letter dictation.) Not to worry if the patient has an accent or strong dialect; the computer will gradually train itself to understand the peculiarities of anyone's speech—even doctors and nurses can't do that.

The 117 works first by converting sound waves into electronic signals. These signals are then amplified and converted into digital form that can be understood by the system's word processor. Dialog Systems expects that the 117 will reduce hospital costs because nurses and therapists will have a reduced workload. In addition, while a nurse or therapist can see to just one patient at a time, the 117 can be designed to serve as many as eight patients simultaneously.

GALILEO 47



*W. H. Harrison '78*



Marvin Kaye/Parke Godwin

# THE MASTERS OF SOLITUDE: Conclusion

Parke Godwin  
and Marvin Kaye

[Condensed from the forthcoming Doubleday novel.]

## Synopsis

### The Story Thus Far

Garick, god of the Shando, has sent his younger son, Arin, to rally the Uhian covens in a war against City. Singer, his son by Judith of the City, is still his unwilling prisoner.

Arin's travels have led him first to Karli where he is reunited with Shalane, the young master he loves, and then across the cruel, winter-bound Blue Mountains to bargain for an alliance with Uriah, chief elder of the Kriss.

Uriah is secretly financing the war through his own son, Callan, an officer of the Mrikan mercenaries. His intentions are to destroy or subdue the covens in a holy war. To this end he has fostered the plague carried by the huge rats of Lishin which kills all of the 'broken circle' but Arin.

Half mad—and curiously sane for the first time in his life—Arin escapes Lishin with the final clue to the whereabouts of the Girdle of Solitude.

Meanwhile, the Karli have begun Garick's war against the mercenaries. Learning of Uriah's treachery, Garick sends a small band of Karli to decoy Bowdeen and Callan toward the east while his own main force obliterates the Kriss. Arin is

with the decoy force.

The Kriss are annihilated; nothing is left alive in Salvation. For many coveners like young Shalane, this necessary horror brings home to them what was predicted by Hoban. Their world and they themselves will never be the same again.

Garick tries to enlist Singer to find the Girdle, but Singer flatly refuses. He will not fight Garick's war. He is bundled along on his father's travels, still a prisoner.

A young Suffec named Webb accepts Garick's request to search the great swamp for the Girdle. With the priceless weapon in hand, he turns north to meet Garick.

Sick and wounded, Arin has hidden in the house of Sidele, Bowdeen's woman, led to her by instinct and a kind of vision. Not knowing his presence, Bowdeen and Callan come to the house, and here Bowdeen makes his final break: a Wengen himself, he will no longer fight his own kind.

Though his father is dead, Callan decides to fight on his own with the mercenaries under his command. When he leaves, the mysterious Sidele reveals the hidden Arin to Bowdeen. On the same side at last, the two men ride to join Garick while Webb hurries north with the fateful Girdle of Solitude.

Now the forces of Callan and Garick seek each other for the battle that will change history.

The die is cast at a place called Dannyline...

## PART IV

### THE FIELD AT DANNYLINE

**E**VERY TIME THEY STOPPED TO REST, they tied up Singer with a coarser rope than they'd used in Charzen. It was uncomfortable. Garick meant it to be.

Singer was drowsing against a tree when his father's lep curtly announced he wanted to talk. He opened his eyes to Garick's shadow looming big in the flickering watchfire. His father dismissed the guard and approached Singer.

"Getting bored, boy?"

"Well, the guards aren't much conversation, but there's stars to count and a firefly now and then."

"I guess you've heard: Webb is bringing the Girdle."

Singer said nothing.

"That wouldn't matter to you," said Garick. "You never met Webb. A swamp boy who probably doesn't even know why he's doing this. Doon gave him a handful of riders, that's all he could get. If they're bushed by merks, it'll be because you wouldn't go when I asked you to."

Singer cocked one eyebrow at his father. "Daddy dear, this is your war, nobody else's. Anyone who dies is dying for Garick, not Singer."

"Is that all you can see? Is that all you've learned in twenty-seven years, how to hate?"

"What I've learned does not make a joyful body of knowledge. You've used people all your life, and if a few got broken here or there, well, that's sad. But not me, Garick. If I'm going to be a tool—my own hand does the shaping."

Garick glared at his son. "I just want to know one thing."

"What?"

"Webb's driving north, we're moving south, Arin's coming from the east with Bowdeen. We're not hiding now, we're letting them see us. Any time now, one or all of us are liable to run into Callan."

"So?"

"So...when that happens, will you go to the knife with your people?"

Singer studied his hands for a long time. "They haven't been my people for twenty years."

"If you don't," Garick went on, "I'll see you're tied to a tree till the fighting is finished. Now, think about that, Singer. If I lose, you'll still be there when the merks find you."

"I like trees. They remind me of my mother." It was matter-of-fact, without a trace of irony, but Garick winced. He turned and strode silently away. Singer raised his head in the firelight.

"Garick!"

The god halted, half in shadow. "What?"

"About Bowdeen: do you trust him?"

"No."

"I would."

Garick came back a pace or two. "Why? There's not a covener in this column doesn't want to cut his throat, and Jenna heads the list."

"Getting used to blood, aren't they?" said Singer. "You're a using man; use Bowdeen. There ought to be somebody out here who knows what he's doing."

**T**HE SCOUT CANTERED OFF THE ROAD and trotted through the trees toward them. Dismounting, he threw the two officers a hasty salute. "Raised a mounted party of five about an hour southeast."

Callan handed him the map and pencil. "Mark them."

"Right there."

"Bearing and speed?"

"By compass, northwest by west. Slow and easy."

Callan studied the map. The intervening terrain was fairly open and level, mostly grassland with patches of forest. At normal march pace, Garick would meet the small group in less than six hours. "You think they're his scouts?"

"Don't think so, sir. They're streaked, but not Shando green. Sort of gray-brown."

"Suffec," Vanner judged. "Moving awful close to Mrika. Why, when they could cut west just as easy?"

"No, there's a reason." Callan remembered Uriah's speculation about the Girdle of Solitude. They could be carrying something of value to Garick—if not that, something else. That would explain why he was skirting City rather than marching due east. The Girdle story was a pagan myth, too farfetched to take seriously, and yet—

"Pass it on, Vanner: two companies for a drag—39th and 44th."

Vanner looked quizzical. "You said the old bounties don't go any more."

"They do for these five."

"Five coveners? Where's the gain?"

"They're moving to meet Garick. Say they have something he wants."

"Like what?"

"Just say they do. Garick thinks we're spread too thin, anyway. If we drag these five, he might think we don't have any better plan than to tear him up a piece at a time. The 39th and 44th have been dragging with me all spring." Callan paced with his thoughts. "And I want them to *look* like it, Vanner. Every piece of covener gear they've picked up."

"That won't fool Garick."

"I don't want to fool him, not that way. You'll head the party yourself. Garick's close enough for an easy lep. You'll

give them time to do it—that's important—and then tear them up."

"Right."

"And if they're carrying anything unusual—anything at all—detach two men and get it back here fast."

"I'll bring it myself."

"No," said Callan. "You dig in and wait for Garick. If I'm right, he'll come quick."

Vanner's fist of a face contorted. "Wait for Garick," he echoed in disbelief. "I'm gonna sit there with a hundred men while Garick throws everything but his mother at me?"

Callan nodded, sure at last. "That's right. One hundred men—"

"Field—"

"—and all our new toys."

The addition caught Vanner agape. His shapeless mouth evolved slowly into a grin of comprehension. "Yes...right; while you peel-and-fade?"

Callan nodded. "Right. Map check before you move out. And Vanner—"

"Field?"

"All the toys. The talk boxes, too."

**T**HE FOUR OTHERS, the three boys and the girl, rested below. Webb felt hardly tired at all; the nearer he came to Garick, the more he ran on nervous energy that would have to be paid sometime in one hell of a sleep. But now he scrambled up the hill, hoping to see some sign of Garick from the top. The strength of the leg and Garick's own reports told him there wasn't more than a few hours' travel between them.

He was glad of the climb. It took away some of his concern with himself. All his concentration centered in his hands and feet as he worked his way higher and higher. It was a gentle hill, mostly, easy to climb. Once there was a difficult place, a bare outcropping of rock covered with a treacherous layer of shale, but he got on all fours and scrambled and grasped until he won past it, then it was up and up again till he reached the last lip and sprawled spread-eagled on the grassy summit.

The little puffs of cloud dreamed across the blue summer sky, distant and unconcerned. He allowed himself another private moment, one more breath before rising to search the country in front of him.

The merks were there, two straight, unmoving lines of them. He saw them in their column order, sitting motionless on their horses, so still they might have been chipped out of stone. For one disoriented moment, Webb had the notion of a woven picture of menace that would remain fixed and changeless so long as he did not move himself. His heart thudding, he began to count them swiftly by two's. He made over a hundred of them, and a string of ten pack horses at the rear of the column, loaded with large boxes.

They began to move, urging their horses forward purposefully, without haste, circling the base of the hill.

*Webb!*

The others saw them. The frantic lep screamed into his mind and he watched them scabble for their bows. Even as they did, the merks charged full-speed down on the four young Suffec, sheddys swinging in fierce semi-circles. By the time he reached the bottom of the hill, it would be all over. They might pick off two or three of the soldiers, but they could not hold out against them all for long.

Four arrows hissed, but the charging merks were elusive targets. Still, he saw two of them fall, another and

another...

Then the distance was closed, and the blades rose and fell and rose again. The two remaining Suffec ran to gain their horses. One of them wheeled about to loose another arrow, and Webb watched dumbly as the boy threw his own life away in the pointless action, bringing one more merk off his horse before a sheddy lopped his head from his neck.

It gained another second of time for the girl. She vaulted her horse and kicked it into a gallop but even as she did, fifteen men widened their circle, penning her in. One arrow flew, then two more, all three striking her horse. The beast's knees buckled; she leaped free before it could pin her under it. Spinning, she sought vainly for some place to escape through the circle.

At a signal from the leader, a fierce, blunt man with a hatchet face, they ceased circling, dismounted and began to stalk her. She shot her final arrow, missed. Transfixed with horror, Webb watched her take one man with her knife as he stepped in, blade raised. Then the others were on her, bearing her down. They ripped away her clothes and began to paw at her, but the leader walked off to busy himself with the three dead Suffec. His blade flashed once over each of them, cutting the right hand from the body.

High on the hill, Webb gazed down with lofty stupidity at the nightmare below. It was not real, he couldn't believe it. The tiny figures were just puppets. *Or maybe fish.* And then the girl shrieked in pain as they sliced off her hand and dropped it into a bag.

That was the moment—he remembered it clearly afterwards—that a thing broke in Webb, a sickness he had never felt before, poison and strength at the same time, that boiled out of his center and exploded in sound. He *hated* for the first time in his life. He cursed the soldiers, howled at them, dared them to come up and fight him one at a time, yelled without knowing what he was saying, screamed at them until his raw throat grew too painful to voice the murder he felt.

The merks stared up at him, silent, watchful. The leader spoke and they all ignored Webb, spreading out to search the grass in the immediate vicinity of the massacre. Even as they searched, he realized the merks were also managing to encircle his hill.

He cursed himself then for giving way to his anger. It did the girl no good, and only betrayed his own position. More important, he'd endangered the mission to Garick, because—

*Because...*

Because, he finally admitted, the thing in the sack might really be the Girdle of Solitude and he, Webb, might have contributed to Garick's war by putting a powerful weapon in enemy hands.

Now Webb partly realized at last why he'd entered the swamp in the first place and why it was so vital, no matter how he felt, to bring Garick what he wanted. Because Garick was *we*, and he was *we*, and the Suffec down below and the Karli and Shando, and all the coveners that had found peace and music in the forest were *we*. And these men with their long blades were *them*, a disease to be cut out of the healthy body, buried and grown over. They were a sickness in Webb himself that would rise to high fever before it ended.

He was crying. Clutching the sack, he closed his eyes tight and began a desperate leap to Garick.



HE LEP SPED LIKE FIRE in the dry grass through Garick's people. Never the most disciplined of his force, the Suffec contingent was already riding down on the ambush point and would answer no order to turn back. Others were saddled, anxious to follow, impatient for Garick's order.

"We can't get there fast enough," the god told Jenna. "How far away is Arin?"

She stared at him but did not voice her thought. "The girl's with him, she can say." In his haste, Garick missed the bitterness in her tone.

"Ask if Arin is further south than us."

Jenna lepped to Shalane. They waited in the dust and heat.

"She says yes."

"Bring her here. She has to help me get him."

They lepped Shalane up the line; then Garick shut his eyes and concentrated, trying to reach Webb with whatever instructions he could. Lately the god was so tired, he experienced difficulty in focusing long-range lep. Tentatively, Jenna put her hand on his shoulder. He grasped it instinctively and drew on her vitality to strengthen his lep. It was not the reason she took his hand, but she knew Garick would think it was.

The three masters completed the lep to Arin, then Garick called for his map. The scouts had just reported Callan and what appeared to be his whole force, moving east down the old road, away from the ambush point. This bunch—just over a hundred, Webb said—had probably turned aside to make some quick money.

He measured Webb's position to Callan's last sighting, then to his own. If it was a trick on Callan's part, it had backfired: he couldn't turn around in time even if he knew. And the loss of a hundred men for five would hurt him. Garick's force would roll over them like an angry river, and there would be no prisoners.

The god of Shando looked at Arin's woman and his own, saw his wish mirrored in their faces, and the lep went out to the whole column from their linked minds.

*Follow the Suffec. We will attack.*



BOWDEEN GRUDGINGLY ADMIRERD the tireless ease with which Arin rode hour after hour. Of course, he had twenty-five years on the Shando, but even now he was relearning coven shrewdness from the young master. They rode in open country but zig-zagged every few miles and avoided fields where the grass even looked as if it had been recently crossed.

Arin was not warm company by Bowdeen's standards. He spoke rarely and to the point. The wintry set of his eyes never thawed, but they missed nothing. Bowdeen no longer wondered how he had been beaten at the bald top. The miracle was that he had gotten away at all.

Arin reined short, silencing Bowdeen's intended question with a wave of his twisted arm. He sat his horse, unmoving. At length, he turned to the Wengen.

"Message from Garick?"

"Trouble south," Arin confirmed. "Drag party's bushed some Suffec."

"Drag? Why'd Callan be dragging *now*?"

"You don't think he would?"

Bowdeen shook his head sadly. "No, but maybe that one bunch didn't get the word or don't care. Money comes hard. Anyway, what can we do about it?"

"Not us," Arin corrected, "just me. Garick wants me to

ride south, try to help them."

The black man's eyebrows shot up. "With what? One bow? They're dead by now, Arin. And what do I do while you get killed, too?"

"Ride on west, meet up with Garick. Due west, you'll pick up his column somewhere along the line."

"Without you? They'll think I sold you again. What'll I say?"

"Bowdeen, considering who you are and what you were," Arin gave him a small, chill curve of smile, "I'd be *real* friendly." He slapped the reins and galloped off to the south.

"Arin!"

"Garick's orders," the drawl floated back across the meadow from the dwindling figure. "Any questions, ask him."

"Arin, goddammit—"

"...Garick *said*!"

Which was a lie.



WEBB MOVED CAUTIOUSLY down the slope, scared that he was doing just what the merks wanted him to. As he watched them range out in their puzzling search below, he couldn't believe they were so completely uninterested in him.

Garick's last lep urged him to use the Girdle for escape. Webb didn't think it would do anything, but he tried it—only to yank it off again fast. The thing made everything so wavery before his eyes that for a second he thought he might pitch head first off the side of the hill.

He inched downward, using every bit of bush and rock for cover. There was still too much open ground where he was in full view of the merks.

Below, the horses ate grass obliviously. Some of his feverish hate fell on them. He took a sliding step, shifted the center of his weight, made a scuffling run for the safety of another clump of bush, reached it. Only one more stretch; a few yards down the final curve of hill, then a short sprint across ten more feet of meadow to the nearest horse, all in the open.

Could he outrun the merks? He was rested, they were probably exhausted. Maybe, just maybe—He wondered how far off the closest of them were. He couldn't see anyone from where he was. They might be coming up the opposite side of the rise.

Not much time... *now*.

Sucking a lungful of air, Webb shot forward down the last slope, adding gravity to his speed, half running, half stumbling, ignoring the bruises and cuts along the way. Even in his headlong flight, the Suffec in him kept his leg muscles supple and relaxed, careful to make as little noise as possible.

When he hit level ground, he heard the cry go up, and he spurted across the intervening distance to the horses, not daring to turn his head, running, running, his lungs gasping for more air, not allowing himself the dangerous split-second he'd need to gasp in one sweet breath that could be his last.

He had the horse moving before he was in the saddle, lashing it into a stretched-out gallop, lying low along its back to present a small target for arrows. One shaft hissed close to his ear, another thwacked the ground a few feet ahead and to the right. A few more misses, then no more. He was free.

The horse plunged on. Webb dared a look back; they stood there, cursing and shaking fists, a dwindling group dwarfed by the hill behind.

He gave the frightened stallion its head, riding high on the

If it was a trick on Callan's part, it had backfired: he couldn't turn around in time even if he knew. And the loss of a hundred men for five would hurt him.

shoulder for balance. He did not look back again, but let the horse eat up the rolling meadow, dashing west until he perceived, in the distance, the single rider in green coming toward him.

As the fleeing rider glanced back fearfully, Vanner clenched his fist in mock menace and uttered a grunt of a laugh. "That's right, boy. Go tell Garick we're here."

"I could've got him, sir," one merk protested. "Clear shot; why'd you stop me?"

"Field Callan'd have your ass for dinner," Vanner warned. "You'll get your chance real soon." He barked at another man. "Sweep! Company officers to join me here."

He supposed the coven boy had time to lep Garick, but even without that, he'd carry the news of the massacre. That was the bait; Garick should take it. A hundred men would have no chance against him, and Callan couldn't afford to waste that many. Callan was counting on that. Vanner reflected: Garick was estimated six hours from this point when Callan sent them out. Another hour and a half to reach and finish the Suffec, say two to be sure. Garick would reach them with daylight to spare and come in with the late sun at his back.

"Dig in," he told his officers when they gathered around him. He drew two circles in the dirt, one inside the other. "Two closed lines of trench. When they're in position, let 'em rest and eat."

The commander of the 39th was a slow-talking, careful man. In his Karli skins he might have been Moss studying the two circles. "How far out for the aiming markers?"

"Fifteen yards," said Vanner.

The other man thoughtfully poked a hole beyond the outer circle. "That close?"

"That close," Vanner smiled grimly. "Man, it don't make no difference. Not with the throwers."

**N**EITHER SPOKE FOR a long time. The heat had a music of its own, rustling the grass, buzzing in the movement of insects. They listened. Finally, Webb gave the horse a pat and dropped himself down in the grass to drink thirstily from Arin's water bag. He looked up at last. *Almost didn't know you. You changed.* With more than years, Webb thought.

"I've been travelling." Even Arin's voice was different. *You changed too, Webb.*

*Yes. Too painful to share.*

Arin nudged the sack with his toe. *In there?*

Webb nodded.

Arin uncoiled from his stone-cut stillness. He opened the sack, dumped the contents on the ground. He picked up the dingy belt.

*... This?*

*All I found.*

Arin held the belt for a long time, staring at it. What he said made no sense to Webb, but it wasn't meant for him.

"These are my folk. Garick's broken circle. Shando's best." Another silence. "All of them... for this."

Arin sat there holding the dirty old belt in his hands, saying nothing, looking like he couldn't remember what to do next, in the middle of an empty field under an empty sky. Then he rose and fastened the belt around his waist. His finger found the toggle.

*Don't Arin!*

?

*I tried. Made my head hurt.*

Arin flicked the switch.

Webb started; one second Arin was solid before him, the next he was gone and even the grass showed no depression where invisible feet ought still be standing. Just as suddenly, he reappeared, clutching at his eyes. "Damn..."

"Told you, Arin."

"See what you mean," he murmured thickly. "The force field affects the wearer's own vision."

The strange words meant nothing to Webb. His eyes still bulged with the wonder of it. The other pointed to the cap and sealed pouch that fell out with the belt when he emptied the sack. "What are those?"

"Found them with the Girdle," Webb replied, finally accepting the real identity of the belt. "Thought they might be a part of it."

He watched Arin examine the pouch, open it and remove a small book whose thick pages had survived the brittling of age. After scanning a leaf or two, he closed it, replaced the book in the pouch and handed it to Webb. "Take this to Garick."

"What is it?"

"Kind of a story, Webb. All about Callee."

That had to content Webb. Arin was already busy turning the cap over in his hands, until he found symbols imprinted on one side: SCU-A3. Mumbling to himself, he fitted it on his head. A pair of odd things with something like glass in them swung down to cover his eyes. "Now," he said, as his hand found the switch again.

This time Webb was braced for it, even casual, asking the empty air if the cap took away the dizziness. He received no answer.

"Arin?"

*Goodbye, Webb.*

"Goodbye? Where you go?"

No answer.

"Arin, come back so I can see you!"

*No time. Get to Garick. Give him the book.*

*You ain't coming?*

For answer, Webb saw Arin's riderless horse suddenly break out toward the east at a fast trot.

"I can't go to Garick without you, without Girdle! What I gonna tell him?"

*Tell Garick—meet me in Lorl. If.*

*If what?*

He received no other answer. The horse sped into the distance and was soon lost to sight.

**T**HE FIRST SHANDO element reached and blended into the Suffec lines, headed by Garick and Jenna. The goddess' trailing red mane was like a flag, recognizable hundreds of yards distant. They lepped Webb to them and, when he ranged at Garick's knee, the god demanded, "Where's the Girdle?"

Webb was at a loss. "Arin took it."

*Took it? Where?*

*East toward City.* "Said—said for you and goddess Jenna to meet him in Lorl. 'If', he said."

The open, uneven ground flattened out for a good half mile before them. Without command, the leading ranks increased their gait to a steady, controlled trot.

"If," Garick snapped. "If what?"

"Don't you know," Jenna answered quietly. "Don't you know where he's going?"

When he broke over the rise with the first line, the sight tore involuntary laughter from Garick: dozens of merks fleeing on foot down the hill toward their horses gathered within a wide circle of trench. They'd caught them at last, caught them like dull autumn flies in their vicious, stupid complacency, counting cut-off hands and seeing them as money. He nocked an arrow, saw Jenna do the same. The last merks leaped the outer trench—

*Why trenches?*

The instinct swiveled his head to the left toward the long wood that bordered the meadow. Linked with him, Jenna turned, too. They saw nothing but trees, and yet the *no* struck them both like a sudden blow, screamed the whole insane story in one split second. The wood quivered with danger, and there shouldn't be trenches *no wrong stop* as a single voice lifted over the roar—

"Fire!"

Garick saw the men rise out of the first trench like humpbacked dolls jerked up on a string, point something, then disappear as two dozen separate tongues of flame spurted out and became an opaque wall of sticky, flaming jelly. His will urged Jenna's and she sawed her horse's mouth with her hands. The two hurtling animals went stiff-legged in mid-stride, splaying their forehooves in a jolting halt, rearing up, taking with their heads and shoulders the flame that would have covered the riders, shrieking as they went down, forebodies covered with curling flame.

Garick stopped thinking. Automatically he rolled free of the stricken animal. He heard his own screaming in the noise. His left arm, from hand to shoulder, was encased in a sleeve of fire. He rolled in the grass, the stink of his own seared flesh thick in his nostrils, trying to lock the pain away behind consciousness. The world roared and tumbled about him and, through the unbreathable, heat-distorted air, he saw the ruin of his first wave, burning where they lay. Some still moved, trying pitifully to crawl away while the fire puckered and split their hairless skin.

The ranks behind wavered, halted as they saw with horror another flame wall rise from the trench to engulf the second line. Vanner poised, arms raised, then pointed at two waiting men with large black boxes sitting on the lip of the trench. Each bent to the box; each pressed a button.

The air bellowed with bugles played at ear-piercing volume from the solar-battered recorders. The high-strung coven

horses bolted and plunged, neighing high, tossing their heads to rid their small brains of the agony in their ears. Garick gasped, only part of it pain. What had been a great seething charge became now a milling confusion as the riders fought to control the maddened brutes. Further up the slope, the Shando looked down into the hell at the bottom, seeking Garick and Jenna.

"The goddess!" One master spotted the red flag-mane in the smoking maelstrom. "There she is."

Jenna's horse had reared a split second before Garick's. She rolled clear, singed but unhurt and cursing. Down on one knee behind the burning carcass, she sent shaft after shaft into the ditch. The nearest thrower-man went over, then the next.

*Jenna...*

*Garick, where?"*

The other lep lanced at her: *Goddess, hang. Hang.*

She loosed one more arrow, turned to look for Garick, then the green riders were on her. She grasped their arms and let them carry her out of the heat, twisting her head back to find him.

*I'm all right. Find the god.*

Lips drawn back, Vanner watched the horses run out of control from the nightmare horns, the riders struggling vainly to master them. "Hold fire!"

There wasn't enough fuel for the throwers, that was one weakness in the plan. None of them were more than a quarter full to start. *Callan, you shit*, he thought, *where are you?* He waved forward the bowmen already hurrying from the inner ditch. By plan, they were to press the advantage now, move forward mopping up the running wounded and push on to gain the ridge. There was one target for all of them, Venner knew, and it was still alive. He'd followed it with his eyes all along, its clothes smouldering rags, trying to stumble away, falling again, the red-black remnant of arm flapping uselessly. Garick.

Three of his men lurched sideways and fell as they came out of the ditch. Vanner flinched as the arrow tore his sleeve. What—?

The arrows flew again with deadly accuracy. His men were running back to the trench. Vanner couldn't even get his head up to see what it was.

The slope above Webb was a solid, squirming mass of men and women, struggling on ground so cluttered with fallen horses and humans that there was barely room to move. At the bottom, around him, the burned carcasses became his own protective wall. Six of them came out of that first wall of fire unharmed—himself, the Suffec girl Dooby, and four others of his own. With the attack from the woods, the battle passed them by, but they crouched behind their wall of flesh directly in the path of the men in the ditches. Silently agreed in the linked minds, the realization became a plan: for whatever good it did, they could stop the fire-men from getting into the fight for a while.

There were plenty of arrows, and big, slow targets a hundred times easier to hit than the swift birds that honed their bowcraft in the bayous. It was almost funny; every time the merks tried to clear the ditch, the Suffec thinned them out and ran the others back to its protection. But their arrows were almost gone now. Webb hugged the sweating, fierce-eyed girl. Dooby was fifteen, skinny, raised like himself in a bayou on wildrice and greens. She'd stayed with him once.

*Next time they come out*, he told her. *Watch my point. One*



man. Dooby.

The last arrows flew. Webb didn't have to raise the knife. Dooby and his folk knew what had to be done.

Vanner swore. Six of them. Six goddam Suffec just out of thrower range keeping him out of the fight, calmly decimating his men, scoring more often than they missed. The sun had dropped below the hill crest and the struggle inched up the slope, leaving it thick with dead. You couldn't see the dandelions now.

Not so many arrows that last time. They must be near out. "Drop the throwers. Sheddys, dammit, we're going out!" "Vanner!"

He looked where the soldier pointed. The six Suffec were already running full speed down at him, bounding high over the obstructing bodies, nothing in their hands but knives.

A dozen men started forward with Vanner to close with them. One of the last snatched up a thrower and swung the nozzle at the six. It sputtered and smoked, empty. One skinny girl dropped under a chop that would have taken her head off, spun in a blur of speed to slash the man's neck, completed the spin and came straight on at Vanner with barely a break in her stride. Behind her was the boy. Vanner set himself, wielding the sheddy two-handed, raised it—

He was swinging when the girl's feet left the ground, came up before her, slamming low into his middle as she fell. Too light to knock him over, she broke his balance, and then the boy was on him. With no time to swing again, Vanner lunged in a straight thrust, but the girl tripped him up. He fell; snake-lithe, she pounced on his sword arm, trapping it under her while the boy wrenched the sheddy from his fingers, raised it and brought it whistling down.

The shock paralyzed Vanner. Through the numbness, he gaped at his right wrist. Webb raised the sheddy again and brought it down on the bearded neck, as the men from the second trench lunged forward, rolling over them, barely pausing as they pushed toward the slope.

Dooby crumpled beside him, an arrow in her chest. In the last second before the sheddys ended him, Webb threw the severed hand in their faces.

The two Shando riders tried to get to Garick. They were hit and still came on, hit again, falling while the riderless horses plunged by him. Barely behind them, the other rider in buff skins darted in, lying low along the horse's flank. He careened to form a shield between Garick and the merks, and dropped off, pulling the god toward the saddle.

"Go on, thickhead, get up."

Garick's parched lips cracked in a grin. "Moss..."

Suddenly Moss yanked him back. "No, down. Down."

The rush, like the sound of supernaturally swift birds froze them still. From out of the bordering wood, a black storm of arrows rose, hovered and descended. They flattened themselves to the horse as the deadly rain came down, and then the wood sprouted a quarter-mile of galloping soldiers.

"Master Garick," Moss pushed him up into the saddle, "you sure know how to start a fight." He slapped the animal's rump. "Git, horse."

On the brow of the hill, beginning to control his pain, Garick could still see Moss running, Maysa beside him, bows and quivers jouncing at their side in the press of milling horses and men, and the angry tide of merks that battered into them, sheddys flashing in the sun. His brain began to work. Behind him waited the unharmed bulk of his force,

halted and confused for the moment. *Bowmen, he lepped. Bows on foot. Shando masters, move forward with Edan. Packdogs. Packdogs.*



HE PEEL-AND-FADE worked beautifully. With his column half-obsured by dust, Callan moved away from the drag site knowing he was watched. But as the distance increased, Garick's scouts could not detect the right hand column dribbling off into the concealing woods, or the parallel lines of men from the woods on the opposite side of the road that replaced them under partial cover of the dust. While it was still in sight, the column did not appear to thin.

The peeled-off files reformed quickly and rode under heavy wooded cover to range themselves on Vanner's right flank, horses and men flattened to the ground. Waiting, watching the covens come down in that first charge, Callan weighed chances. Vanner was smart enough to conserve the thrower fuel. He'd move forward out of the ditches when he could, probably cursing the field commander all the way, but the one weakness of peel-and-fade was that his last men on the road could not reach him in time for a full-strength attack. Callan waited as long as he dared, but the talk boxes had done their work. Garick's riders, some of them, were being carried by the maddened horses right into merk ranks to be slaughtered. When he gave the order, a thousand men followed the first flight of arrows to smash into Garick's disorganized point.

When Callan's last elements arrived from the road, the struggle on the hill had separated into something recognizable: two lines, the covens backing slowly up the hill in an organized formation, the merks dismounted and advancing slowly behind their horses, throwing flight after flight of arrows into the open, unprotected ranks above. The throwers of the 39th and 44th were among them now, expending the last of their fuel in well-placed spurts of fire.

As the uncommitted men watched, a rider dashed out of the battle and drummed down on them—Callan, sweaty, waving his sheddy like a flag, cut in the leg but glowing with energy that crackled out of him as he swept the blade toward the west.

"Flank!" he snapped to the ranking officer. "Cut around Garick's right, flank them. There's too many of them to move, too dumb to deploy. They're piling up on themselves, lost thirty to our one."

"They're retreating, sir?"

Callan paused to gulp a needed breath or two before answering. "No, just moving back behind bowmen. Poisoned arrows. And masters," he rasped out of his raw throat. "They... set up a kind of field, a field of power. Seen them do it with packdogs... can't put it very far out, but stay out of range. Twenty yards... they'll burn your brain out. Go in behind your throwers, use them up, throw them away when they're empty. No more fuel, anyway. Cut down the edge of the woods, keep covered, then attack in order. In order, is that clear? Move out."

The officer swung his horse around to execute the orders. "Where'll you be, field?"

"With the 44th," Callan pointed to the hill. "We can't give them the chance to come back at us. Keep pushing. Keep hitting."

The columns clattered off through the trees. Callan wiped his sweaty forehead on a sleeve. "Now, Uriah," he murmured. "Now, at last. Today."

Neither he nor Garick had any more choices to make, but he

had a plan where the Shando had only a chaos of stunned, untrained rabble. He couldn't afford to let Garick recover or mass in concerted attack, not with all his own men committed now. It hinged, as always, on the Devil's own fate-maker, Garick. Someone said he was dead, others that he was badly hurt. If he were still giving orders—if he managed, unthinkable, to use those untapped numbers—if Callan had to fight defensively—

No, it had to be now, before dark. Before Garick had the chance. He spurred toward the hilltop.

In the wood west of the hill, Jenna crouched protectively by the limp god, glowering at the masters who worked with silent determination over his wounds. They could save the arm, but Garick would never use it again. The god would never have survived amputation; he was too weak. Besides the arm, he'd taken an arrow in his thigh. Not deep, they'd cut it out, but he couldn't afford to lose any more blood. They plastered the arm thick with mould-salve and wrapped it tight to his side.

As Jenna watched, her head ached with the jumbled lep that whispered and cried in the air. *Is Garick dead? Where is he? What orders? What?*

White with pain, Garick clutched Jenna's hand as Hoban and Tilda came through the trees to kneel by him.

"Garick," the Karli god asked, "can you ride?"

"You've got to," Tilda told him. "None of us knows what to do."

"I can," Jenna growled. She bent low over the colorless face. "Garick, I'll lead them. Tell me what to do."

"I'll tell you," Hoban grunted. "Pull back into the woods with what you've got left. Small groups. We'll cut them to pieces."

"He's right," Tilda agreed.

Garick's head moved weakly side to side. "No..."

"We can't match them on open ground," Tilda argued. "The Suffec are gone, your Shando are piling up out there. You think we'll send Karli out to pile it higher?"

Garick struggled up. He refused the medicine that would have dulled the pain and his mind as well. "If we go back in deepwoods, there's nothing to stop Callan. He'll live off our land and burn the rest all the way to Salvation, and once he's got the mines, he can fight us for years. We'll never see City."

"City!" Tilda exploded. "Who wants it? Not us, no one but you. What do you want from the Karli? We fought them all spring, we never asked for your money, your goddam sida money. We're going back. If he comes to Karli, we'll be ready."

"Send them out *there!*" Jenna pointed to the struggling field. "There, where they can help."

"No," Hoban refused. "Not on open ground."

"You," Jenna seethed. "None of you could do what he's done. Where would you be without Garick to lead you?"

"Then let him lead!" Tilda shot back.

Jenna's fury choked off in a gesture of frustration.

"How can he? Garick—"

He fought the fainting. The world reeled and faded around him.

"Garick, tell *me*. Tell me what to do," Jenna pleaded.

He lost consciousness again. With a dry sob, Jenna folded down over him, cradling his head. She ignored the newcomers, the dark men and women who filtered through the trees to stand looking down at her, waiting to be recognized.

"Goddess Jenna."

"...yes."

"The Wengen masters."

She pushed the limp hair back from her face. "What?"

The Wengens wanted to be courteous, but their mission was important. "Goddess, our folk need orders. They're ready to fight, but—"

Jenna pointed dully toward the field. "Out there."

The people exchanged quick glances. "No, Goddess. The people out there have no chance. We don't know this kind of fight."

"They're my people. They were the first in with me and Garick."

"Damn fool move." Hoban turned away.

"Fool?" Jenna rose to face them all. "Then he's paid for it. He was in the first line, and those fire things burned his arm off, but *he* won't pull back, and *I* won't. No, masters. No, Hoban. I'll take them out there myself—"

The sharp lep interrupted her: *Bern and Shalane coming in?*

*Got Bowdeen.*

Jenna took a ragged breath. Bowdeen. An outlet for the frustration she felt. *Bring him here.*

The other masters went to meet the prisoner, but Tilda crouched with Jenna, wetting a cold cloth for Garick's forehead. The old woman looked at her sister-in-power, saw the first wisps of gray still all but lost in the river of rusty auburn, the haggard lines around the mouth.

*You'd kill us all for him.*

*Don't, Tilda.*

Tilda's glance pitied her. Jude and her City magic made Garick into something Jenna could never hold. "He should've stayed a farmer. He had everything."

"He's the god. He was born for it."

Tilda looked at her mouth, drawn with years of a silent hunger. Maybe, she thought, but who can lie down with the lightning?"

Then Shalane was leading Bowdeen to Jenna, his hands tied behind him. The others ranged around, curious. This was what they called a merk, this gave the name a face. This killed their kind for money. There was nothing lower.

"Bowdeen," Jenna said the name with all she felt for it. "They tell me you rode with Callan. You cut off coven hands for money." When she stood up, her eyes were almost level with his. The black man's face looked lived in, but the lack of cruelty surprised her.

"Arin's gone to City. I don't need you." She set her knife just under his left ear. "You ought to get born again quick."

"Jenna."

Weakly, Garick tried to raise himself to a sitting position. Instantly, she was there supporting one shoulder, Shalane at the other.

"So, you're Bowdeen."

The black man breathed deep and let out the relief in a broken laugh. "Glad you woke up, master Garick. Look, about Arin—"

"He's gone, I know." Garick narrowed his eyes. "I... know *you*. You were in Charzen once."

Bowdeen nodded. "Years back. Lotta years."

"A dragger. What the hell happened to you?"

Bowdeen didn't smile. "I got hungry." He shook his head. "Man, this is a mess. You got nothing working *for* you."

"Someone told me to trust you," Garick said.

"It wasn't me," Jenna put in. "Kill him."

"—and I've taken chances too long to be careful now. I

need help, need it bad. I've lost a thousand people in an hour, maybe more, and they're still dying out there. It... was a mistake," he sought the other masters with his eyes. "We couldn't stop those Suffec, you know that. But it's not the end. We don't quit. Bowdeen, what can you do?" He studied the black man. "I forgot. You always get paid, don't you?"

Bowdeen was surprised that the words could hurt; that hadn't happened in a long time. "I got a woman. Can't ride much longer."

Garick rubbed the blur from his eyes. "You stop Callan and Jenna won't cut your throat. You try to trick me, and you're hers."

The goddess' expression was not pleasant to contemplate. "Hear that, cowan?"

They meant it. By their time, he was two minutes to dead already. He tried to grin it down. "They *said* you was a sonvabitch."

"They were right," said Garick. "You working for me?"

"I'm working for you."

With Bowdeen's knife, Garick laboriously sketched in the dirt the situation and what had happened, Bowdeen attentive, lips pursed.

"Sounds like peel-and-fade."

"You know it?"

"Helped work it out. First thing you gotta do, save what people you got left out there on the field."

One Wengen master spoke quickly. "We won't go out there."

"No," Hoban said.

"Neither would I," Bowdeen agreed. "Master Garick, lep them Shando back into the woods."

"No," Jenna refused. "Garick says we don't pull back."

"Garick, you gimme the say or not?"

Garick nodded. "We'll call them back."

"Right. I'll need a set of Shando skins. This robe's for a storekeeper, and I got a hint I'm gonna be running fast. Bow and quiver; you ain't got to spare, get 'em off someone don't need them no more. God Hoban, you got some folks shoot a good bow—"

Hoban smiled grimly. "You should know."

Bowdeen laughed. "I kind of remember you do. Can you lep me two hundred here? *Lep!*" The Wengen, without moving, seemed to come alive with energy. "That's your weapon, the lep. Callan can't beat that, but you got to work *together*, man. You Wengen, when the Shando get back in the woods, move up longside, masters on each end of the line for strong lep. Keep covered and hold the line. You gotta move back, move *back* as a line. Your people don't know how to move fast, tell them mofos there's a big black ass up here gonna teach 'em how. Move out."

The Wengen masters hesitated. He was of their blood, his speech rang with their laughter, their rhythms, but he was cowan now. They took orders only from the god Garick.

Garick lay back, exhausted. "Those are my orders."

The lep went out, the Garick-lep that no one questioned. Chaos took the first, faltering steps toward order. Crackling with a purpose he knew would cost him later, Bowdeen stripped off the robe and took the skins from the young man who brought them. Bowdeen dropped on one knee beside Garick, took the god's hand. "Trust me or not, just back me up, Callan's gonna try flanking you again."

"How do you know?" Jenna challenged.

"Cause I taught him, goddess, and that's what I'd do. That's where I'm going. Keep up the lep, Garick, let them

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know you ain't beat, that you're gonna ride."

They understood each other. Callan might be stopped, but they had to go after him or lose. There was the wall of flame that none of them would forget, the burning they could still smell, the hill and long meadow thick with Circle dead. No one else but Garick could lead them into that fire again. Perhaps not even him.

Bowdeen squeezed his hand. "We get cock'nbox with Callan, you gotta ride. They won't follow me."

*Ride?* he thought as he moved away. *He can't even sit up. Sidele, Sidele, whydn't you kick me when I'm so dumb?*

The companies sent to flank had no experience in deep-woods. Deployment was difficult and slow, the ground uneven, choked with fallen trees and thick creeper that caught in their equipment and cut visibility to a few yards. There was no time to scout the wood, or Callan might never have given the order. Still, they used their sheddys to hack their way through, coaxing the now-useless horses after them. The battle was audible, only a few hundred yards ahead; it might as well have been ten miles.

One sek, inching yards ahead of his element, found a kind of path, overgrown but serviceable. Before waving the rest to it, he took a few steps along the twisting trail to see if it led to anything more than a dead end. No drag-wise merk would have done it for fifty krets. Any path-that looked easy was always lined with coven.

The boy and girl rose up behind him, small and slight, close enough to touch. He never heard them. They took his sheddy when they were done.

Bowdeen's first arrows hit the merks.

**W**HEN BOWDEEN PLACED his line of Karli across Garick's flank, he was only applying for the covens what he had learned against them: two hundred coveners in the bush were worth a thousand in the open field. Crouching near the center of his line with Jay and Shalane, he received and passed information in whispers that flashed through Shalane to Garick and Jenna and the whole fighting line.

*Flank stopped. Karli holding.*

*Shando, Wengen formed in woods west of the meadow. Holding.*

The merk attack slowed and changed radically in the heavy bush, not the battle Callan wanted to fight. It became now what it had been north of Karli, a near-silent skirmish between small groups or individuals, punctuated briefly by a shout here and there and the incessant *boonk-wush!* of arrows.

Twenty yards in front of Bowdeen, the long spout of flame fanned out of the thick bush at some invisible target. He heard a scream, young and high-pitched. Someone crashed away to the right. For a moment, the figure was visible. It had been a small boy or girl, you couldn't tell now. It was nothing but flame, and it fell, still screaming. Shalane covered her ears.

Jay swallowed hard. "Jesus."

"Now we know where that thrower is," Bowdeen whispered to him. "That stuff burns a path for thirty yards in front of it. Hot, but you can get a horse through. Let's go, Jay." He nudged Shalane. "You got it straight?"

She jerked her head up and down; her mouth went very dry.

"Give you a turkey-gobble when we're ready." The two

men slipped into the bush and were quickly lost to sight. Shalane untethered the horse, quieting it with whispers and soothing hands. When it stopped quivering, she wrapped the hooding over its eyes. As long as it couldn't see where her hands and legs would guide it, she could run the horse anywhere. Carefully, she coaxed it back through the bush into a shallow depression, down on its stomach, and flattened to the ground behind it. *Get ready, she lepped. Jay and the Cowan gone out. Fire coming.*

She and the Karli nearby had to make themselves targets for the fire-thing. Frightened to a numbness beyond fear, she listened to her pounding heart.

To the thrower man, isolated from his nearest mates by the opaque tangle that surrounded him, it seemed no danger. He heard a turkey-call that wouldn't fool anyone, then a crashing of movement yards ahead, a quick flurry of arrows and the voices.

"Hey! Hey!"

A target. He didn't have to see it. He pressed the valve and the flame shot out, dissolving the bush in front of him. He fired again. The roar of the pressure-driven jelly muffled the slight noise behind him.

"Now!" Bowdeen dove for the man's back as Jay caught the right hand, wrenching it from the trigger-valve. Holding the nozzle aside, Jay closed his eyes as Bowdeen's knife came down. Quickly, they removed the thrower from the body. Bowdeen shouted: "Go!"

Two dozen yards away, Shalane heard it and gave the reins a twitch. The horse bunched and sprang: she flowed onto its back as it came up, plunging forward, letting pure movement absorb her terror.

She could barely breathe. The whole world burned and stank around her, but there was a fire-lined path to her front and, heat-blurred at the end of it, Jay and Bowdeen.

She started down the flaming alley, throat seared by the burned-out air, feeling it scorch her face and hands. Drops of fire-jelly dripped from the bush; her skins were smoking already. The horse shrieked as it brushed against live fire, but she forced it forward. Then the lane was crossed, and there was clean air she could breathe, and Jay was slapping at her smouldering skins and Bowdeen was working at the black City magic, the fire-thing. He lifted the nozzle and pressed.

The flame fanned in a wide arc toward the jungle where the merks were deployed. The green erupted with running men, and the screaming began. Bowdeen locked off the valve and swung the thrower up to Shalane. "Get this to Garick."

Shalane sucked in air, held it and drove the blind horse into the burning corridor again. Bowdeen and Jay followed. As he jogged along the corridor of fire, Bowdeen heard the bugles—loud, mechanical, out of the battered recorders.

"Recall," he grunted to Jay. "Callan's calling them back."



HERE WAS NO MORE SUN, only the soft, cooling shadow deepening toward night. The armies fell back from one another like exhausted, fighting dogs, panting in the green silence.

*Sundown, Maysa.*

They used to watch it together in front of the house or walking by the edge of their fields. They made love there in that beauty as often as in their own bed.

They never had any sense; sometimes Shalane, in her mastership, was more grown up than both of them, but life had been good to them, Moss reflected, never made them work too hard, and Maysa came to understand when the rain

made him stay alone.

They thought they had shaped their own life, but they didn't. Jude did, Jude and Garick: they carved. He and Maysa were only part of the wood.

When the Shando started forward on that first charge, it never occurred to Moss and Maysa to stay behind. Discipline was one of Garick's Old Language words that meant nothing to them. They just felt like getting forward quick. So they'd seen him on that burning hillside and Moss saved him. So they came to stand with the Shando in that open field.

So they waited while the merks came into the bush with the fire-things.

They were smart, those merks. They were draggers, you could tell from their coven clothes and the way they used every bit of cover. They burned the Wengens and Shando out of the trees, out of the bush. You could get them if you saw them, but they kept coming, pushing Circle back, burning holes in the line, closing to fight in small groups like coven.

He and Maysa got the fire-thing and the man who carried it, but the heat burned Moss' eyes. He shot the arrow just a blink too late. But he had the fire-thing and a sheddy and a tricky shovel that collapsed for easy carrying.

The merks went back when their horn sounded. That was fine with Moss. They could go where they pleased. There was no more fight in him. It was like the rain. Tomorrow he might care, but not now.

He grunted it to the tool as he worked. "Not now."

*Gather in. Gather in to Garick.*

A few Shando slipped out of the bush, answering the lep. Moss barely glanced up at them. Some were hurt bad, big blisters under their streaked paint.

"You didn't hear?" The man's eyes were glazed with fatigue. "Gather in."

The shovel blade bit again into the soft earth. "You tell Garick—this old man's busy."

They left him then and drifted like smoke into the green tangle. Moss went on digging.

He kept his eyes closed when he shoved and scooped the earth into the grave. Not till it was mostly full would he look directly at it. When the last bit was patted on top, Moss dropped the shovel and lay down beside the grave. The fierce silence, he hugged the length of his body to the mound, one arm over it as it had always been with them. He couldn't imagine not touching her.

As the light faded toward dusk, Bowdeen rode a cautious reconnaissance along Callan's flank. What he saw confirmed his logical suspicions. He galloped back in plain sight of the merks part of the way, yelling to identify himself as he entered the wood.

"Bowdeen coming in!"

No one challenged him, few even glanced up. He passed endlessly through clumps of people who sat or lay exhausted on the ground. Some dug with dull determination at shallow graves. *Everything stops while some farmer gets born again.* There wasn't anything like a line any more, just exhausted, sullen coveners ready to quit, muffling the agony of wounds and burns so the enemy could not hear how badly they were torn.

Bowdeen knew the extent of the damage and hoped Callan didn't. You couldn't match coveners in the bush, but Callan lured them into his own kind of war and gave them no chance to recover. Only the darkness saved them, and the flank move that never came off. With two more hours of light, or even

# “Leave?” For an instant, Jenna showed him a part of her he wouldn't have guessed: fear, not for herself but the thing she lived for. “Leave Garick?”

one, Callan would have won. Bowdeen had to admire him: well-trained in strategy, Callan pushed his primary plan as far as he could, then switched to the logical alternate without any further waste of men. When next time came—where or when—he'd have better odds. Nearly a third of Garick's force lay on the hill or meadow or under the trees still burning where the throwers had whipped across them.

A little further on, he found Shalane arguing with some of her own people. Jay stood against a tree nearby.

“They're leaving,” Jay told him. “Some of the Wengen, too.”

Bowdeen wasn't surprised. They had no idea what it was to be an army, didn't even have a word for it.

“They say Garick's dying,” Jay went on. “They can tell from his lep.”

Bowdeen cursed. “Dying, my granny's ass! Master Shalane! Tell them Karli, they leave now, won't be anything to go home to.”

He pushed the horse faster through the brush to the copse where he left Garick. Only the goddess was there with him now, bending over the prostrate god with the deepening shadows. Bowdeen tethered the horse and knelt by Garick. The man was not dying. His eyes were alert. Only his body was beaten. Bowdeen offered him a ration bar.

“Try some of this. Concentrated food. Good for you.”

Jenna refused it. “Could be poison.”

“No.” Garick unwrapped the bar and bit off a small hunk. “Lot of strength in it. Jude had some.”

“See how big *she* grew on it.”

Garick rested on his good elbow. “Well, Bowdeen, you stopped him.”

“For now.”

“You scout?”

“Yes, sir. Most of them strung out along the ridge, eating, collecting arrows and other stuff off the field. The horses are there, and nobody's digging in. He's gonna move come dark.”

Garick waited for him to go on.

“Has to be now, Garick.”

Jenna shook her head, strained. “Leave him alone, cowan.”

“Garick, now. It has to be.” Bowdeen felt desperate. “You gotta lep strong, a gather-in. And you gotta ride.”

“He can't!”

“Goddess, they say he's dying, his lep's so weak. And some of them are leaving.”

“Leave?” For an instant, Jenna showed him a part of her he wouldn't have guessed: fear, not for herself but the thing she lived for. “*Leave Garick?*”

“Yes, goddess.”

“Jenna,” Garick said soothingly, “come be with me. Bowdeen, bring me that saddlebag.”

From the bag, Garick took a gleaming, white-handled *thammy* and gave it to Bowdeen. “Show this to Hoban and

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Tilda and the Wengen masters. You know what it is?”

There was enough Circle left in Bowdeen for that. Garick called them to go to the knife, to the end. No one would come back until it was finished.

“You think they'll come?” Bowdeen asked.

“I don't know. They knew it might come to this.”

Bowdeen dropped his eyes. Garick's cheeks were sunken. The wounds had unlocked the weeks and months of fatigue. It hurt to look at the man. “And you, sir?”

Something passed between the god and goddess that Bowdeen felt but could not read. “We'll be waiting for them with the Shando,” said Garick. “Tell them, Bowdeen.”

The Wengen sighed and pulled himself up into the saddle. “You won't mind my ridin' alongside, will you? Case you get a headache or something?”

Garick gave him an ashen grin. “You just might help.”

“Like those two throwers we got,” Bowdeen added. “Been thinking about them.” He trotted the horse away.

*Gather in. Meet the god and goddess. . .*

Jenna brought the horses as close as she could, cinched the saddles. It was time. Garick gathered himself for the effort to rise. He took a bite of the ration bar and offered the rest to Jenna. “Go on, eat,” he coaxed gently. “Can't stop later.”

To please him, she took the bar, bit, chewed and swallowed, as it were, at arm's length. “Got no taste.”

“Cowan food, what else?”

She kissed him on the cheek. “We'll eat good when we get home.”

“Yes.” He put his good arm around her. “Pretty here. I've never been down this way; don't know if this is Shando or Suffec covenstead. Doesn't even have a name.”

Jenna regathered her loosened hair and captured it tight under the strip-and-pin. “Some of our folk gave it a name. For the flowers, there's so many. Call it Dannyline.”

*Meet in the woods just west of the meadow. . .*

Jenna inspected the captured sheddys for their edge and tucked one into the straps of each saddle. “Shalane rode good today, Garick. Arin picked right, I guess. First she came, all I could see was them damn big front teeth.” She smiled. “She'll be a good master, maybe even. . .” She turned to him, fingers touching the iron moon-crescent at her breast. Garick—

?

. . . *nothing*. She locked it away forever and knelt to help him. “Guess we're ready.”

“I guess.”

“Feel bad?”

“Felt better when I got hit by lightning. Give me. . . give me a minute.”

The fading light softened her face. “You know what? You remember the time we whitebrained the packdogs coming home from Lorl? I was in the masters' circle and you were inside with Jase and Moss—old Moss will be lonely now,

should come live with us—and I was trying to keep up my part of the power, and all I could think about was Jude in your wagon. Where I wanted to be. That's why the dogs almost got me instead of ma."

She slipped his good arm over her hard shoulders and braced herself as Garick hung on. His mouth disappeared in a tight line as he struggled up. "Not far," Jenna held on to him. Come on, hand on the horn... come on."

Before the pain could start, he felt her mind braced about the edge of his own like strong hands, helping his own flayed senses in their command to the muscles. "Foot in the stirrup. Up... up... there."

He was set in the saddle, but still Jenna clung to his leg, head tilted up to him. Her large hands spread gently up his thigh to embrace him awkwardly. Jenna rested her head against his leg; her face felt warm through the buckskin.

"I hated her then. I hated her for a long time. Not now. I got what I wanted, Garick."

He felt his chest squeeze tight. His bad leg was bleeding again, but he leaned down to root his fingers in the thick red hair.

"Girl, if we had time, I'd love you right here."

She laughed aloud. "That's right. Come see me, Garick. I'll make you happy like at Sinjin and all the other times. Like when I hid your pants."

"And I went home in a hide shirt."

"You had the *niciest* ass, Master Garick."

He started to answer, then his head turned sharply. "Jenna—" *Listen.*

The lep was more a leaking of thoughts from many minds, few clear words, only an intent that grew in strength from moment to moment. They recognized a voice here and there, close, loved voices, rising briefly out of the others.

*Moss... Bern... Hoban and Tilda... will meet...*

"And Shalane! Listen, Garick! It's the girl. I told you, that's some kind of woman!" They led the horses out, heading toward the wood's ridge.

*The Karli... the Wengen... Shando coming in... will meet...*

More voices and more and more after that. Still exhausted, still frightened, not bright with hope. But coming back.

Garick held on to the saddle horn, feeling the strength surge back into him. "Jenna, Jenna, *listen* to them. They're coming. *So many* of them!"

Jay and Shalane rode close together through the thinning trees toward the edge of the meadow, the two captured throwers strapped to their backs. Behind them came the long green and buff lines, the whole wood alive, rustling and snapping under the stepping hooves.

They reached the last cover and paused. They were to separate here. Bowdeen's plan was simple: first in would be the two long echelons of Shando and Karli bowmen, then the two of them, and then Garick with the rest. No plan would be needed after that.

Together they watched the shadow-men and horses silhouetted against the ridge. "Be dark in a bit." Shalane turned to Jay. His head was bowed, lips moving silently. Just like him to pray to an old-man god, as if Goddess earth couldn't do anything.

"Hey," she whispered. Their fingers laced together.

"Hey, Lane."

"I'm glad I loved you, Jay."

That shy smile of his: "It was needed."

She leaned out and kissed his fingers. "Born again."

"God bless you."

They trotted out of the trees and turned apart to opposite ends of the line that emerged from the forest edge, Garick, Jenna and Bowdeen in the center. Silent, all of it, but where there had been a fringe of trees, two hundred riders paced forward in a straight line as more issued from the wood, the dark green Shando almost invisible in the thickening shadows, lighter-salted with Karli buff. The straight lines advanced at a walk; more an extension than a break in that rhythm, Garick's horse flowed out ahead of the line and cantered laterally across the moving front. He held the *thammy* high overhead.

Shalane braced the fire nozzle under her right elbow as the walk rippled into a swift trot and two single-file lines of riders moved out from the first and second lines to stream ahead of the mass. When Garick's lep flashed across Shalane's mind, it was a rowel in the horse's flesh. She dashed forward, and for the second time, the darkening meadow filled with the roar of their coming.

**B**ETWEEN HIS TEETH, Callan said: "Bowdeen."

The set of the man in the saddle was too familiar; it was Bow he saw dash briefly across the open, must have been him who stopped the advance. And only Bowdeen would think to counterattack now when Callan's men were scattered about the ridge, finishing their rations, within minutes of the call to move out.

With no time to saddle, the companies swirled about Callan into some semblance of order while Callan watched that overwhelming green swiftness come on—speed unbelievable, tortured out of animals bred within an inch of madness, goaded to heart-bursting exertions by knives raked along their flanks, yet that speed seemed effortless, a hurtling cloud driven by a fury-wind, cresting like water as the lines bounded high over the piled, obstructing bodies of soldier and Circle alike.

To the merks, the charge had a hypnotic, inexorable quality. It came on like a single being they could neither break nor stop, that had no relation to them. They themselves didn't seem the object, it had to be something beyond. The racing wave would top the hill and hurtle onward, outward forever...

Two single-file lines of riders in green rode forward from the rest; veering inward like sharp diagonals, they passed through each other in criss-cross fashion. And the first arrows began to whine around Callan's men; the deadly, controlled grouping covered the whole ridge of soldiers. Then the first halves of the two files of archers turned inward, forming a staggered diamond—and loosed another flight.

The second volley ended, Callan's men started to raise their heads. Suddenly, the diamond below opened, two riders shot through the middle, pounding up the rise by themselves, alone.

A bowman next to Callan set an arrow for them, grumbling, "What do *they* think they're—"

Callan grabbed him, yanked him over sideways. "Watch out!"

The two riders splayed to a halt even as merk bows bent at them. They raised two captured throwers; two streams of fire shot back and forth across the nearest lines of soldiers, turning twilight briefly into day. The flame made it hard to see the thrower-carriers, but Callan kept loosing arrows. He had no line of defense now, only burning men, dozens of

them, twisting like so many strips of bacon on a skillet.

"Back!" He strang up, running swiftly but without panic, gauging the nearness of the hellish things behind him. At the last possible moment, he dove headfirst behind a dead horse.

The main tide of coven broke over the ridge and down the other side; a hail of arrows rose from the ditches beyond; a few riders fell, but the rest came on. Many of Callan's men never made it to cover, trampled underfoot or cut down in passing. Garick's vengeful force rolled down the ridge, engulfing the ditches in a swirling mass that clanged briefly with steel on steel.

Callan's division had been effectively run over, as if by a storm wind, but they were only battered, not broken. Running to re-form, the merks were dismayed to see the whole, massive body of Circle wheel suddenly, without a spoken order given, and turn to come at them a second time.

And again the soldiers shot, huddling behind horse-bodies as the impossible coven hurricane raged over them, down the hill—only to wheel silently and come yet once more. And again there were many soldiers who never made it to cover.

Someone grabbed Callan's arm. "Field, we can't keep taking this! We got no plan, no defense, no cover. They're running us into the ground!"

"Four lines!" Callan shouted, tearing a quiver from a crumpled body at his feet, "Form four lines, thirty men each. Now!"

The merks scrambled desperately to follow orders. By fate it was Callan's battered 39th, his hardened draggers who formed the line with other men thrown in to fill the ranks. They knelt and waited for the wave to surge up at them once more. Callan stood, sheddy raised, until the frothed, white-eyed horses were within three bounds, then brought the blade down. "Shoot!"

At point blank a wall of one-hundred-and-twenty arrows slammed into the first oncoming line. A huge section of Garick's charge buckled and fell, but the rest tore on.

Yet it had worked. Before the next charge, Callan knew a longer, deeper line had to be formed. The bows could stop them, but only if they were massed. He looked: many of the unhorsed riders were fighting hand to hand with the 39th. He yelled again. "Commanders, to me!"

A futile order. No one had time to obey him. He sprinted forward after the skirmishing 39th—and then saw the big man pushing his horse through the running merks, cutting them down like corn with his one good arm.

"Garick!" The sound tore out of Callan's throat. He ran at him, swinging his blade two-handed.

But Garick was coming too fast, Callan could barely dodge aside, only half-parry the blow that sliced his shoulder. And Garick was gone, taking his great wave with him.

And then, just then, Callan, on his knees, saw the red-haired woman whirl out of the skirmish on foot, surrounded by merks. She moved lightly for her size—spinning, ducking one swing to parry another, whirling in a slashing circle that took one man's arm off at the elbow. She kicked and cut her way free—and saw Callan.

With a wild ululation, she rushed on at him, sheddy raised. With one surging lunge, Callan rose up and extended his body in a single straight thrust. The thrust was clean and centered; though her eyes were still open, she must have died instantly.

Callan staggered, blood starting to flow from his shoulder. He permitted himself a tight smile. It was Red Jenna, the next best thing to killing Garick himself.

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God was still with him.

Cool thought returned to Callan. He still had a fighting force, but wasn't using it right. The thing his men had to do was mount with or without saddles and break out at the weakest point to the woods.

He opened his mouth to give the order. And stopped.

It was too late. In the dusk, squinting to see the maneuver, Callan watched Garick's huge, charging mass lengthen into a serpent that slowly circled the hill just out of bowshot.

The merks would not break out toward the forest. Anything else that happened would be contained within Garick's circle.

*Too dark to see them. We go again?*

*Garick says no. Hold the circle.*

*Hold the circle. . . till sunup.*

**W**AITING, IN DARKNESS, one of Callan's leads nursed an injured hand and grumbled. "Damn. We shoulda got more money for this."

It struck a few of them funny, yet there wasn't much laughter on the hill.

Long before first sun, the summer darkness lightened to a hazy, sweltering gray. Rousing himself from brief sleep, Callan felt gingerly at his bandaged shoulder. He sat up.

The closed circle was still down there, mounted, motionless, as if they hadn't stirred all night. Within it was a smaller ring of white-tabarded masters.

No move, no sound broke the early morning hush except the queasy sighs of his men waking stiffly to view the frozen tableau that surrounded them.

"Must be three thousand."

"What's the white coats for?"

"Them's masters. Dam'f they didn't dress up for us."

Callan called his commanders to him. "Report. How many fit?"

"One-hundred-eighty-three, sir. About a hundred wounded."

The southern division now numbered less than three hundred.

"Ran off what horses they didn't kill. Some of the 41st tried to get away last night. That's them. . . to the north."

"Orders, field?"

Callan had no ready answer. He swept his eyes across the ridge, the ruin of his force, the long waiting curve of coven.

*Oh, my Lord, I can do no more for You. Forgive my failure. See only the effort, the intent, and take the faithful to Your own enduring victory. Amen.*

"Field." It was the 41st commander. "Don't matter about orders now."

Callan spun on him; "Why not?"

"We fought. We got paid to fight, but not to die for nothing."

"For nothing?" Callan echoed, tensed as if he would strike the man. "For *nothing*—?"

"Hey, field! Four of them coming out."

"That's Garick."

The four riders paced forward out of the inner ring to halt at the foot of the ridge. Garick called: "Callan!"

The field singled out the young commander of the 44th. "Set an arrow, walk me down the hill. You leaders, every man that can pull a bow is to have one arrow ready. When I give the order, kill Garick."

He strode away. The commanders glanced at each other. ". . . what?"

"He don't know when he's beat," one official said. "But I sure do."

Callan started to buckle the sheddy belt, then drew the blade alone and rested it on his shoulder. "Let's go, commander." There was a cold smile on his lips as he started down the hill.

Garick waited with Shalane, Jay and Bowdeen at his side; ironic that two of them should be cowans. He would have wanted Jenna with him now. The moment should have been hers, too. Strange to feel chill and old on a warm summer morning.

Forty-seven summers, the same as Bowdeen, but hence-forth he would feel the weight of them all in the stiff leg and the arm that would never hold reins again. He would count winters now.

Jay still carried the thrower; he thought they might need it. Shalane deemed thin in her tabard. Both of the young people managed to look coldly righteous. *But old Bow's seen it all, and so have I. No wonder we sag a little.*

Callan stopped ten paces up the slope, the other officer a step behind him. Garick moved forward slightly. Two white butterflies chased each other across the space between them.

"Callan, we can come again if we have to, but there's no point. Surrender yourself as my prisoner and the rest of your men can walk back to Mrika."

The Kriss glanced distainfully over all of them.

"Well, Bowdeen."

"Hey, sub."

"Sold again, Bow. Good offer?"

"Best I ever got," Bowdeen answered, thinking of Jenna.

Callan pointed at Jay and spoke in Old Language. "Jacob. Jacob who stood at the altar with Uriah. You think it is only him you've betrayed? You think it is only your own, earthly people who have cast you out? You sold your *life*, Jacob, sold it for one stinking coven slut. You should have died with her."

"Yes," Jay said evenly, "That would have been a mercy. It's over, Jeremiah."

"Over?" Callan shot back at him, glancing again at Garick. "When is it ever over, Jacob? Remember whom Satan chose to torment with his own claws. Remember Judas who dangles by his head from Satan's own mouth."

"Jerry, for Christ's love, it's *over*, it's finished!" Jay pushed the horse forward to Garick's knee. "There's nothing left to fight, you can't do any more. Jerry, why kill those men on the hill for your pride?"

"He's right," said Garick. "I don't want your life. That doesn't matter now. Drop your sword and come with us."

Callan took the sheddy off his shoulder and leaned on it. "Go to Hell, Garick! With Jenna!" He spun suddenly and roared to the men on the hill. "Shoot!"

Bowdeen's muscles bunched, ready to cover Garick. Startled, Jay raised his head to the hill, expecting the arrows. Shalane rolled out of the saddle, tensed for it.

But no arrows flew. The men on the hill did not move.

"Shoot!" Callan screamed. To the man next to him: "*Shoot, damn you! Kill him!*"

The commander dropped his bow. "No, sir."

Roaring, Callan shoved him aside and snatched up the weapon, scabbled for the arrow and set it. Jay started forward, unlocking the fire nozzle.

"Jerry, you *fool*—"

Callan bent the bow.

Shalane felt Garick's will close on hers, shaping it with his

own into one, lethal spear of force that shot out at the Kriss as Jay pressed the trigger-valve.

Callan never felt the flame.

The long, hot day was spent burying those who would be born again. Callan's men were left for the scavenger birds. When they were done, the ridge and meadow looked like a huge, ploughed field. No one paused to clean their knife. That much and more was changing.

Though they offered, Bowdeen and Jay were not allowed to assist in burying the goddess Jenna. Only Garick and Shalane stood close to the filled grave, the ring of masters about them. As always, there was little ceremony, more thought given to the living who grieved than to Jenna who would come again.

When it was done, when Edan brought him the knife and necklace with the few, proper words, Garick turned to Shalane who knelt before him. Around her neck he placed the iron moon-crescent: Jenna's wish caught by him before she shut her mind to save him thinking on her death. Into Shalane's hands he gave the goddess' *thammay*, then raised her up, leaning on his improvised cane.

"I'm—I'm very tired, but we have to move. Help me lep, master Shalane."

The order went out: *form by covens, Shando lead.*

It was a shorter, thinner column than had ridden into the place called Dannyline. Cinching his saddle, Bowdeen watched them gather along the edge of the meadow, drifting by him across the field and out of the woods, down the ridge. Some were too old to hurry, some too young to catch up with their long-striding elders, some too badly wounded to walk without help. But they could ride. The Karli girl said something about riding two weeks after she was dead. He didn't doubt it.

He knew all the maps of Uhia and City. It was eerie to think that these coveners who didn't really know what they'd won and wouldn't know for years, were now the masters of the whole game right up to the Self-Gate. Mrika was theirs for the walking in. But Circle was thick; they knew and saw just what they wanted and no more. In their way, they'd probably just go home to raise sheep and crops and never think how things were changed forever, never see Garick's shadow lengthening over the maps they couldn't read.

Still, a man could learn a lot from coven folk. Like the way the very old and very young all went to the knife with their people, not just the able men. Few merks ever understood that. He did, now. A man could get awful big and proud thinking he was something special that other folks needed. So they didn't allow that. Dannyline, Blue Mountains, Salvation, the Karli forest—they shared it, all of them, they *knew* what it was, and no bigmouth sonvabitch could hand them any shit later about how it was or what *he* did. They already knew.

Out of habit, he started to tuck the sheddy into his saddle straps, then stopped and just looked at it. *Who you trying to fool, Bow?* If he hadn't been good at ducking and running, he would never have come off the ridge. Not fast any more, not near fast enough. Just lucky. He didn't even throw the blade away, just let it fall at his feet.

"Bowdeen!"

He glanced over the horse's shoulder. Garick trotted across the new-turned earth of the meadow. The god's ruined arm was strapped for comfort across his chest, the stiff leg thrust out beyond the stirrup.

"Just fixing to ride, master Garick." Bowdeen scratched



his head with a wry grin. "'Cept I can't ride with the Wengens, they won't have me. Karli kind of old-fashioned, too. And them goddam thick Shando of yours don't think *no* one's good enough to ride with them."

Garick took something from his saddlebag. "Then I guess I'm all the company you can find. You want to ride alongside in case I get a headache?"

"Proud to."

"Here," Garick handed the packet to Bowdeen. "You always get paid, don't you?"

Unbelieving, Bowdeen riffled numbly through the thick sheaf of krets. "Ninety-five... hundred. You—you carry this much around *loose*?"

Garick smiled. "Everything costs. I let the merks share all the money on their own dead before they left."

Bowdeen whistled, calculating. "Callan just paid them. Some them people went home rich."

"Not that rich. I charged them ten krets each to get off the hill." Garick swung the horse around toward the waiting column. "You still working for me, Bowdeen?"

The black man started to laugh. He couldn't stop. The deep, rich sound of it rolled across the meadow. "Working for you? Man, who *ain't*?" Bowdeen hauled himself into the saddle with a grunt of effort. Too many muscles protested against it. "I am way too old for this. Where to?"

"Where Arin's gone," said Garick. "To City."

## THE FAR SIDE OF SORROW

**H**IGH ABOVE THE REST of the City, sitting in her pale gray robes in her pale gray office, she worked alone, always alone, and all she knew and all she had yet to learn charged her with that somber joy that may be found on the far side of sorrow. Her pale ivory complexion was delicate, and her eyes large, liquid and brown; she seemed young, and yet there was no trace of youthful uncertainty in her manner; she was composed and filled with dedication to the City's purpose.

In the morning, she was always first to greet the sun and begin work. At twilight, she was the final mourner of the day, eking out the precious seconds before darkness came. The sunset saddened her in more ways than one.

That evening, just before the rim of the sun dipped below the horizon, she pressed the 274 key to learn if there was any change in the status of the burn-out investigation. While she waited for an answer, she was disturbed by thoughts of her daughter, long ago wasted and gone. The ache of something she did not care to define came frequently now at close of day; before the burn-out, there had been little time for what she considered an atavism, it was inefficient.

The scanner flickered.

4647/9329.

It surprised her. In the year that she'd been asking about the progress of the investigation, she'd grown accustomed to seeing—4647, report incomplete, almost before she'd finished entering the inquiry into the console. But now she was promised 9329: report coming.

There was no time to review it in entirety; she immediately ordered a precis readout so she could have the gist before central switching banked off power for the night.

The synergizer used to operate after dark, but a year earlier, the sudden and mysterious electrical burn-out in a large section of the main energy storage unit greatly reduced

available night-time power. That which could still be returned had to be allocated to crucial needs, such as the hospitals and the Self-Gate. All data scanners were reluctantly shut down after dusk until such time as the crippled facility could be restored to full service.

It would take a while to put it back into operation, she could only spare three engineers for the huge repair and replacement task, and one of them was independently responsible for investigating the cause of the burn-out; it was his report that the scanner finally was promising.

It was quite possible, she knew, that he'd been unable to trace the malfunction back to the source, for many of the potentially suspect components—faulty terminals or weak connectors or stripped insulation—had been incinerated or melted in the catastrophe. So her abstract of the final report might consist of a single symbol:§.

The relays clicked and hummed. She stared at the scanner.  
6427/90:5417.

This was news. The burn-out was not the result of defective equipment, it was triggered by a power overload. She punched 917, impatient for once at the machine's lack of initiative. It had the capacity to evaluate and create new meanings from existing data, but only if directed to do so. At the moment, it meant wasting her dwindling time. Her order to collate sent it off to check all circuits operating at the time of the overload. She had to know the source of the excessive demand; it was disturbing—City power requirements were extremely stable.

Collation took a little longer than other operations. She tried to cast her mind onto some other problem, but all she could think of was her child. She wished she might see her once more, hear her speak, but to order up a holograph or a voice-print would be absurd and irrational, it would serve no purpose. So she did not act upon her impulse.

The relay clattered. Gratefully, she turned her attention to it.

5417/040:015/97.

The final symbol startled her. But before she could even begin to think about ordering up a full report, the power died. She rested her hand on the useless buttons, fighting a preposterous desire to pound vehemently on them. Centuries had not quite stilled the frustration of not being totally in control of the City she controlled.

She stared at the dulled scanner screen, musing over its last bit of information. She would not know more until morning.

Rising, she left the office and stepped along the quiet passageway to her suite. Inside, she entered a library where there were so many books to read, so many she'd forgotten, so many remembered, so *many* yet to be digested. Walking along the rows and rows of shelves, she sought some tangent of thought to divert her troubled mind.

Something caught her eye. She stopped.

She plucked down an incredibly ancient volume, mouldering, brittle, but still readable. The gloomy poetry of a dying age. It had been one of her daughter's favorite books. She opened it and discovered that it had a tendency to break at a certain page. On it, there was a passage neatly underlined in marking more than a hundred years old.

*Thinks't thou existence doth depend on time?  
It doth; but actions are our epochs; mine  
Have made my days and nights imperishable.  
Endless, and all alike, as sands on the shore.*

*Innumerable atoms; and one desert.  
Barren and cold, on which the wild waves break.  
But nothing rests, save carcasses and wrecks.  
Rocks, and the salt-surfweeds of bitterness.*

She closed the book and closed her eyes. "Judith," she whispered, "Judith."

**A**T DAWN SHE ROSE, dressed in clean robes and hurried to her office. She liked mornings better. She sat, punched up the 274 key and watched the scanner light up. Quickly, she entered her instructions: 210-6427/4647. She had to know what made the Self-Gate call for such a colossal supercharge that the backup turned half the solar energy storage unit into fused slag.

The console hummed. Flickering, the screen informed her the analysis of the burn-out would be in three stages:

I. 015/97-64/5491++++.

The first thing that happened was a sudden demand by the Self-Gate for an excessive amount of energy.

II. 015/97=\*\*6447:-04970§.

The synergizer responded by immediately weighing power priorities. The Self-Gate was at the top of the list, second only to the hospitals. An emergency decision was made: drain energy from all non-essential circuits.

III. 5417=7284++++!!!

?v?

248/0748=§71.46461:09450:248/0748.

The energy drain taxed systems not meant for such a heavy load. It quickly became certain to the synergizer that considerable danger and damage might occur on a widespread basis unless some deliberate sacrifice were made almost immediately. It calculated that the energy storage unit would not be totally destroyed, and even the part ruined might be rebuilt in time. Therefore, it ordered the burn-out to take place there.

Clearing the screen, the woman began the second part of her probe: why the Self-Gate made such an unprecedented demand in the first place. The collation was already done, so she called for a report.

51v640? the synergizer asked.

She punched 640. The precis she received was one of the shortest and most puzzling ever produced by the synergizer: 231.

She frowned. The Self-Gate could cope with anyone foolish enough to attempt to enter the City. What did the synergizer mean by an *anomaly*?

Pressing the 51 key, she waited for a full report.

And then he was there.

The drowsy afternoon softened toward dusk. Bees droned homeward. The grass swayed in a breeze tipped with the cooler breath of evening. Wildflowers bordered open fields that stretched to the distant horizon.

Not a gate anywhere. Not even a fence.

But it was impossible to overlook the huge sign in both Mrikan and Old Language:

**SELF-GATE  
CITY BEGINS HERE. GO BACK.  
DANGER!**

He regarded it for a long time.

Then he plunged on past the warning marker.

**I**T WAS RARE that she did not know how to proceed, rarer still to request direct audio-visual communication with another member of City. But the Self-Gate had been running the same way so long, she'd lost touch with the intricacies of the original concept and rather than spend too much time with the synergizer, rooting out data bits and pieces at a time, she punched up 64021:4271/0294.

The man who was once her cohabitor appeared on the screen. It had been years since they'd seen one another, but he was the same as she remembered. His sandy hair was no thinner above his forehead. His pale gray eyes shone serenely, joylessly.

He was doubtless surprised at the contact but, in characteristic City fashion, did not expend precious seconds on an emotion that led nowhere. He raised his eyebrows, signalling *question*.

She reviewed the problem of the anomaly at Self-Gate and explained that though she'd appointed a border guard to stand watch over the zone, she needed referents toward a more satisfactory and permanent solution.

He nodded, punched a call into the synergizer, cross-switched it to her scanner, then cut off the connection.

They did not say goodbye.

She depressed the key signaling start and the report began. 015/97... 51/074.

Her lips compressed briefly with the ghost of an old emotion. Typical of Randall's thoroughness, but she should have made it clear she did *not* want an encyclopedic reply, she could have done the same thing without his help.

Sighing, she skimmed the material. Early history. Definition. How the Self-Gate got its name. Differing attitudes: City magic vs. empirical tool. Theory of operation—

65821/7[8]4... Yes! She slowed the input and read, for the first time in centuries, the structural premise of the Self-Gate, key to the anomaly that caused the overload.

I. 7[8]70=197407=93910.

Thoughts are reducible to intricate electrical reactions within the brain and are, in turn, expressible in terms of complex chemical codes.

II. 197407.93910/97=67420x.

[§197407.93910/67420x?]

There are a finite number of chemical-electrical brain patterns based on psychological definition of character. City scientists codified and dissected them, postulating that there must be, for each, a negative chemical-electrical field.

(90351...)

329/76405///+329/76405

V-XII

V-XII

...?)

For example, the synergizer explained, what would happen if a particular sub-type of manic-depressive brain wave was subjected to its own matching negative set?

The answer was simple.

§.

Totally.

That was how the Self-Gate worked.

She dimly remembered an occasion when Judith, in her infancy, argued with her parents about the Gate. She was so young they had to converse in the wearily slow Old Language; Judith had not yet mastered the City's verbal shorthand.

"The Self-Gate," Judith complained, "is just a tool to you

**THE MASTERS OF SOLITUDE**

# She had to know what made the Self-Gate call for such a colossal supercharge that the backup turned half the solar energy storage unit into fused slag.

for keeping people out. But *how* does it stop them?"

Randall calmly tried to explain the mechanics, but the girl impatiently tossed her head.

"Yes, yes, I know all that! But have any of you thought about what it must be like to have your brain shredded?"

The question took them into a difficult problem of ethics, but it all happened so long before that it was hard to recall exactly what was said. Didn't Judith finally—

She cut off the thought, disturbed at her growing tendency to muse about Judith as each day drew to a close. It was becoming a definite anti-productive pattern, one that might eventually require corrective processing. This time, she'd wasted nearly a minute.

She went back to the original problem, ordering a precise analysis of the brain-pattern that the synergizer had labelled "anomaly."

The answer was upsetting.

—————6427/I-II—————6481/9362077.

6427/I-II was a classic paranoid pattern, complicated in this instance by partial compensation. In other words, the person who ran the Gate and caused the burn-out—the anomaly—was a paranoid who had learned how to deal with his fixation to some extent.

It was too near dusk to call up detailed power statistics, but she could easily see such a pattern would demand a great energy input to negate it. Difficult, yes, but foreseen...

It was the ————— that astonished her. She rephrased the call, but got the identical reply. So this was the final, unbelievable piece of the enigma, she thought. The anomaly was a *new* pattern! It only roughly approximated 6427/I-II! When it triggered the Self-Gate, the system only had two alternatives: improvise across circuits till it found the most comparable negative set, or commit electronic suicide by failing to carry out the function it was intended to perform.

In the end, it did a bit of both.

At least the lesson of the anomaly made her warier about trusting the Self-Gate entirely to a machine any more—even one as sophisticated as the synergizer. Its circuits were now imprinted with a directive to notify her immediately of any further unusual invasion of the zone.

But what if it *did* happen again? The anomaly had been turned back, probably was dead, but there might be another, evolved over the ages. Or worse, if the original survived, it was now bolstered by a new awareness which inevitably had to alter the original to something yet more remote.

As she was considering the ramifications of her line of thought, suddenly the emergency buzzer sounded. She started; it was the first time the silence of her chambers had been so disturbed since the burnout.

She watched the scanner begin to flash the same message again and again and again.

7284: 015/97!!! 7284: 015/97!!! 7284: 015/97!!!

7284: 015/97!!! 7284: 015/97!!! 7284: 015/97!!!

7284: 015/97!!! 7284: 015/97!!! 7284: 015/97!!!

Acknowledging receipt, she asked the nature of the danger at the Self-Gate. She got the precise answer she both expected and feared: 231

Anomaly.

And then the power died.

**G**ARICK'S COLUMN MOVED SLOWLY toward Lorl. They rode easy, for the sake of the wounded. There was no hurry now.

Garick rode half a mile behind the point with Edan and the remaining Shando masters. By tacit agreement, no one bothered the god more than necessary.

Close behind, Shalane rode with her father, the two of them flanked by Jay and Bowdeen. Moss and his daughter shared silently a private grief they would not lessen with words.

Daylight was gone. Only the muffled, grinding clatter of hooves broke the silence.

Sharing with Shalane, suddenly Moss grew chill with the too-familiar fear, the bleak sense of isolation. His nostrils flared with the phantom sense of remembered rain. Then he heard the hiss of intaken breath... next to him, Shalane went rigid in the saddle. Her mind snapped free of his like a broken branch. Her eyes unfocused, staring into infinity.

"Get out! Get away!"

"Lane?" Moss reached for her hand. Jay turned at the sound of her voice.

"Let it go! Or be crushed by it!"

"What is it?" Jay worried.

Moss grabbed her bridle and led the stallion out of the column to the roadside. The old Kriss distrust of magic flared briefly in Jay, died. He and Bowdeen followed Moss, off the road.

They lifted her down from the horse, unprotesting but still rigid, helped her lay down on the grass.

"All of them," her voice came, harsh and strangled. "For this? Liar! Thief! Give them back!"

As they watched helplessly, Shalane curled up, face to the grass, whimpering. Some of the sounds she made were words, hard to piece out from the guttural agony. Moss began to sweat; the old, dull pain throbbed behind his eyes, the rain-smell suffocating him. He knew instinctively what it was.

"She's with Arin."

"Maybe Garick should know," Bowdeen said, but Moss stopped him with a hand on his arm.

"Garick can't help this. It'll pass. She's close to Arin, been with him all along, has to feel this."

"Irrelevant!" Shalane snarled. "Not there. Not again."

"It's tearing her apart," Jay whispered.

Moss looked up at him, not without kindness. "Don't try to know it, Jay. She's with him. Good as you are, cowan can't ever know *with*."

"And you don't know the Self-Gate," Bowdeen said. "Because that's where Arin is, the only place he could be, getting killed like all the others who try the zone."

Abruptly as it began, the convulsion ended. Shalane lay quiet, staring up at nothing. Her lips moved in a whisper:

"I remember you, wolf."

Jay shook his head, still bewildered by it all. "Arin? How can you be sure?"

The answer came from Shalane's lips.

"I am Arin. And I am alone."



HERE WAS NO CHOICE. She punched in new commands on her emergency circuit to return full power to the synergizer, twilight or not.

The scanner warned her of power shortages it would create. She acknowledge the danger, but still insisted. Information was vital, the need immediate.

The ready bulb lit. Pressing 274, she ordered a profile of the anomaly pattern in the Self-Gate zone. Meanwhile, her mind raced, trying to think of a safe way to cope with another approximate 6427/I-II.

But just then, the scanner flickered.

231/6451: \_\_\_\_\_

9362077 ——— 6427/I-II x 0907/IV-X ——— 9362077

§

She stared at the answer for a full fifteen seconds, an unheard-of time for any City person to spend digesting a single piece of synergizer data.

*The thing is impossible!* Her mind rejected it. She ordered a check of the reply, but the identical answer came. Then she asked the synergizer to analyze and collate the pattern thoroughly.

The answer was §.

Irrationally, her mind sought a haven in thoughts of her daughter, but she could not allow it, no matter how desperately she wanted to escape the incredible thing. At least she knew one fact: the anomaly, unchecked, could cause a power crisis immensely more dangerous than the previous burnout.

The thing had to be stopped, but she could only see one way left to do it, an unthinkable way. Yet she entered her idea into the synergizer—and discovered, to her dismay, that it agreed with the plan.

She ordered the Self-Gate shut off. . .



AT THE FAR SIDE of the Gate, he fell exhausted. He knew he'd made it, he was through. There was another marker indicating the end of the danger zone. He exulted: *I made it! Me!* But it was too dark to see City, and he had no energy left. He flopped down under a bush and let sleep wash over him.

Bird-songs wakened him just before light. The sky was gray and he could see faint shapes that were the City stretching out right and left, filling almost his entire angle of vision. It was like Lishin, but incredibly bigger, there was no end to it! Houses and houses and houses brightening in the coming dawn: stone, glass, red clay molded into brick. Spires higher than Lishin, and one of them bore on its side a great round thing with Old Language numbers and big arrows pointing in two places. As he watched, a deep, majestic sound came from it or someplace near it, a rolling music like the voice of a vast animal, king of silent forests.

The music ended, the stillness returned. City stunned him, beckoned to come walk the empty streets and stare into the windows. *Come*, the City seemed to whisper in invitation. *See me, love the things I hold, the beautiful things that belong to nobody but me. . .*

*Where do I start? Which way do I go?* At first he thought there would be people fanned out to find him, but then realized they would all be indoors, afraid to expose themselves to the threat of a contaminated outsider. *Then how do I find them? How do I learn who's in charge?*

It was there he came upon the odd road.

It was neither eroded by time nor warped from beneath. It glistened peculiarly, but was not made of metal, polished wood, or stone. The nearest thing it resembled was the pouch containing MacCauley's diary that Webb found in the swamp

The road was wide, so wide that fifteen men might stand side by side with arms spread out and touching. As he approached, he saw the roadbed was not a single unbroken surface but many adjacent strips laid next to one another.

He stepped on the nearest one. There was a grumbling, whirring sound. He glanced about, started. The trees began to glide slowly past. The entire road had sprung to life, moving north, the strip he was on proceeding at a crawl, the one to its left running a bit faster, the next accelerating about a third more, and so on till the final ribbon, speeding along at a dizzying clip.

He conquered his initial panic. The slow strip did not change speed. It was obviously designed for safe entry onto the road, and acceleration or deceleration could be accomplished simply by stepping from one strip to another.

Since he had no real idea of where to go, he decided he could do worse than stay on the road, reasoning that it would not be kept in operation if it did not lead someplace possibly vital.

Deliberately, he began crossing the highway to reach the fastest strip north.



49(8)20! 07/2740! . . .

She repeated the emergency notice of the night before, informing the entire City: EMERGENCY. STAY INDOORS. ANOMALY UNCHECKED. POSSIBLE CONTAMINATION.

. . . 07/2740! 231/2877! 6061!/9273282!

The anomaly was *past* the Self-Gate, somewhere in the City since the previous evening: the first time anyone ever crossed the impregnable barrier! Her mind was too flexible to dash against the rocks of impossibility for very long; it happened and she had to accept the fact. Eventually she would analyze with the synergizer the exact way in which the age-old system broke down, but for now she was reduced to a policy of expediency: find the interloper, prevent the spread of some virulent bacteria to her long-insulated people.

Again she sent out the warning. SELF-GATE BREACHED! STAY INDOORS!

Calls had been lighting up for hours along the scanner banks, the first one very likely from Randall. But she was prepared, had sent all incoming queries the same automatic answer: *Refer to File 6427*. Let them follow the same series of steps and deductions she pursued, she had no time to instruct them all personally.

As she waited for an update on the anomaly's position, she was haunted by an irrational thought. . . Judith has somehow invaded the City's solitude. Foolish to consider, she was dead by now, had to be. The Self-Gate read her decades earlier, detected the incipient biological breakdown and rejected her. Yet who but her daughter could be intelligent enough—and stubborn enough—to dare the Gate and *succeed?*

The buzzer sounded. More information. She watched the scanner. Every circuit was locked in, all data that could be

channeled to her was on tap so the synergizer could inform her of the progress and intent of the anomaly.

231: 3529/47.

At last!

She punched in a demand for exact positional data and got an immediate answer.

3529/247(8)/7——

The anomaly was some forty miles below the old Pennsylvania line, heading north at a speed close to one hundred miles an hour.

She calculated, derived an estimate and knew what to do. If. She instructed the synergizer, then sat back and waited for the clock to catch up with her racing mind.

If only the seldom-used circuits still worked.

**A**FTER A TIME, he thought the roadstrip to his right was speeding up, but then, noticing it still in phase with the other bands, realized his own strip was slowing down. Jumping up, he leaped onto the faster ribbon before the difference grew too great to make the crossing. But as soon as he did, his new foothold also began to lose momentum.

He hurried to the next right-hand section. As soon as his feet touched, it, too, decelerated. His initial impression that he'd unwittingly done something to cause the slowdown gave way to the far more likely thought that someone in City was deliberately manipulating him off the road.

He had no choice but to do as prompted. All segments on the left slowed and finally stopped, so he found himself at last on the first snail's-pace strip he'd originally stepped on. It crept around a brake of walnut and then, like the rest, ground to silence. In front of him stood a tall wooden pole, a cross-piece at its top something like the godsign of the Kriss. A strange device was affixed to the apex of the artificial tree: a gray molded horn big enough for a giant's fist; its sides coned outward to a lip which rolled gently back on itself. The horn cracked, and she spoke:

"If you've business in the City, follow the road till it stops again. Then I'll direct you further."

The sound was soft, yet held a faintly chiding edge that disturbed him.

The road started up once more.

**A**ND THERE WAS THE CITY. Massive hulks of steel, brick, stone and glass staring down impassively at the insect who called himself a man. Roadways curving far above his head. Signs bigger than a whole room of Garick's house in new symbols and abbreviations he could not read.

A *bug*, the worm said sadly.

And then she spoke again.

"I can't see you, but know you're there. The sensors picked you up when you passed. Can you hear me?"

"Yes!" he spun around, confused at the sound of her voice coming from too many directions at once, like audible lep.

"Will you meet with me?"

"Yes...yes." his own voice sounded pitifully thin to his ears.

"Follow this route," she said. He listened carefully, memorizing the turns he must take. It was no great distance, ten minutes walk south, perhaps fifteen minutes further to the east—

"You'll see a building. You won't mistake it."

It took longer than either anticipated, though he set out at

once. The hush of empty avenues, the crumbling blocks that once were shops weighted him down. He knew the City was cut off from the world, but its own utter isolation he had not anticipated.

He proceeded south as she instructed, intensely curious, yet much depressed by what he saw. He reached the turning-place. Entering the wide cross thoroughfare, he faced east—

—and stopped.

The building, she said, was unmistakable.

It was.

Before it, he sank down, knees crumpling, resting on the naked sidewalk in the attitude of a praying Kriss. Up and up and up he gaped at the tower whose top could not be seen, shrouded from his gaze by summer clouds.

*Shake your fist at it, the worm mocked. Bring it down.*

A long time passed. He stared at it and thought.

When his voice came back, it was not the worm's. He spoke with the bleak self-knowledge that carried him past Holder, past the Gate, past Lishin and Salvation and the vengeance that was Callan's.

"Bring it down?" he murmured. "If I have to...yes."

Alone.

He walked along the street and came to the massive door. He entered, footsteps tolling in the vaulting emptiness. He found the small room where she said to look. He hesitated only a moment before entering.

Neatly printed in Old Language, the message on the wall instructed him to press a certain three-digit button set in a long panel on the side of the room. He did so.

A portion of the wall slammed shut. Trapped! He dashed forward, pounded at the barrier, could not make it budge. He was sealed in the small closet. The floor shook and trembled. Before he could decide what to do, the motion stopped and the door hissed open. He lost no time getting out.

The room was narrow and the gray curtains on either side were drawn shut. The walls were gray, the ceiling was gray and all was illuminated by a gray light reminiscent of the tunnel's globe, but duller.

At the far end, he saw a door and a window next to it. She waited behind the glass.

He stared at her, forgetting to breathe. Once, just before the test of power he won over his brother, her face and form appeared to him, but that was only an image while this woman was vividly real.

He advanced, still shocked, but keeping himself firmly under control. His fingers sought the toggle of the Girdle, snapped it off. He plucked the helmet from his head. His sudden appearance must have surprised her, but her calm features retained their composure as she catalogued every detail of him in her memory, from his great height and reddish hair to the peculiar set of one poorly-mended arm.

When she spoke, her voice harbored neither rancor nor challenge, merely a gentle curiosity. "Why did you run the Gate and enter the City?"

"I promised someone I would."

"Promised whom?"

"Someone who...resembled you very much."

Though her eyes widened, the announcement did not much surprise her. "Who *are* you?"

Raising his head with grim pride, he said, "I am Singer, son of Judith Randall Singer, late of the Department of

History, subsection on technology." He twisted Arin's lips in sardonic amusement. "Guess you'd better decontaminate me before we have a long, long talk..."



THEY DECONTAMINATED HIM in an empty room on a lower floor of the same building. The doctor, wearing a translucent protective mask and suit, tested him and fed the data into the synergizer. When the readout came, he made doleful, clucking noises.

"We can only manage a temporary series of measures," he said, opening a black case and removing bottles and needles like the one Matthew had.

The doctor pierced his arm several times, not a particularly pleasant experience. He had to swallow a variety of powders, tablets, liquids—one of the latter was so vile he almost threw up.

The doctor was solicitous. "Something wrong?"

"Worse than Kriss cooking." The doctor didn't understand.

He was allowed to return to her chambers, riding back on the same elevator, the only car in operation. When he got out, an impulse made him twitch aside one of the curtains concealing the windows from his view. He saw nothing through the glass; a white vapor swirled before his eyes.

"They're clouds," she said.

He dropped the curtain and quickly stepped to the center of the room. It made her laugh.

"Don't be afraid, the place hasn't tumbled down yet. Come forward, let me see you."

She stood waiting at the far end of the corridor, framed in the doorway. When he drew near enough for her to study his face, she spoke again.

"You don't look much like Judith." Standing aside, she gestured for him to enter her office.

"You knew her, then."

"She was my daughter."

He looked at her intently, but her large brown eyes betrayed no deeper emotion than curiosity. Taking her usual chair by the scanner, she smoothed out her robes and motioned for him to sit where he would.

"Yes," she nodded, "we're related, you and me. However... I don't know how much Judith told you about the City..."

He inclined his head. "You don't touch."

"Rarely."

He held up one hand. "I'd better explain something right away—if I can, if you'll accept it. The reason I don't resemble my mother is because you aren't actually seeing Singer. This is my half-brother, Arin. Right at this moment, I'm outside the Gate—my body—just riding into Lorl."

Her eyebrows rose. Silently, she evaluated what he claimed, provisionally decided that whatever he might be saying, it wasn't a lie. "You'd best explain."

"I can't give you a complete history, not everything that's happened outside since City sealed itself off, but I'll start by telling you about lep. It was new to my mother at first."

She listened carefully, absorbing each word, pigeon-holing it till it could be processed. Singer spoke of the power of masters, the reading and the sharing, how the cowans called it magic but what it really was—

"Telepathy!" she interrupted, recalling the ancient word. She swiveled in her chair and punched several input buttons. The scanner lit up.

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Singer regarded the glowing green surface with amazement. "What the hell is that?"

"Part of the synergizer."

"And the numbers?"

"The definition of telepathy—direct mental communication, a matter of like frequencies. We don't study it."

"Why not?"

She entered his question. The synergizer explained.

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She translated. "The usage and boundaries of telepathy are too limited to be of interest."

He cocked a doubtful eyebrow: "It's grown some."

"According to the synergizer, it's a profitless direction."

"Perhaps," he shrugged. "But I've carried it beyond the masters. They can't steal, but I can."

"Steal?"

"When I was maybe seven, I discovered I could steal people, go inside their minds, take control, make them do what I wanted."

She nodded. The mind-boggling symbol she received when Singer entered the Self-Gate for the second time was coming clear. *He* was the compensated paranoid pattern, and the impossible link-up was his sharing of the same body with a compensated schizoid, his half-brother, Arin. Aloud, she merely remarked, "What you call stealing would be a new extension of sympathetic fields. Theoretically possible, but quite unlikely."

"You want me to demonstrate?"

She held his eyes with her own level gaze. "You wouldn't."

"No... I guess not." He waved it away. "Anyway, it used to be I had to touch anyone I wanted to control, but the power's gone over the years. I didn't know it myself till I met Arin in the woods. I was hunting a deer, and all of a sudden I was Arin watching *me* through his eyes! I realized I could steal Arin without touching him. Later on, I learned I was even able to manage a certain amount of manipulation of others *through* Arin."

She looked at him disapprovingly. "Then you forced your brother to risk the Self-Gate against his will."

"There was no other choice. I tried it once, alone. It beat me. Thoroughly."

"And why were you so anxious to try again?"

He began to tell her, but stopped. It was not good enough to say he wanted to see City because his mother woke a hunger in his heart, or that he dreamed of the place where he, Singer, might find a home and a people and not be lonely ever again. Maybe that was his basic motive, but now there was a lot more. It was important to pick out for her the parts she would consider valid.

So he told her of the war and how the Kriss spread a plague, still not effectively checked, that decimated the covens over the years; the subordination of the mercenaries under Callan, how the disguised, fanatic Kriss intercepted Garick's letter to City; the consequent, desperate massing of the forest nation under his father's genius; the battle at Dannyline. How they waited now at City's door.

And he told her about Uriah and how Judith might have been right if *he* had gained possession of the Girdle. "A weapon my mother must have been afraid would bring the destruction of the City if it was found and the wrong person used it. She originally thought it might block out some of the Self-Gate signals. My father may have thought that, too, though he never said. Anyway... it doesn't."

There was still more, he knew, but he could not yet find the

words to express it, the idea was almost there but the more he tried to summon it, the more it eluded him.

She rose, tired from the long, cumbersome conversation in Old Language. "We'll talk more tonight. Now you'll come to my quarters and rest. Later there'll be food."

He nodded, realizing he, too, was tired. During the long journey, he'd given Arin little rest and forgotten to feed him. *I'm a hell of a tenant.*

She led the way out of the office and into the corridor. As they walked, he asked her name.

Her lips curved at an unexpected memory. "I'm Marian Singer, chief administrator of the City."

"You're smiling. Why?"

"Nothing. Something your mother used to call me."

"What?"

She shook her head. "I'm afraid it's rather fresh."

He echoed the word, puzzled.

Marian sighed. It was difficult enough to converse in anything but verbal shorthand; explaining an Old Language idiom was particularly tedious. But she tried. "Fresh is—a kind of flippant disrespect, light irony, sarcasm at worse. But in a society without religion, I'm afraid your mother was, well, rather fresh when she called me 'the priestess.'"

"Priestess?"

She nodded, surprised and pleased that the memory held something more than sorrow. "She'd get angry. When she did, her eyes went—"

"Black."

"Yes!" She almost pressed his hand. Instead, she opened the door to her private chambers, stark and gray as her office. "When Judith became annoyed, she'd refer to me as 'the priestess of solitude' . . ."

**F**OR THE FIRST TIME in his life, Bowdeen had found a man to follow, respect, even care about. That care took its toll. Right now, the Wengen was exasperated.

But . . . Garick, *dammit*, listen to a little plain sense!"

"No," Garick repeated for the third time, "you're not coming with me. You watch and wait. The rest can do as they please until I get back."

"If you get back."

"Bow—shut up."

Bowdeen sighed and gave up. "You going now?"

"After we eat. Spitt's here, I want to talk to him."

"How 'bout if I just sort of follow behind, not too close—"

"Alone," Garick bit off the words. "Arin is *my* son."

Garick went back into Korbin's, leaving Bowdeen in the empty street with Shalane.

"Stubborn."

Shalane touched his arm. "He's going for Arin, isn't he?"

He looked down into her sad young face, lined with fatigue and something worse, then reached out and patted her shoulder. "Don't you go burying Arin yet. I've fought him, I've trailed him. They don't come no smarter."

He was more concerned about Garick. If Arin was dead, there was nothing they could do, but the god was a different matter. Garick was half out of his head with grief, exhaustion and pain, making foolish decisions now. No way should he go to the zone by himself, but that's what Garick was going to do.

City food was mostly synthetics designed for nutrition, certainly not savor. Singer didn't mind and if Arin objected,

Marvin Kaye/Parke Godwin



Marian Singer

he said nothing about it.

For the past several hours, Marian—he could not bring himself to think of her as his grandmother—had been working. She returned at sundown.

"I've spoken with the doctor. You'll leave tomorrow."

"Why? Doesn't the decontamination last longer than that?"

"Yes, but we're disturbed about the plague. He'll give you medicines and instruct you in the treatment of the disease, how to control it and the carrier rats."

He shook his head. "It's not enough, Marian."

"What do you mean?" Isn't that why you came?"

"For a start, but now Garick wants more. There's the memory of my mother driving him."

"I don't understand. Judith left the City to prevent that portable force-field you're wearing from falling into the wrong hands. Nothing more."

"No, there was more, Marian. Garick knew it, maybe not in words. Took me nearly twenty years to piece it together."

She waited for him to explain.

Singer rose, employing what he thought might be the psychological advantage of Arin's height. "When my mother was dying, I think she tried to tell me she wanted an alliance between City and the covens."

"That's impossible."

Her bland denial irritated him. "Why? Does it *have* to be?"

"Singer, the City deliberately shut itself away from those who didn't join it. Except for the schism, no one has entered or left since your mother. And you."

"What schism?"

She gestured impatiently. "Early City history. Not pertinent. There were those who couldn't accept the inevitable pattern that City life took. They left."

He tried to question her further on it, but Marian refused to spend time on anything other than the main topic of their talk.

"Unification," she said, "wouldn't serve any City purpose. Our population is frozen in number. We don't talk much, even our own compacted language is tedious to us. Work is our major activity, and we're alone when we do it."

He shook his head. "I see why my mother called you 'priestess of solitude.'"

Her lips twisted with a rueful memory. "City life chafed Judith, though she loved her work. But City people aren't forbidden to touch, Singer—the urge simply withers away."

Sitting down, he leaned forward till their heads were close, resisting the need to reach out, touch her hand, "Marian, my father says that something that doesn't grow eventually dies. If City can't change—"

"Not applicable. Argument doesn't reflect City rationale."

He ignored her. "During her life among the covens, my mother concluded there were things about coven ways important for City to know. Doesn't that at least suggest limited contact? What can you lose?"

"Time."

"Time?" He gaped at her. "Why should time matter to people who practically live forever?"

"Practically: that's the operant word." She rose. "Singer, come with me." She conducted him back to her office, pointed at the lifeless scanner. "What do you see?"

"Nothing. It doesn't work."

"Precisely. For the time being, we can't use the synergizer at night."

"So?"

"It's a great hardship," she said, emphatically. "We have

nothing but our work, and every second is vital."

"Even with your endless lives?"

"Singer, forget your coven notions of time, they aren't valid here. Yes, we live nine hundred, a thousand years, but it's still *not enough*. We each dread the statistically inevitable accident that will finally kill us, or the time when our brains refuse to store any further data, or the possible laboratory malfunction that destroys some vital organ that can't be recloned..."

He remembered a City expression his mother once used. "Forever is in the future."

"Yes! We're still doing all we can to add life, preserve the knowledge of every City brain, shorten the educative process. Singer, when we plan a new baby here, it's perhaps eighty years before the child gains enough historical perspective to begin to be useful. Usually it's much longer before emotional maturity is also attained."

"And have you replaced Judith yet?"

She winced, but did not reply.

"So," he mused with a tinge of bitterness, "you live impossibly extended lives stuffing that electric sponge with everything that possibly can be known—or at least all that you and *it* consider important, and to hell with the world outside."

She started to answer, but the sheer weight of the effort it would take crushed the impulse. Marian shrugged. "Something like that, Singer."

He poked aside a curtain, tried to see the City far below, but it was too dark. Suddenly, he spun on her. "And what happens, Marian, if one day you finish feeding data into the synergizer and decide it's time to add it all up and—"

She interrupted. "And we press the button, and the answer comes back, 'no correlation.'"

Silence.

Her smile was gentle and ageless. "Was that your question?"

"Approximately," he murmured, "thought you had no lep."

"Judith asked the same question once. So did I... when I was young."

"Is that a rebuke?"

"No, just a memory." She closed her eyes. "I can hear Judith now, brilliant as she was, breaking herself on that supposition. We trained her too soon."

Marian held his eyes earnestly. "Singer, we don't make a god out of the synergizer, we're beyond that need. In the early days of City, there was a church, but it became superfluous finally, and faded away."

He gestured impatiently. "What's that have to do—"

"With the synergizer? The only way to answer you is to tell a bit of early City history. It's difficult, I wish you could speak our language."

"You mean, those numbers you punch into that thing?"

"No, that's computer talk. Our oral communication is based on the same principle, but we employ digital adjuncts to speed it up. The whole purpose of our language is to *save time*... and it's still not as streamlined as we'd like."

"All right, tell me. I'll try to follow."

She pointed to the scanner. "It's all stored in there. If the power were only on, you could watch what they called newsreels."

Marian cleared her throat; the unaccustomed use of protracted speech was straining it. "Long ago, Singer, there were many religions. Their adherents wrangled about which was the true faith, basing their arguments and appeals principally on emotional persuasion, rather than logic. Logic



examines, belief accepts. It was fashionable then to indulge in debates on the nature of god. Most creeds postulated a personal diety, some transmuted godhead into a vague force binding together all things. Even those who rejected religion regarded god as a vital issue; some claimed he/she/it had died, others merely contended that god's nature was beyond man's power to know.

"And then a new philosophy was formed. It was called the Church of the Irrelevation. Its members refused even to discuss the old issues of god and spirit and immortality. They said they were unprovable theories, wastes of energy and time when the world is sick and hungry."

"Irrelevation," he echoed, feeling a cold premonitory chill. "Meaning... irrelevant?"

"Yes, Singer. Gods, heavens and hells, incarnations and passages, universal forces—all *irrelevant* to making human life better. Things that can't be proven, disproved or even intelligently, empirically debated are childish to fight about."

Singer thought of the Kriss. "Yet the religious mind thinks its faith *can* be confirmed, by death at least."

"Yes, by death," Marian said gravely. "Dissolution, immolation, surrender. The religious mind doesn't think in these matters, Singer, the religious heart *feels*. Priests persuade, they know better than to try to convince. 'We *know* it's revealed word, trust us, we're right.' Irrelevationists protested: 'We don't want to take it on faith, we want proof. Your personal convictions satisfy *your* emotions, not *our* minds.'"

"And the priests, I imagine, countered with a withering mockery of mind. You should have known Uriah."

"More than just the priests," Marian said. "There was a whole generation of anti-rationalists. They sneered at pitting the fallible brain against thousands of years of tradition. Irrelevationists dismissed tradition as ancient error compounded by millenia of accreted ceremony."

"So," Singer asked, "the Irrelevationists tried to stamp out religion?"

"Only at first—before what's usually referred to as the Jing invasion, when established society was destroyed."

"What did they do then?"

"Irrelevationists grew subtle. Before the invasion, knowledge had advanced so far in the world that rituals had to be overhauled drastically, priests compromised with modern views to soothe their people's accelerating doubts. It was an age without spiritual moorings. The invasion brought anarchy brutalism, the collapse of many faiths. Yet the frightened masses still craved security against the real and immediate dangers of personal insignificance and death.

"The Irrelevationists spoke up then. 'Never mind theology now,' they said, 'save your own skins, heal the country's wounds. Let *us* worry for you about god and immortality.' In other words, Singer, they developed a popular appeal for shunting aside religious issues until they could be examined on some other basis than unquestioning faith."

"And that was the beginning of City?"

"Not as it is now. There was no Self-Gate at first. But we were—still are—a minority. There's only a few thousand of us in some 15,000 square miles. City leaders feared religion would grow again, try to fight us. So—"

"So you invented a way to shut us all out—and place yourselves beyond time and emotion."

"Emotion," Marian echoed the word ironically. "That was a luxury once. Long ago."

"My mother learned to love."

"And died for it." Slowly, she shook her head. "Yearning for personal security—comfort, happiness—created religion, Singer, and religion, in turn, made death desirable... inevitable. That's a repugnant premise in the City."

"But, Marian, all you substitute is long life. Without joy, without emotion—why *deliberately* choose such a thing?"

"There's joy in our work. Or at least, satisfaction. The love and joy you allude to, Singer, are toys amplified beyond their importance by your ephemeral lifespans. Give a City life, the passions—even the most constant, companionate loves—grow stale. But meanwhile, intellectual activities become increasingly enticing. We follow them, and as we do, our lives flow toward serenity."

"And solitude." He felt very cold.

"Yes."

"It's not enough, Marian."

Wearily, she massaged her temples. "My head aches. I could've told you all this in a tenth of the time." Allowing a few of her precious seconds to elapse, the priestess smiled bleakly at him. "You should have been educated here, Singer. You've got your mother's intelligence. She also demanded a reason for the agony of a life without myth, for denying the distractions of naked flesh. Maybe you'll understand what I told her then, I'm not sure Judith ever did.

"Singer, perhaps it does take a certain amount of courage to choose to work solely for what someday *might* come about...but in our solitude we achieve one precious thing. Self-knowledge. It's a consolation itself like sorrow."

He could say nothing at first. Then, eyes closed, Singer spoke and each word was a distinct and separate pang. "Once my mother told me pain defines and exacts the price of its wisdom."

Marian looked up at him. "Judith said that?"

"Yes."

"I'm glad." It was a whisper.

He studied his brother's big hands, flexing the fingers, clenching them into fists. "I practically told Arin the same thing. Yet one part of me always thought, No, Singer, go to City! That's where there's—"

*Meaning?* his worm gently mocked.

She nodded, understanding. "The need to believe, Singer, is an almost inescapable trap of the ego."

*Now you know?*

*Yes, worm, yes.*

The reason why it wouldn't matter to City whether or not the synergizer ever derived a final solution to the riddle of existence.

*Say it all.*

"Random. Irrelevant."

*Now, said the worm, meaning has meaning.*

Clean as the arc of Forever. *And shove it up your ego, big brother.*

Marian left Singer alone to think. Somewhere far off, a clock tolled the hour of nine.



WANDERING THROUGH HER SUITE, he found a room with many books inside. Plucking down a few at random—ones where Old Language didn't seem too difficult—he dropped them on a plain metal table and took a chair, browsing for a while, noticing with a quickening pulse the occasional margin-penciled notations in his mother's unmistakable handwriting. Singer liked the book of poetry best. He'd grown up hearing the old song-stories,

but these were different, more complex, cleverer, and some were funny and some were sad. One of the simpler stanzas clutched him like a cold hand on his heart.

*Bleaker than a winter wind blowing on a hill  
Chiller than a freezing stream flowing through a mill  
Is the victor and the victory  
The willing and the will*

But what victory could he claim? His mother's desperate efforts to educate him to City ways in the last months of her life—all for nothing. The plague would be cured, but the covens were to be left in ignorance.

He had a frustrated feeling that he was almost on the brink of some discovery, a suggestion which might persuade Marian Singer to reconsider. But it wouldn't come, and in the morning, they'd send him away from City and again he'd be alone, a single covan in a sea of coven.

A sea of coven. Where did he hear that phrase before? Had to be the Kriss, Uriah. He thought about that honed intelligence, the crippled but questing mind, the keen relish for strategies for the sake of *inventing*. The game played out in Salvation. Uriah told Arin something that time... what?

*Nothing is free. There's always a price.*

But Singer told Arin then, if he gave something away, make a profit on it. What was the profit here? Would City gain, or coven, or both?

*There's always a price.*

That was why he couldn't force the birthing thought to come. The price was too high, he couldn't pay it...

*And yet we have a great deal in common, prince. A knife-edge of thought: Uriah challenging Arin. You have the makings of an exquisite bastard... not easy to carry a king's mission in this world...*

*Do I have to? A long, slow, easy death for the covens. Not—*

His mother's face. Fragments of a memory so dim he couldn't remember the words she spoke, he was too young to understand them, and he refused to remember, except nothing ever was lost. She told him and told him, *Hear what I say and don't worry if it doesn't make sense, it'll be there when you need it.*

And it was. The sound came back, her breath rasping against advancing death. "My baby, the City and the covens will break each other, as on a wheel. But the wheel won't turn till—"

Till. Till Singer went to Lishin, found the Girdle, put it on, went through the Gate, declared himself before City: Damn you, see me. I exist!

Yes. The block was gone. The thing he had to tell the priestess, the little fact to tip the balance, open up City, absorb the covens and swallow them and their dirty, ignorant and... and... *beautiful* way of life.

He arose, feeling cold, and Arin was cold and there might never be any more warmth, but every unwilling footstep brought him closer to where she was.



HE LEP IS MORE THAN JUST WORDS, Marian. It includes a thing they call sharing."

"Meaning?"

"A wordless communication, transference of emotion and knowledge, pictures, complexities... it can pass between two, a dozen, even hundreds of people at once."

"So? Why are you telling me this?"

"City language," he said, wishing he could stop the words from coming. "You said it's too slow."

She waited for him to go on.

"Do you know that Garick, using lep, taught Arin Old Language in two months? Two months! With linked minds, it's like hooking up an output to a memory bank. What you've done with the synergizer, they have, in a way, done with their own minds. And the power doesn't switch off at sundown."

A brief silence. The ramifications clicked through her mind as fast as the synergizer might process them. She nodded. "Two directions. Eventual, deliberate breeding of the characteristic. More immediate: linkage with coven minds the way we connect with the synergizer."

"Yes," said Singer. "*How* would be up to you, but look at the tool you could make of lep, think of the tremendous leap in knowledge that could take place in ten, twenty years... think of the *time* it could save you."

"What do the covens gain?"

"City education, technology."

She considered it, taking longer than necessary; the dead weight of tradition also operated in the City. But Singer, anticipating the force of inertia, had a suggestion to make.

"Marian—ask the synergizer."

It was near dawn, she knew she ought to wait a little longer, but the idea was too important and yet, as she punched the demand for power, she felt almost frivolous.

The feeling disappeared when she received the answer.

Marian sat for a time in silent thought. When she looked at him again it was with the stirrings of an emotion she couldn't remember the name for.

"Singer, when you saw this building for the first time, what did you feel?"

"Shock."

"Slight or deep?"

"Profound, Marian. I literally fell on my knees."

"Yes," she said, and was silent again.

*When we've gone where we must—*

"And now, Singer... what will you do?"

*Done what we have to—*

"Singer?"

*How much of it will be left?*

All the distant voices: Judith intermingled with Kon-Magill, Elin, Santeela, Webb, Hara, Clay and Holder—and the one cry stabbing at Garick over and over through the years, *his* cry that never stopped.

"You can read it!"



ISTENING TO THE GUARD, Garick knew it was Arin who went through the Gate.

"When someone tried to run it," he pressed, "how do you get him? Shut off the power?"

"Not completely, City never does that," said Ab. "We use helmets. We can get pretty far in with them. Not all the way though."

"Get me one," Garick told him. Though quiet, it was unmistakably an order.

The guard shook his head. "Won't help. City has to cut back the power first."

Garick scarcely hesitated. "Then get me two."

"Two?" the guard spluttered. "Who's the other for? Not me!"

"When somebody runs the gate and it hits them," Garick went on, "then they lower the power, right?"

"Sure, but—"

The merk gaped at him. "You'd shove some poor bastard through that Gate full power?"

Garick's serenity was ice cold. "Cowan, I know a bastard just made for it. He's even done it. Now, get me those helmets."

The guard's hand rested on his shabby hilt. "Forget it."

Garick sighed. "Now look, soldier. My son's in there and one way or another, I'm bringing him out. And if you plan to stop me," he pointed over the guard's shoulder, "he's going to be awful mad."

He followed Garick's point. A tall figure emerged from the bush at the roadside, grinning foolishly. Garick growled at him. "Bowdeen, a man your age should know enough to follow orders."

"Ain't you glad I don't?" Bowdeen waved casually to the merk. "Poke, your sad-ass still on pay?"

Poke hooted in recognition. "Hey, Bow! Heard you retired."

"Sort of." The black man clapped him on the shoulder. "Sidele back in town yet?"

"Sure," said Poke. "I seen her yesterday."

"Good," Bowdeen patted him, "now you get them helmets like the man says—"

"Goddammit, Bow, I can't do that!"

"—so *he* don't have to shoot you." Where Bowdeen had emerged from the bush, Jay waited with an arrow ready.

"Bowdeen, wait." Garick leaned over the barrier, straining eyes and ears into the eastern distance. "Listen!"

They all heard the sound then, a raucous, growling noise like none they'd every known, coming nearer.

Motors.

At the top of the rise, beyond the Gate marker, three small wheeled carts rolled rapidly in their direction, each carrying two riders. Bowdeen squinted into the morning sun.

"Master Garick, that's . . . ain't that—"

"Yes," Garick breathed. "It's Arin. It's Arin, Bow. And—"

Garick broke off, staring at the tiny, delicate black-haired woman. For a moment, he thought he might pass out, but his will held his body in check.

It *couldn't* be Judith.

The carts rolled to a stop. Arin alighted first, wearing the strange belt, the Girdle, over his robe. He approached his father and bowed with deep respect before him.

"I brought them, sir."

"Yes." Garick didn't try to stop the tears welling in his eyes. *All. You did it all. No one else.* He thought of how proud Jenna would have been of Arin, let the boy share it wordlessly.

Arin said nothing. Singer wouldn't let him.

Garick felt lightheaded and weak, and through the blur of tears, his son's weather-burned face seemed bathed in a compassion and pity as vast as it was remote. Then Arin's arms were around him, and Arin's lips moved, murmuring at his ear.

"Before you meet her . . . whatever comes . . . *I love you.*"

*Why does he say it like it's goodbye?*

"Yes," Garick said softly. "That was needed."

"At least once," said his son.

"Garick," he introduced his father. "Marian Singer, mother of—of Judith."

Like the rest, she was encased from head to foot in a light translucent suit that protected her from contamination, but the face was clear enough.

"You," Garick swallowed, "you look so much like her."

"Yes," she acknowledged. "It appears we're related. And

that we have a great deal to talk about." Marian looked at his arm and turned to one of the three City men who had accompanied her. "Doctor, please examine this."

Garick sat down, supported by Arin while the doctor studied the arm. "We could amputate later or restore limited use, it's hard to say without X-ray." He prepared a hypodermic and was about to administer it when he glanced up at the dark, streak-painted savage hovering protectively over Garick. "Tell your man, this is only to help you. It won't hurt."

"Tell him yourself," Garick said mildly. "He used to be Kriss. Speaks your language."

Tucked into the young man's belt that carried his black knife was a book bound in raw leather. The doctor was not unimpressed. "I see you read?"

"The Apocalypse." Jay tapped the book. "You know it?"

"Oh, yes. On tape."

"Strange to feel like the Fifth Horseman." Jay pointed to the needle. "You be gentle with him."

Korbin's was agreed on for the initial conference. It was where Judith first stayed when she left City.



THE FIRST SESSION was only between Garick, Arin and the City people. Neither Hoban, Tilda, nor the other masters felt any insult in being excluded. They had seen the small, fragile people in their queer clothes and their carts that went without horses: pretty enough and with powerful magic, they guessed, but they would leave it to Garick and not accept these new people or their ways just like that.

Shalane stood in front of Korbin's door, waiting for the conference to end. She'd ridden an errand for Tilda to the Karli outside Lort and missed Arin. She'd heard about the shiny material the City people wore and wondered how she'd look in it, instead of her own ragged skins. "Like a wet cat, I guess," she said ruefully.

*Will he come out soon?*

Moss kissed her hair. "Sure as frost, baby girl."

Arin emerged alone, before any of the others. He had a pained, drawn look that tightened the skin about his forehead and temples. Hand shielding his eyes, he looked like a man too quickly awakened from bad dreams. Blinking in the sun, withdrawn, he sat down on the edge of the wooden sidewalk, against a post, feet splayed in the dust of the street.

Arin—

Her lep caressed his mind before he saw her coming out of the group of Karli. He didn't get up, and the girl didn't run to him as she had a year or a hundred years ago. She came slowly with her woman's grace, her hand extended, and he drew her down beside him.

"You cut your hair."

"It'll grow," she said.

Leaning together, their foreheads touching, they still did not lep or share, their minds did not mingle yet, and it was bad to feel like this, bursting and empty all at the same time, and then Arin felt it well up in him. He buried her in his arms, faced pressed into her throat. *Lane . . . Lane . . .*

*I know. She cupped his face in her hands. Don't share yet. We can't. Too much, Arin.*

Yes.

They held each other, and the joy was there, would always be there, but heavy with ghosts and no more like morning.

**B**UT THEY'RE CHARMING. Absolutely beautiful!" The City woman named Diane whispered to Randall Singer as they came out of the conference. "Garick is like a sculpture."

"A Rodin," Randall agreed, "in weathered granite. But see how they age." They'd agreed to use Old Language outside the Gate; even so, they whispered. One of these proud, clannish people might understand and think them condescending.

Diane glowed with a fever of discovery and purpose. "They'll be fascinating to study. I could spend fifty years on it and probably will. Look, Randall, there's the boy who came through the Gate." She began to putter with her camera.

"Don't embarrass them, Diane. They're not used to us."

"Nonsense, he won't mind. Marian says he's quite intelligent. And that *girl*. Look at her bone-structure. She's a primitive Durer!"

She planted herself in front of the boy and girl. Unmoving, absorbed in each other, they glanced incuriously at the oblong thing she held to her eye. It clicked at them. She pushed a minute lever and clicked again.

"Just babies," she whispered to Randall. "I do wish they'd smile."

In her view finder, Arin and the girl looked at her, seemed to look through her. But they would not smile.

Before the next scheduled conference began, Garick sent for Singer. He arrived several minutes later, hands still shrouded in skins and bound securely.

"I'm going to let you go," Garick told him.

"About time, daddy."

Garick came close and spoke in a low, dead voice. "Don't call me that. Arin did, he did everything while you just sat there and watched your people die."

"Not *my* people."

"Then you're not my son." Garick lepped to Arin: *come, bring an extra horse*. To Singer, he said: "You're leaving. Don't ever come near Charzen again."

Singer swallowed with difficulty, said nothing.

Arin arrived with a saddled horse in tow. "You found him in the woods," Garick ordered, "so leave him there. Far enough away so he won't cause anybody any trouble." He bent one last cold glance on the outcast. "I'm through paying for Jude."

Without another word, the god of Shando turned his back on Singer and crossed the street into Korbin's.

Arin had his mouth open to say something to his father, but couldn't make the words come. And suddenly, he found himself leading Singer to his horse.

When they were past the last houses, the brothers dismounted. Without Singer's prompting, Arin cut away the rope, stripped off the gloving skins and chucked them into the bushes. *Lot of good they did*, he lepped, ironical. Arin seemed to be struggling to express a complexity of thoughts.

*What, Arin?*

"You were there from the first, weren't you?"

Singer said nothing.

*The worm. The wolf.*

"Near the end, Arin, you made a pretty good worm yourself."

*Had a good teacher.*

Arin was oddly loath to end it, ride away. By unspoken assent, they sat down, side by side, backs to the bole of a large oak. It was just past high sun. They listened to the

birds.

"Go on," Singer urged gently. "Ask it."

"You know. The Circle at Karli. Me and Lane."

"Yes, Arin, I was with you."

*Why?*

*Moment of weakness.* "For what it's worth, I'm sorry."

Arin said nothing.

*Does it still matter?*

Arin shook his head. "No. Not now."

Moments passed. A curious look came into Singer's eyes. "Look, Arin, now I think, you have nothing you should complain about." He wagged a finger comically at his brother. "Leastways, *you* didn't have to sleep with Bowdeen."

*What?* It only took Arin a second to catch it. His eyes widened. "Sidele, *too?*"

"How else was I going to drag your big ass into that box? And did you ever try to tie yourself up?" Singer gave him a wry grin. *Dunesk*.

The picture was too much for Arin. For the first time since the long nightmare began he had a reason to laugh, and Singer joined him. They chuckled, then roared with the absurdity of it and though there were other things than mirth in their laughter, it took them a long time to stop wheezing and sputtering from it. Wiping the tears away, Arin finally caught his breath.

"Why, Singer? What was it all for?"

His brother shrugged. "Started out with one thing, changed along the way. Remember the day you came to rest that shiny new power of yours? When you hit me with an image of my mother?"

"Yes. That was cruel."

"I got mad, that made me decide faster, but the thought had already come. There you were, Arin, so full of yourself and your mission. I decided then I might play god. Shape the world my way." *My mother's way*.

Arin understood more than Singer was saying, he knew his brother now. *Shape a world where Singer wouldn't be a misfit...*

He hadn't meant his brother to read it, but Singer rose suddenly, scrambled to his feet. "Must be about time for you to get on back, Arin." He held out his hand. "Let me have the Girdle. Misfits are practically invisible, anyhow."

He glanced down. "Almost forgot I was still wearing it. But you left the helmet back in City."

*The Girdle, Arin.*

"Garick'll ask about it eventually. Why do you want it?"

*Gods don't look too good up close.* He waited, hand still outstretched. Arin did not move. "Do I have to steal you again?"

"First time, you let me win. Wonder how'd I do in a real test of power...?"

*Little brother... shove it up your ego.*

Arin grinned sheepishly. Then reluctantly, he unbuckled the belt, gave it to Singer. "All right, you sad bastard, take it. You'll need it more than Garick." He watched his brother cinch it about his middle. "Where you going? City?"

"No."

"Then come on *home!*"

*Home? Where's that?*

"Singer, there's no reason for this. I'll tell Garick what you really did, and—"

"NO!"

"Why *not?* What are you trying to prove?"

Singer passed a hand over his eyes, shaded them, stood silent for a moment before looking up at his brother. "Arin," he said softly, "I've carried that hate nineteen years. It's time for me to stop hurting him."

?

*He can finally bury my mother. Unless he learns he owes me, instead of you.*

"But it must hurt you."

"I'm Singer." *Used to it.*

"No, dammit," Arin protested, "you want to hurt, it's how you know who you are! Me and Lane, we've hurt bad, we'll never be clean, but we'll try. Come home, Singer!"

"I've spent too much time already alone in Charzen." He raised a hand in farewell. *Goodbye, Arin.*

Singer started off into the forest on foot.

"Take the horse, anyway."

"No, Arin. Nothing of his."

"He won't ask."

"Where've I got to go so fast I need to ride?"

He walked in a southeasterly direction. He'd pass between Lorl and the zone, giving both plenty of berth. Arin watched him. A thought suddenly occurred to him, but Singer was too far off to call, so he lepped.

*You left something out, big brother.*

?

Arin's lep slashed into Singer's mind. *Why don't you admit it? You're alone because you want it that way.*

*No other choice, Arin.*

*Because you define yourself as Singer, the misfit.*

*Not the only one who does.*

*Sure, you reshaped the world, but somehow you can't manage the same trick on yourself!*

Arin—

*No, you can't shut me up! I went through the Gate with you, remember? I know you. You and Garick, shaping worlds, shaping me, leaving me to understand too much or not enough and not believe in any of it. You think Garick fits? Is there room in his skull for all he's learned and going to learn? Will Lane fit when she prays to earth 'be full of life' and smells the blood in it? Fool everybody but me, Singer. Marian taught me, too. I don't believe, I don't have to believe. If I stink of the world, I'll still live in it, because it's the only one I've got.*

No response from his brother.

*You don't fit because you won't fit because you can't fit because you won't let yourself fit because...*

And then he couldn't see Singer any longer.

In spite of the dizzying sensation without the helmet, he had to shut Arin out, jumble his thoughts. But it didn't help. *You're not alone no matter what you think because you couldn't make it into your goddam City without me...*

It took a long time for Arin's lep to fade. Singer wanted to curse his brother, scream at him to shut up, but he couldn't.

*Once through myself. Once with Arin. Once looking up at her building. Once talking to the priestess. And now—*

Wouldn't he ever stop running the Self-Gate?

Marian was waiting for him, as arranged, just outside Lorl. She reached into the motorized cart, brought out the helmet and handed it to him.

"It's the first time I've actually seen you," she said.

"I know."

"There is a family resemblance."

"Won't Garick wonder where you are?"

"He's busy with a little man with a bald head. They have

this old book and Randall—your grandfather—is helping them translate part of it." A faint smile twitched the corners of her mouth. "They'll be tied up quite some time, I can assure you."

Singer put the helmet on his head, reached again for the switch...

"Singer?"

He paused. "Yes, Marian?"

"You're welcome there now, you know. In the City."

"Thanks. But I can't... not yet. It's too much."

"All right." She sounded doubtful. "But don't wait too long."

He shook his head. "City preoccupation with time."

"What about Garick? You could reconsider—"

"No, Marian, no, you promised. Arin did it all."

Without further discussion, he flicked the switch. Just as he did, she was seized by an irresistible impulse. It was absurd, she knew, yet Marian reached out her hand to touch Singer once, gently.

But he was already gone.

**H**E HADN'T INTENDED to go by the tree. Not at first—but then he knew he must finish it. He went alone, cloaked in the Girdle, by a route he knew better than anyone else.

The pain was old and dull, the years had blunted the barbs, and yet—

*They are a beautiful dying flower.*

The deep-cut letters, stretched and distorted with the tree's growth... the labor of two days as he bruised and tore eight-year-old flesh to carve it deep enough—the recurring bitter experience never turns them sour. *Life is their religion, so all-pervading—*

Like the City that would bury them.

*Hardship, suffering and death, and yet they have a sense of joy and oneness too deep to speak.*

He struggled with his emotions, delving deep for the answer he knew he had now, the final thing that would close a bracket in time.

JUDITH SINGER BURIED HERE  
WIFE OF GARICK  
MASTER OF SHANDO  
BORN IN THE CITY  
DIED OF

The thing Singer had been too young to name or understand.

His knife bit again into the bark, surer, stronger, swifter, carving the last of it for himself and his father, burying her for good.

DIED OF  
TOO MUCH LIFE

Yes. That said it all. And no. Everything and nothing. All that could be spelled.

And then it was time to go.

Stepping carefully, thinking only of the need to move with the deer's soundless tread, the misfit god, outcast of the covens, started off through the forest toward the distant, empty hills. About his waist he wore the Girdle of Solitude, at once a badge of honor and a stripe of shame, and he was neither Circle nor City, but he was Singer.

And he was alone.

—G—

# Cultivation

Rich Brown

**G**EORGE BRIMSWELL WAS FEEDING the pigeons one afternoon when a creature with sea shell ears materialized alongside of him on the park bench. The creature glanced about, noticed Brimswell, nodded, and chirping quietly in a strange tongue, hauled what appeared to be an ordinary attache case up onto the bench between them. It squeezed on a section of the case's black strap-handle, and the chirps instantly twisted into English words:

"Hiya, pal, how you makin' out?"

Brimswell had been shredding the bread of a leftover baloney sandwich for the pigeons. He continued to do so now until a fine, leaven dandruff covered the caps of his dress shoes.

The creature leaned back and rested its long, scaled arms along the back of the park bench. It crossed its rubbery, apparently kneeless legs and surveyed the indifferent pigeons with complacency.

"Nice place. Come here often?"

Brimswell's eyes darted left and right in harried, soliloquizing terror. "I've gone insane," he murmured, "It was the Weidler account."

"Sorry to hear that," the creature commiserated, offering him a cleft claw, "Bluth's the name, selling's the game."

The product of a Catholic home, Brimswell numbly accepted the claw, then realized what he was holding and dropped it in a paroxysm of fear. Bluth planted the claw on his non-existent knee and eyed Brimswell with concern. "Say, what's the matter with you anyway? You feeling okay?"

"Where did you come from?" Brimswell whispered. His head was scrunched down between his shoulders, and he was holding onto the park bench as if he feared an earthquake.

"You know," Bluth said, "it never ceases to amaze me, the amount of widespread pestilence you run into on these young planets. You'd think they'd do something about it, you know?" He reached down, beckoned over a pigeon, and began to pat the bird on the head.

Brimswell sat back in his seat and gaped as the other pigeons flocked around Bluth's feet, cooing loudly while he stroked their feathers. For years now Brimswell had found avian company more rewarding, less taxing, and generally more sympathetic than any human's. He felt that he'd devel-

oped a special affinity with pigeons, whom he'd always found to be placid, undemanding, and extremely uncritical. But never, in all his years of pigeon feeding, had any of the birds permitted him such shocking physical intimacy. Humiliating feelings of jealousy and indignation—feelings he'd only felt before in relation to the human vulgarities that populated his world—swelled up inside him. He let out a strained pant.

"Please don't do that," he murmured.

Bluth looked up from the pigeons and withdrew his hand with a nod. "Pestilence," he agreed circumspectly, "Bound to be unclear. Ought to know better actually."

"Who are you?" Brimswell asked in a hoarse whisper.

"Bluth's the name," the creature said, offering his claw again. This time, Brimswell ignored the gesture. He leaned forward and scrutinized the creature's face.

"Where the hell did you come from?"

"Just left Lyra. Fourth planet."

Comprehension dawned in Brimswell's eyes. He pointed a finger. "You're an alien," he said.

"How do you mean?"

"You're from another planet."

"Well, obviously," Bluth grinned, "Where did you think I was from?"

Brimswell pointed vaguely at the ground, then dropped his hand. "But you speak English."

Bluth patted the top of the attache case sitting between them. "Oh, well, that's Old Bessie here. She's translating, naturally. One of the best little old reality modulators on the market. Got a hell of a deal on her too. Even modulates my mannerisms to fit right in with the local scene. Absolutely essential in my line of work."

"Your line of work?"

"Traveling salesman."

Brimswell stared at him. He couldn't have been more surprised if Bluth had told him that he was an interstellar prostitute. He started to rise, but Bluth pulled him back down by the elbow. "Take it easy, George. I can't stay too long myself. Got a staff meeting in Snickers in half an hour."

Brimswell sat back down. "How did you know my name?"

"Bessie. She's analyzing the whole planet."

Brimswell stared at the attache case. He reached out and superstitiously touched its side. "It reads minds, doesn't it?"



"More or less. So listen, George, you got anything you want to trade?"

Brimswell started to rise again. "The president..." he mumbled. Bluth dragged him back down. "You're not listening, George. I can't hang around here all day. I work a tight schedule. I might not be back this way for 30,000 years."

Brimswell paddlewheeled his hands in the air. "But you can't leave. This is the first meeting between man and intelligent life."

"I'm sorry, George. I'd like to stay, but I've just got too many prior commitments." He sat back and waved his claws. "Actually, I just stopped in to take a look around. As long as I was in the neighborhood. You know, sniff the air, see if there were any deals about?"

"Deals?"

"Yep. So tell me, you got anything to trade?"

Brimswell waved his hands helplessly. "Listen, I don't have anything to trade. The president, the U.N., that's who you've got to get in touch with. You have to stay here."

Bluth looked around in admiration at the park and smiled.

"Oh, I find that on these young planets the things of value are generally owned by everyone." He reached over and patted the top of the attache case again. "Why don't we just have Old Bessie look the situation over and see if you've got anything I might be interested in?"

Brimswell watched mutely as Bluth reached over and squeezed the case's strap-handle a second time. A ticker tape immediately shot out an invisible slot in the end of the case. Bluth peeled it off and examined it at arm's length.

"Ah, myths, great. What would you want for these?"

Brimswell leaned over to look at the ticker tape. "What are they?"

"Fairy tales, lots of them. Santa Claus, Superman, The Easter Bunny, Marxism, Capitalism, Buddha, The Boy Who Cried Wolf—"

Brimswell brushed the bread crumbs off his lap. "Those are worth something?"

"You bet. Why, where I'm going these'll sell like hot cakes. And this idea about birthdays, great. I think that could really catch on, George."

Brimswell shook his head. "I don't understand. I don't

understand any of this—”

Bluth scratched the corner of his eye. “It’s really pretty simple, George. Down here, these concepts are public domain. But I’ve got to have a signature to export them off this planet. I know it’s Mickey Mouse, but that’s the way it is. I never violate a galactic trade law.” He belched. “So what do you want for these?”

Brimswell closed his eyes and massaged his forehead.

“But I have no idea what they’re worth.”

“You name it. Set your price.”

Brimswell shook his head.

“Anything you want.”

It suddenly dawned on Brimswell that a traveling salesman who could teleport between the stars just might mean exactly what he said. He looked up slowly.

“Anything?”

“You name it.”

Brimswell pulled on his bottom lip. “Well, we have an energy crisis down here. We’re running out of petroleum.”

“Sure, just the thing,” Bluth nodded, “I’ve got a gizmo that turns soil to oil. I’ll let you have ten billion of them.”

Brimswell sat up straight.

“And then there’s hunger.”

“Sure, a Nutro-Molder—works on the same principle. Throw in a few rocks, you get an equivalent mass of synthetic food.”

Brimswell began to bounce around on the bench. He held the future of the world in his hands. He was going to be famous. People would want his autograph. Women would throw themselves at him. He had visions of appearing on The Tonight Show with Johnny Carson.

“Cancer,” he murmured.

“Sure, disease eliminators. Have you guys arrested the aging process yet?”

Brimswell gasped.

“Immortality!!!”

“Listen,” Bluth said, sitting back and smiling, “I can see you’re getting a little worked up. Why don’t we just have Old Bessie pick something out for you? She’ll tell you what would be a hot item down here.”

Brimswell nodded mutely and swallowed. He sat forward on the edge of his seat while Bluth once again squeezed Bessie’s handle. A second ticker tape spewed out and Bluth ripped it off and held it up.

“Ah, just the thing, Mistake Preventers, great for cultivating the social graces, building self-confidence and interpersonal social skills. Why, with one of these little jobbies you can become a dynamic, charismatic, moving force in history. You could literally rule the world.”

“Rule the world?” mumbled Brimswell. He hadn’t thought of that one.

“Sure, just the thing for straightening out the situation down here. Here, let me show you one.” He opened the attache case and took out what looked like a dark-faced, digital, wrist watch. Brimswell stared at it skeptically.

“What is it?”

“An M.P. Old Bessie here has scientifically analyzed your world, George, and she’s found a crying need for these. They really fit the bill. I’ve got six billion of them on Rigotte IV; I’ll let you have them all. And I’ll throw in the shipping free of charge. I’ll send ’em here by tachyon drive, the fastest known form of conventional space travel.”

Brimswell took the wrist watch and turned it over in his hand. “But what does it do?”

“It tells you when you’re making a mistake. It’s a built-in counselor and personal confidant; analyzes any and every situation for you and helps you select the right course of action in accordance with your innermost desires and wishes. Any situation, George: practical, financial, social . . . sexual.”

Brimswell raised an eyebrow.

“Why, with these little gadgets here just about anybody is assured of success in any and every endeavor he tries.”

“But immortality, hunger, the little thing that turns dirt into oil . . .?”

“Listen, George,” Bluth put a brotherly arm around Brimswell’s shoulder, “Old Bessie is never wrong. She’s analyzed your society, and you know what she’s found?”

George shook his head.

“Bessie found, George, that 78.4% of your people are worried 11.8% of the time about making fools of themselves. She also found, George, that 93.7% of your people wonder if they’ve made the right choices in their lives. With these little M.P.s, George, all that can be eliminated. I don’t have to tell you what that means to you on a personal level, George.”

Bluth rather calculatingly raised his right arm, and Brimswell noticed for the first time that the alien was wearing one of the watches. Bluth winked at him. “Invaluable in my line of work.” He shook his wrist, beaming at the watch. “Totally indestructible too. And the best part, you don’t even have to wear it to use it. It has an effective range of one light year. Leave it at home in the desk drawer if you want.” He smiled at Brimswell, then he looked down and his face grew pensive.

“But listen, George, I know what you’re thinking. What about all these other things we were talking about? What about these other things that would improve your world’s situation?”

Brimswell nodded avidly. “Free oil, food, immortality—”

“Precisely,” Bluth cut him off. “But, George, that’s tunnel vision. You’ve got to look long range.” He spread out his claws as if framing a picture. “Sure, those things would improve the short range situation, but those are transient problems. Disease, energy, hunger: why hell, George, all you’ve got to do is apply a little technology. In fact, George,” Bluth eyed him reprovingly, “Old Bessie tells me that your people already have the technology to mitigate, if not solve, half these problems. But why isn’t it being done, George? Because your people are confused, and they’re making mistakes. Big mistakes. No sirree, those other things I mentioned might improve things temporarily, but these, George,” he held up the watch in Brimswell’s hand, “these will strike at the root of the problem. These will improve the people.”

Brimswell looked down at the watch. It didn’t even look like a very expensive watch.

“They need guidance, George. And you’ll have a corner on the market.”

George fidgeted in his seat.

“I won’t be back this way again for another 30,000 years. Who knows when you’re going to get another chance like this?”

“They don’t force you . . .?”

“Only advise. Just a quiet little voice in your head that tells you when you’re messing up.”

“And they’re never wrong?”

“Money back guarantee.”

George looked glumly at the wrist watch. “Well, I don’t



know . . ."

"Of course," Bluth said, "if you're not interested, I could always find someone else." He turned and looked up the park path.

Brimswell started. A figure in a trenchcoat had appeared up the lane. Bluth had noticed him too, and Brimswell realized with sinking despair just how much his chance monopoly on Bluth's presence had come to mean to him. The intruder, though, simply yanked open his trenchcoat to reveal an exceptionally emaciated, nude, male body, then turned and ran off into the bushes.

Brimswell jumped to his feet. "All right, I'll sign."

Bluth pulled a pen and paper out of his attache case. "I wouldn't be surprised if they made you king for what you're about to give the world, George. Sign on the dotted line."

Brimswell took the pen and hesitated over the contract.

"How do I know they'll work?"

Bluth waved a claw. "Strap it on. It'll communicate with you mentally."

Brimswell took the M.P. and strapped it on his wrist.

"Give it a moment to attune to your mind."

Brimswell quietly stood still a moment, then a cool, forceful, fatherly voice spoke inside his mind.

"Be sure to get a bill of sale, Dummy," it said.

Brimswell signed on the dotted line.

Five minutes later, Bluth was gone and George Brimswell was strolling back out of the park. It would, perhaps, have been natural for him to question the reality of his recent encounter, but two things prevented it: a large, ugly wrist watch now adorned his right wrist, and a cool, authoritative voice was speaking to him inside his mind.

"You got taken, you know."

"What? What's that?"

"Close your lips when you talk. People frown on mumbler."

Brimswell glanced over at a park bench he was passing. Two formidable-looking dowagers had shifted their purses into defensive positions and were now eying him with suspicion. He doffed his hat and hurried by.

"What do you mean I got taken?" he asked mentally.

"And don't press your lips together like that. You look like a fish."

George conscientiously relaxed his lips. "What do you mean I got taken?" he thought.

"Much better."

—G—

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*Far From the Madding Crowd*  
[Continued from page 29]

It would never do. With solemn hands—and a heavy heart—he lifted the mangled prototype off the bench, and ceremoniously—ostentatiously—dumped it in his wastebasket.

The next morning, he realized that his encounter with The Muse had not been in vain. The Idea could be salvaged, in a way that would permit him to achieve the goals on his list, without sacrificing his privacy.

Tinker, tinker, tinker. Hammer, hammer, hammer. A condenser here; a drop of solder there. Eighteen relays all in a row. A seal and a gasket; a handful of thermocouples. One cannibalized calculator. Two uncalibrated dials.

There. Damn near finished. And a good thing he'd abandoned the time machine, too, because this would make

him even richer—even more famous—even more powerful (not to mention even more attractive to nubile young ladies).

An instantaneous transporter. Really, it wasn't difficult—the equation derived from The Idea, once inverted (to deal with space rather than time), neatly described how to get from one point to another without crossing time (whereas the earlier, uninverted equation had told how to get from one moment to any other without crossing space).

Just hook it up to the car battery, and—

A tidal wave of applause bowled him off his feet.

They were back. All of them. And they'd brought friends.

They swarmed around him, now, pushing, jostling, elbows, shoulders, microphones thrust so close he could clean his tonsils on them, mad stroboscopes white-washing the basement, questions in a million languages (one of the "reporters" stood 45 cm. at the shoulder, had innumerable boneless lower limbs, wore purple silk over apple-green skin, and shouted its questions through a bullhorn that translated them into Spanish).

A very tired-looking Asian male osmosed his way to the front of the crowd. "Hi, Rodney. You did it again."

"Looks like I did," he sighed, then had to repeat it in a bellow. "What happened here, Rodney?"

"Very simple, you turkey." He had to press his mouth close to his—own?—ear to be heard. "The GM Engineering Department studied your patent applications and your demonstrators. Took 'em six weeks to see how they could invert this machine to achieve time travel. Bingo! Back to Square One."

"See what you mean." Rodney (the younger) was already half-sprawled across his bench, forced there by the sweaty bodies of his fans. The battery was a mere half-meter from his hand. He reached, grasped the wire, and tugged.

And, of course, he was alone again.

The following morning, he was back in his workshop. The Idea didn't have to be scrapped, just adjusted a little. He'd conquered time—and space, as well—so all he had to do was add to his device another refinement that would insulate him from the adulation of his admirers.

Sighing, he massaged his ribs. It felt like two or three had been cracked in the crush. Then he bent back over the maze of electronic components.

Once activated, the device would englobe his house in a spherical field designed to resist temporal and spatial travelers. A force field, almost—aha! another marketing possibility: surely banks and museums and places like that would pay through the nose for such protection?—he would be able to live and work inside it. All the privacy he'd ever need would be his. When he wanted to have his ego stroked, well, he could just step outside and let the crowd roar.

One last connection. Attach the little fronds of copper, and—

If you go to the southwest corner of Rodney Liu's house, and press your nose flat against the shimmering—but very substantial—Temporal Stasis Effect Field, you will note that the Field is streaked and banded like holograph film. Were coherent light shining on it from the proper angle, and could that light travel without time, you would see Rodney, still bent over his workbench, one hand applying gentle pressure to his ribcage.

It may be a thousand years or so before the Muse inspires somebody else with this same double-edged Idea.

But Rodney'll keep.

—G—

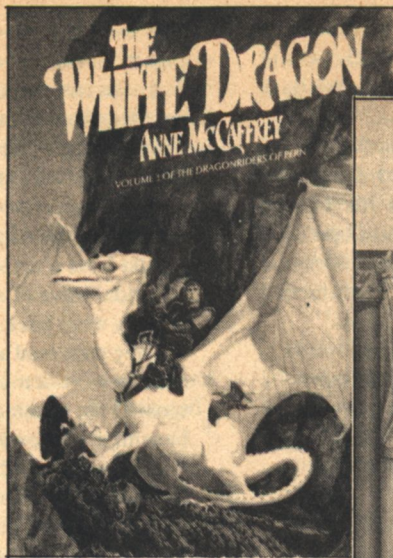
# The Aleph:

Andrew A. Whyte

## ALEPH INTRODUCTION

We didn't have room for an introduction last issue. So much is being published! Frankly, it was an enormous relief not to have to write what for me are the final words of the column and for you the very first (if you bother to read them at all). Yet, despite the effort they sometimes are, I think there is a definite need for the few words that space does permit. I've never successfully managed to explain just what it is I'm trying to do here, because it is difficult to put into a very few words and because I thought that it would (eventually, at least) be more or less self-evident. Moreover, "The Aleph" has never quite settled down to being exactly the same thing twice in succession. There has been experimentation and I like to think there has been growth. The fact remains, however, that there are an awful lot of you out there who, never mind the fact that I've been doing this for a year and a half, still are not aware of the basic facts about the nature of this column (and, of course, there are new readers every issue). Well then, for all of us, let me (re)iterate. Books listed in "The Aleph" are not reviewed, they are previewed. These are advance descriptions of books announced for publication, prepared in advance. This naturally implies that, since books are frequently delayed or postponed, some of the titles described may not appear in bookstores or newsstands when I say they will. I'm just relaying information that was the best to be had at the time we went to press. Everything is subject to change: date of publication, price, even the title. This is the natural hazard of any such attempt to predict the future. "The Aleph" is the most comprehensive listing of its kind ever attempted. It is my aim that it should be accurate as well. Due to factors beyond the control of anyone, this is not fully realizable.

For the sake of brevity and convenience, certain abbreviations have been supplied as a reference code. They will be found on the same line as the author's name, on the right-hand side. Here is a key: (C) Collection (more than one story by the same author); (C+) Story series collected or collection with unifying theme; (F) Fantasy; (J) Juvenile; (O) Omnibus (Collection containing at least one novel). Since sf novels make up the majority of books listed, none of these are specified as such. We have recently added new symbols to deal with the increasing amount of illustrated fiction. (GN) Graphic Novel; (GS) Graphic story; and (GC) Graphic Collection—are used to denote



books of which approximately equivalent portions are shared between text and artwork. Material taken from publishers' catalogues is given in [brackets]. Material from other sources is in quotation marks.

ANDERSON, Poul

(C+)

### The Earth Book of Stormgate

[Polesotechnic League series]  
Berkley-Putnam/June/\$10.95?

The 'future history' can be an effective instrument in adding the background depth so important in sf, where nothing can be taken for granted. The reader is more likely, at the same time, to be looking for involvement than a lecture. No one more than Poul Anderson has made more creative use of the technique, all too often merely a cover-up for shallow conception and lack of perspective. Of all these popular fictional universes, perhaps none is more popular than Anderson's 'Polesotechnic League' stories (actually one end of a continuum that also includes the equally appreciated Dominic Flandry series). Here, then, while we are waiting for *The Avatar*, Anderson's upcoming reported magnum opus, is a big book from Berkley/Putnam which gathers together nearly all the shorter fiction not previously collected in *Trader To the Stars* and *The Trouble Twisters*,\* with the addition of one of the novels, *The Man Who Counts* (first published as *War of the Wing-Men*). The stories span more than two hundred years of the [growth, flowering and decline] of the League as a unifying force for civilization among the far-flung human-and-alien-settled worlds of the galaxy. Sandra Miesel has written\*\* "...The Polesotechnic League arises to exploit the profits of interstellar trade...but it collapses into chaos through greed... This future history is a singular achievement within the science fiction field not only for its length and complexity, but also for its emphasis on historical rather than political, technical or philosophical factors. In the series, the pendulum of time swings between expansion and retrenchment, anarchy and order, mobility and regimentation, enthusiasm and apathy, centralization and differentiation..." Stormgate is, I believe, the name of Nicholas VanRijn's house on Java. The stories have been linked together with new material that presents them as documents for the study of the Ythri, the winged race of Avalon so vividly depicted in *The People of the Wind* and elsewhere.

\*For the record: "Wings of Victory;" "The Problem of Pain;" "How To Be Ethnic In One Easy Lesson;" "Margin of Profit" (revised); "Esau" (Birthright); "A Little Knowledge;" "Day of Burning" (Supernova); "Lodestar;" "Wingless;" and "Rescue On Avalon."

\*\*In the Introduction to *The People of the Wind* (Gregg Press, 1977).

ANDERSON, Poul

### The Byworder

### The Horn of Time

(C)

### The Long Way Home

(Uses plates from new, complete Ace edition.)

### Orbit Unlimited

[The above for \$8.50]

### The Night Face and Other Stories

Contains: *The Night Face* (Let the Spacemen Beware!); "Starfog;" "The Sharing of Flesh;" and "A Tragedy of Errors."

### Two Worlds

Contains *World Without Stars* and *Question and Answer* (*The Man Without A Planet*).

[The above for \$9.95]

Gregg Press/June/\$56 for the set

To be compared to the recent Ace selection (see *Galileo* #7). The Gregg Press series, which overlap the Ace titles, use, with one exception, the original plates, but they have the advantages of much longer new introductions and durable, acid-free paper and binding. Ace plans a new illustrated Flandry short novel for the fall, to be followed in 1979 with a *Flandry Companion*.

ARNASON, Eleanor

(F)

### The Sword Smith

Condor/May/\$1.95

Eleanor Arnason has been contributing short fiction to such markets as *Orbit* and *New Worlds* for about five years now. Her first novel, the first original sf title from a new publisher, is a picaresque fantasy in which are recounted the not uneventful travels of Limper, a royal sword smith (an eccentric hero who "doesn't believe in heroes") and his companion, Nargri, "a three-foot-long pubescent female dragon." "There's a lot of getting into trouble and then getting out." There are peasants and kings, dragons and trolls. ("I tried to make both more or less plausible.") and sorcerers, although the latter seem somewhat

misguided in their choice of career, since the author adds, "There's no magic, because I've never understood the rules of magic." Judging from her previous work, there's likely to be a bit more to this than conveyed by the above description (a certain gentle irony, perhaps). Ms. Arnason, who lives in Minneapolis, where she works in a museum, has completed a second novel (a 'science fiction gothic') but has not yet attempted to market it.

ASPRIN, Robert

(F)

### Another Fine Myth . . .

Illustrations by Kelly Freas

[Aahz & Skeeve series, #1]

Starblaze/May/\$4.95 (paper)

(See description in *Galileo* #7) . . . The author informs me that a sequel, which he calls *Mythconception*, should be published by Starblaze (perhaph later in the year). Chance and the order of the alphabet sometimes make for interesting Aleph-companions. It's hard to think of another book which sounds as if it could be more usefully contrasted to Arnason's (above). Expect to see a lot more from Asprin over the next few years.

BAYLEY, Barrington J.

### Star Winds

DAW/June/\$1.75

[The few remaining ether silk sails were the product of the Old Technology, lost long ago in the depleted Earth and were too valuable to buy. Rachad, apprentice to an alchemist, learned that the key to his quest lay in a book abandoned in a Martian colonial ruin, long, long ago. There was only one way to get to Mars: take a sea vessel, caulk it airtight, steal new sails and fly the star winds in the way of the ancient windjammers. This Rachad did, but his voyage took him out to the very stars, among the fleets that sail the stellar currents forever!] Compare with Clarke's "Sunjammer" and Cordwainer Smith's "The Lady Who Sailed the Soul."

BENFORD, Gregory

### The Stars In Shroud

Galaxy/May-July

Berkley-Putnam/August/\$8.95

A major revision, a complete overhaul, of the author's first novel, *Deeper Than the Darkness*, this, according to *Galaxy* editor Pierce, bears as much relation to the earlier work as Arthur C. Clarke's *The City and the Stars* does to his *Against the Fall of Night*. The comment serves as a useful reminder; Benford is not the only writer in the field to have done this sort of rewriting (here, incidentally, at the request of Berkley's Dave Hartwell). No doubt, like Clarke, he will be told by readers that they prefer the earlier version and that he shouldn't have gone to the trouble.

BETHANCOURT, T. Ernesto

(J)

### Tune In Yesterday

Holiday House/April/\$6.95

For ages 12 and up.

The author of last year's well-received *The Mortal Instruments* returns with a tale of two contemporary young would-be musicians who, given an opportunity to travel in time, elect to return to the Swing Era, where, in addition to Glen Miller and Louis Armstrong (their idols) they encounter Nazi saboteurs. A sequel seems likely.

BONE, J.F.

### Confederation Matador

Illustration by Kelly Freas

Starblaze/May/\$4.95

[An intensely proud civilization defeated by aliens so superior as to consider humans barely better than ants; a torero who is both a starfleet

officer and an agent of the inevitable resistance and the infinite patience of an incredibly beautiful woman. . . ] This was on Laser's schedule when they folded their tents, but I imagine that it has been extensively revised. ( . . . and after all, some of them were pretty good. . . but at \$4.95? . . . well, you've got a point there, but I trust Kelly and Polly Freas. They wouldn't have picked it if it weren't good. . . so okay, but at \$4.95? . . . Look they're all illustrated by Kelly, inside and outside. I've seen the covers and they're beautiful and they're printed by the people who did such a terrific job with the art book. . . but I can't afford them at that price! . . . Well, you're just going to have to go out and get a better job. Anyway, the writers are happy. . . But if they don't sell? . . . There are always libraries and besides the price of everything is going up. It's a question of value for money. You get what you pay for. . . An old Laser book? . . . No, no, you don't understand! . . . ) J. (for Jesse) F. (for Franklin) Bone is a professor of veterinary medicine and the author of several novels and short stories, some of which I think I remember reading with pleasure. His first story appeared in 1957, so he's been around a while, but I somehow never thought of him as described by the publishers. . . but then, what is an 'old master,' anyway?

BRADLEY, Marion Zimmer

### Stormqueen!

[A Darkover Novel]

DAW/June/\$1.95

A professional who, for purely practical reasons, has written two or more stories sharing the same characters and/or basic setting is often astonished to learn from fans, publishers, and critics that he is the creator of a 'secondary universe' and find himself reproached for his lack of consistency. For the longest time, Marion Zimmer Bradley thought of the Darkover novels only as "a loosely interrelated group of novels with a common background—the Terran Empire against the world and culture of Darkover." The series proved so popular, however, that Bradley was obliged to fill in the missing pieces and reconceive each already-written work as part of a greater whole.

If Bradley's chronicle had been originally conceived as such and each chapter had been written and published in chronological order, this twelfth book in the popular series would have appeared as the second volume, immediately after *Darkover Landfall*, (presuming, which is unlikely, that no more forthcoming episodes are set earlier in the sequence). [In the Age of Chaos, the people of Darkover were bred for mental powers. A strange daughter is born to the Lord of Aldaran; her anger calls forth lightning, her distress brings storms. Allart Hastur is called to Aldaran to train this willful child to control her powers, but with him he brings warfare that racks the land. . . ] Last year's installment in the chronicle, *The Forbidden Tower*, has been nominated for a Hugo Award. The popularity of the series is growing all the time. There is now a group called The Friends of Darkover, a non-profit organization who publish a newsletter and a fanzine, *Starstone*, featuring fan fiction, articles, previously unpublished background and much more. . . To subscribe to the newsletter or get information on any of the many Darkover publications, send a self-addressed, stamped envelope to THENDARA HOUSE COUNCIL, c/o Friends of Darkover, Box 72, Berkeley CA 94701.

CALDECOTT, Moyra

(F)

### The Temple of the Sun

[The Sacred Stones Trilogy: Volume II]

Hill & Wang/May/\$8.95

In Bronze Age Britain, the focus of all activity was religion. The spiritual duties of the priest in

one small village have been usurped by Wardyke, a corrupt necromancer. Kyra, a young woman gifted with extraordinary psychic powers, who seeks to oppose his evil, is called to the distant City of the Sun to train for the priesthood. Of *The Tall Stones*, the first volume in the trilogy, Anne McCaffrey wrote, "Mrs. Caldecott has posited a society and its psychology deftly, logically, movingly." Others have felt otherwise. Volume III *Shadow On the Stones*, will be published in Plastic Age Britain by Rex Collings, Ltd. this May and presumably next year by Hill & Wang over here.

CARTER, Lin

### The Wizard of Zao

[Kylix series, #1]

["A few years ago," Lin Carter writes, "it occurred to me that it might be fun to design an entire solar system full of planets and set a novel on each planet—and not science fiction novels, either, as you might logically expect, but heroic fantasy. Not only would this be fun to do, since nobody else has even done it before, it could be an original and interesting experiment. The first of these novels, taking place on a planet revolving around the star Kylix in the Constellation of the Unicorn, is the story of the wandering green wizard, the most powerful wonder-worker of that amazing sphere, of his newly purchased slave girl who knew nothing of civilized ways, and of the mythical beasts and curious humans they encountered.]

CHANDLER, A. Bertram

### To Keep the Ship

[Grimes series]

DAW/June/\$1.75

Published in UK in April, 1978 by Robert Hale.

Still a freelancer, the Hornblower of space returns with the solid gold scoutship, *Little Sister*, last glimpsed in *Star Courier* (1977). This time Grimes falls into the clutches of Susie, a fetching terrorist who leaves the ship infested with [constantly multiplying hordes of miniature nude cannibalistic clones, vicious little homunculi that looked exactly like their sexy prototype except that they were hungry, sharp-toothed, and their only Cause was to eat Grimes alive!] (It's a classic case of pinnace envy.)

CHANDLER, A. Bertram

### Gateway to Never

#### The Inheritors

[Grimes series: Book II]

Ace/June/\$1.75

When D.A.W. left Ace he took Chandler with him but left behind a number of adventures in the career of the worthy John Grimes. Ace is now repackaging these, publishing them in a set of six (two to a volume), in more or less chronological order, over the course of the coming year. Book I (*The Road To the Rim and The Hard Way Up*) appeared in April; Book III will follow in August. Readers taken with the series may wish to read of the real-life adventures of professional seaman A. Bertram Chandler ("Around the World In 23,741 Days") in the Spring, 1978 issue of *Algol* ("The Magazine About Science Fiction"), wherein, by the by, it is disclosed that the book that recounts how Grimes came by *Little Sister* in the first place, an expansion of an *Analog* novelette of the same title (both *The Far Traveller*), has been published in England but not (yet?) by DAW.

CHAPMAN, Vera

(F)

### King Arthur's Daughter

[Third in a trilogy]

Avon/June/\$1.75

First publication in UK.

Each of the books in this series has focused on a

lesser-known female figure associated with Arthurian legend. Indeed, they may be complete inventions; my knowledge of the Cycle is not sufficient to confirm or deny their authenticity. The first, *The Green Knight*, told the story of Vivian, niece to Morgan LeFay and instrument in her plot to destroy the king through the shape-changing Sir Bertilak. She and her lover, Gawain (a younger knight of the same family as his better-known namesake), are killed but restored to life by Merlin. Lynett, of *The King's Damosel*, is Arthur's [personal messenger, the only woman, in an age of male-dominated chivalry, to join in the quest for the Holy Grail]. In the present volume, Ursulet [the beautiful daughter born to Arthur of Guinevere, is crowned lawful heir to the throne upon his death but is challenged by her evil half-brother, Mordred]. (Covers by the brothers Hildebrandt.)

CHAYEFESKY, Paddy

### Altered States

Harper & Row/May/\$8.95

It's probably safer not to make assumptions about the sort of thing which my readers are likely to be familiar. I'm told *Galileo* has a 'non-specialized readership' (that is to say: people who like sf, but aren't necessarily fans) but, inasmuch as we all have access to the same popular culture, I probably don't need to tell you that Paddy Chayefsky is a well-known writer for television (*Marty*), the stage (*The Tenth Man*), and screen (*Network*, which some I've talked to claim is sf). His first novel, as described, evokes memories of "Dr. Jekyll and Mr. Hyde" and the recent *Jacob Atabet (Galileo #5)*. [Edward Jessup, a dedicated neurophysiologist teaching at the Harvard Medical School] has [long persisted to research the origins of human consciousness. After experimentation with isolation tanks and a powerful hallucinogenic drug, his quest becomes obsessive. [With each experiment he regresses, and the drug accumulates in his brain. Then comes the moment when he enters the tank unobserved and a proto-human creature climbs out soon afterwards and goes into the Boston night. . .] You know, I think I've seen the guy! (To be published in the UK by Hutchinson as *The Experiment*.)

CHESTER, William L.

(F)

### Kioga of the Unknown Land

Introduction by Prof. Thomas D. Clareson (of S.F.R.A.)

DAW/May/\$1.95

This fourth and final adventure of Kioga, the 'Snow Hawk,' ("the best of all imitation Tarzans," in the opinion of Richard A. Lupoff) has waited about forty years to see book publication, having originated in the pulps during the heyday of Edgar Rice Burroughs. "Born Lincoln Rand, the son of white explorers, Kioga was raised by Indians and animals"\* in the "wilderness of the unknown (island/continent of Nato'wa)."\*\* [Here the Snow Hawk comes to his ultimate challenge as he finds a lost land within a lost land, as he encounters the city of the mammoths and counters the schemes of those who would despoil mankind's last wilderness wonderland.]

\*Lupoff \*\*Clareson

CLAGETT, John

### The Orange R

Popular Library/May/\$1.50

[The giant power companies had won their war for nuclear energy. There were, of course, a few casualties. . . Large stretches of America were radioactively contaminated. Hundreds of thousands of people were 'Roberts,' forced to live with their mutant offspring on the condemned land and to wear a glowing orange R to warn Normals not to

come in contact with their lethal radiation. Vast air purifying plants and huge enclosed life-support systems had to be built at tremendous cost.] "A young powerman is assigned to duty in rural Vermont, 'Robert' territory, where. . . he falls in love with a young teacher and. . . finally joins a revolutionary uprising." (*Publisher's Weekly*)—"A novel of the fear-haunted future" by the author of *A World Unknown* (Popular Library, 1975). (Sounds as if the bomb has been superceded as agent of fictional atomic doom.)

CLEMENT, Hal

### Through the Eye of a Needle

[Sequel to *Needle*]

Ballantine-delRey/June/\$1.75

Hal Clement the writer is also Mr. Stubbs the teacher and Harry Stubbs the fan. His capacities as the former and the latter frequently take him to science fiction conventions. Since we are both members of N.E.S.F.A. (a local fan group of some distinction) and live in the metropolitan Boston area and Harry likes to have company when he drives long distances, I have been fortunate enough to be a member of the travel party on several occasions. During the last such trip, I took the opportunity provided to satisfy my curiosity about his new book. He was somewhat reluctant at first lest he spoil some carefully-planned surprises for the reader. "See how people like treating it as a mystery story," he said. But I persisted. *Needle* was Hal Clement's first novel, published nearly thirty years ago and still in print (Avon 28555/\$2.25). It is as good an example as any of his other works of the sort of thing for which he is celebrated and that he does better than anyone else: 'the creation of imaginary beings,' life-as-we-don't-know-it, in places where no entirely rational human would expect to find it, so rationally described, with such care for verisimilitude and scientific accuracy that it is impossible not to believe that such creatures do, in fact, exist. *Needle* concerns a 'manhunt' by an intelligent metazoan creature, descended from the virus and resembling a jellyfish, for a felonious member of its species which brings him to Earth and into a complex relationship with a human boy. "The species normally lives symbiotically with a more-or-less humanoid partner, both being fully intelligent and in reasonably good communication with each other. But the detective who traced his Quarry to Earth was, of course, deprived of all his normal technological aids when he crashed on Earth and he had a straight detection problem of a classic kind to find out where the Quarry was." What to do about it, considering the circumstances, was another problem. The story takes place on Earth instead of one of Mr. Clement's plausible/impossible alien environments (although, come to think of it, a fair amount of the action occurs inside the body of Bob Kinnaird, which is as strange a place as I'd ever wish to go—no reflection on Bob.) Harry hadn't originally intended to write a sequel. ("I'm very dubious about sequels, as a rule." But an idea came to him, something too good not to use, if he ever found the time. Fans have an inveterate habit of importuning authors to continue a story that they like, as a sort of revenge, perhaps for the feeling of letdown they experience at the end of a really good read. Some good books have come from this sort of nagging, and this may turn out to be a prime instance. "Well, one of the fans—I can't remember the original conversation—kept swearing he'd stop smoking if I'd write a sequel to *Needle* as he'd been asking me to do for years, and one day he walked up to me and said, 'I've stopped!' So I said, 'OK, I guess I'll have to do my side of this.' We were discussing it at the [World SF Convention] in Toronto a couple of years ago and Judy-Lynn [delRey] heard us and before I knew

what had happened, I had a contract." The title went through various metamorphoses: Harry had originally thought of "Haystack," but Lester delRey didn't like that particularly. "Thread" was the title on the contract. When he actually sat down to write the book, Harry decided—from the way things had turned out—that "Hook" was the most logical title and that was what he put on the manuscript (for reasons which will be explained below). In this universe, however, the editor has the final word, so *Through the Eye of a Needle* it is.

The sequel is also a mystery story, of the problem-solving kind. The problem, this time, is not only the Hunter's. "Human beings are not biochemically identical to the Hunter's regular host species. The Hunter moved in on Bob because he had to and stayed with him because he hadn't really any other friend on Earth, and, as far as he knew, he was marooned on this planet. But gradually, he was becoming compatible with Bob. His tendency to help out with Bob's injuries eventually ruined Bob's immunity processes. He was interfering with various other kinds of hormone balance. Each time this happened he had to do something personally and deliberately to offset the effect. So by seven years of so after *Needle*, when Bob is finished college, Bob is badly 'hooked' on the Hunter. . . he cannot live without him and it looks as if he couldn't live much longer with him."

deCAMP, L. Sprague

(C)

### The Best of L. Sprague deCamp

Introduction by Poul Anderson

Ballantine-delRey/May/\$1.95

delREY, Lester

& JONES, Raymond F.

### Weeping May Tarry

Pinnacle Futurian/May/\$1.75

The explosion of a distant sun had had a devastating effect on the green-scaled people of Alcor. Only the Keelong had saved their civilization from ruin, and the worship of that entity was now the state religion. The starship *Prohorus* sets out to learn the cause of the great conflict that resulted in a nova. On board is the Ama, the high-ranking priest with them to ensure the orthodox execution of their mission and maintain the proper devotional attitude of the crew towards the Keelong. The Hierarchy has informed him that there is a 'cadre of rebels' present on board ship. Almost everyone has unspoken doubts. In truth, the mission has as much to do with contacting other races who might share their faith. Without some supportive sign, the unthinkable will inevitably occur. While making a landing on an Alcor-type planet, the third from a Class III sun, their ship is damaged by an explosion. Although it was the result of an inadequately conceived plot against the Ama, this no longer seems to matter. In all probability, they are permanently marooned. The crew of the *Prohorus* dispiritedly go about their original mission. Ironically, it is the Ama himself whose discovery spells the final dissolution of their beliefs. In the ruins of what they take to be a War Building, first spotted by the priest, they find a book, a string of beads, the statue of an alien form, nailed cruelly to a cross. The linguists feverishly proceed to translate the mysterious book. With horror the Ama comprehends that it is the story of the alien on the cross. The men of the crew repeat the words of the alien sacred text. They have a curious power. There is a curious expression in the alien's eyes. New comprehension dawns. . . [The Alcorans have learned the truth about the power of universal faith.] This book raises several questions — Roger Elwood commissioned this book. He was the editor at Pinnacle. He is no longer the editor at Pinnacle. Why? Was this book written out of a

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- 24. *More Lecherous Limericks*, Isaac Asimov
- 25. *Still More Lecherous Limericks*, Isaac Asimov
- 26. *Grey Mane of Morning*, Joy Chant
- 27. *Seademons*, Laurence Yep
- 28. *Upside Down Man*, Russell Baker
- 29. *Definitely Maybe*, Strugatsky brothers
- 30. *World Soul*, Emstev & Parnow
- 31. *The Adolescence of P-1*, Thomas Ryan
- 32. *A Roadside Picnic*, Strugatsky brothers
- 33. *Prisoner of Power*, Strugatsky brothers
- 34. *Trey of Swords*, Andre Norton
- 35. *The Dark Design*, Philip J. Farmer
- 36. *Skirmish*, Clifford D. Simak
- 37. *Ringworld*, Larry Niven
- 38. *Dreamsnake*, Vonda McIntyre
- 39. *Best of Creative Computing*, ed. David Ahl
- 40. *Best of Creative Computing II*, ed. David Ahl
- 41. *Colossal Computer Cartoon Book*, ed. David Ahl
- 42. *The Lost Traveller*, Stephen Wilson
- 43. *All My Sins Remembered*, Joe Haldeman
- 44. *Time Storm*, Gordon R. Dickson
- 45. *The Serpent*, Jane Gaskell
- 46. *The Dragon*, Jane Gaskell
- 47. *The Red Limit*, Timothy Ferris
- 48. *Up the Walls of the World*, James Tiptree, Jr.
- 49. *The Dragons of Eden*, Carl Sagan
- 50. *Origins*, Richard Leakey
- 51. *Night Shift*, Stephen King
- 52. *The Bleeding Man*, Craig Strete
- 53. *The Saga of Eric Brighteyes*, H. Rider Haggard
- 54. *The Ancient Mysteries Reader*, ed. Peter Haining
- 55. *Dead Woman*, Elizabeth Walter
- 56. *Atlas*, Jane Gaskell
- 57. *The Werewolf*, Basil Copper
- 58. *The Book of Vampires*, Dudley Wright
- 59. *Catchworld*, Chris Boyce
- 60. *The Malacia Tapestry*, Brian Aldiss

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deep, abiding faith by the two authors? Was it a demonstration of their professional capacity to write whatever the situation demands? Is not the story behind this book of much greater potential interest than the book itself? Was this written as a deliberate attempt to sabotage Elwood's plan of spreading Christianity through sf? Will enough people read it for it to have any effect at all? To whom will it prove the greatest embarrassment? Is there any possibility of its being used as a sacred text? For surely of one thing there is no doubt: every thinking lizard who reads this book will be inspired to re-examine his convictions. (Of course, this *could* just be Lester's "For I Am A Jealous People" seen from the other side. Such is the range of science fiction.)

DICKSON, Gordon R. (GS)

### Home from the Shore

Illustrated by Jame Odbert.  
Afterword by Sandra Miesel.  
Sunbridge Press (Grosset & Dunlap)/June/\$4.95

(paper)

Due to lack of space, a note on this important book will appear next issue.

DORMAN, Sonya (C+) (J)

### Planet Patrol

Coward, McCann & Geoghehan/May/\$6.95

Although she has been writing sf for fifteen years, this is Sonya Dorman's first book in the genre (there are three volumes of non-sf verse to her credit). [Fresh out of the Academy, Roxy Rimidon joins the Planet Patrol, a crack corps of 21st-century troubleshooters.] Their adventurous duties take her to such locales as an exotic hunting preserve, the interplanetary olympics... I think some portion of this book has been published before, since, if I remember correctly, there was a story series in *F&SF* about Roxy Rimidon ("Bye, Bye Banana Bird," etc.), but I have not been able to find out exactly how much.

DRUILLET, Philippe

### Yragael & Urm

[Lone Sloane series]

(GS)

Dragon's Dream

Distributed by A&W Publishers, Inc./June/\$8.95

(paper)

In full color. Note on this interesting book will appear next issue.

DUNNE, Thomas L.

### The Scourge

Coward, McCann & Geoghegan/June/\$8.95

This first fictional effort by the man who edits sf at St. Martin's Press is a medical disaster novel to end all disaster novels (but it probably won't work out that way). Overnight, the death rate for cancer escalates. The president starts to crack up. Panic! Chaos! No one is out of danger, even the reader.

EISENSTEIN, Phyllis

(C+) (F)

### Born to Exile

[Alaric stories collected, Book One]

Illustrated by Stephen Fabian.

Arkham House/May/\$9.00

Alaric, the wandering minstrel with the gift of teleportation, is a character who has been a part of Phyllis Eisenstein's creative life since before she began writing professionally in 1971. It has taken her many years of effort to become the writer who could tell the final chapter of his story—yet to appear in print—which she wrote in an early draft at the age of seventeen. In the interim she has written other short fiction, some in collaboration with her husband, Alex, and has recently sold two novels, an alternate worlds story about the Spanish Armada,

and a fantasy *Sorcerer's Son* (to delRey Books). Included are the title story, "Inn of the Black Swan," "The Witch and the Well," and (I believe) "The Lords of All Power," all previously published in *F & SF*. This book is something of a departure for Arkham House, which has specialized in Lovecraft and other writers of supernatural horror. *Born To Exile* was previously delayed by a strike and might be so again.

FAST, Jonathan

### Mortal Gods

Harper & Row/June/\$8.95

The second novel by the author of *The Secrets of Synchronicity* is a blend of sf and mystery, taking place in the year 2226 on the capital planet of the Federation of Worlds. [Mutagen, an enormous genetic engineering company, dominates the economy and life of the planet, and Mutagen's greatest achievement is the Lifestylers—humans who have successfully survived the dangerous transformation into godlike beings. When two of the the Lifestylers are murdered, Hali Hassana, a blue-skinned emissary from a neutral planet, is accused and Nick Harmon, a Mutagen public relations executive in love with her, sets out to find the real killer.]

FELICE, Cynthia

### Godsfire

Pocket Books/June/\$1.75

[Set in the a world where cats are masters and humans are slaves, *Godsfire* follows the life of the extraordinary Pathfinder Heao who attempts to liberate the humans. To this gloomy world once a year comes Godsfire—a brief, blinding glimpse of light. Heao attempts to discover its secret in order to conquer the oppressors and free the captives.] Ms. Felice made her publishing debut in our second issue with "Longshanks." I had thought that this novel was an extension of that story, but it certainly doesn't sound like it. She also has a story called "David and Lindy" in *Universe 8* (see anthologies), and one in *Millennial Women*, now scheduled for July. Campbell Award voters, take note... Ah, but it's too late, already— *Galileo* #2 was copyright 1976. Too bad.

GOLDIN, Stephen

### Mindflight

Fawcett Gold Medal/May/\$1.75

Telepathic Terran Intelligence agent Alain

Cheney's performance had been exemplary for fourteen years. Why then, did his beautiful boss try to find a killer with an unreadable mind to put him out of commission?

GOLDIN, Stephen  
with E.E. 'Doc' Smith

### Appointment at Bloodstar

[The Family D'Alambert series, #5]

Jove-HBJ/May/\$1.50

Members of the Imperial family are being dispatched at an alarming rate. Galactic agents Jules and Yvette D'Alambert must track down the figure behind the conspiracy, the [beautiful and ruthless star-warrior called Lady A].

HALBERSTAM, Michael J.

### The Wanting of Levine

Lipincott/May/\$10.00

"The first major-party Jewish candidate for the Presidency" runs his campaign in a near-future America that has become a second-rate power plagued with energy crises, terrorism, and a general failure of nerve and will.

HAMPSON, Frank

(GN)

### Dan Dare—The Man From Nowhere

Dragon's Dream/June/\$9.95 (paper)

(Distributed by A & W Publishers.)

In color.

*Dan Dare* was one of the most popular British comic strips in the '50s and '60s, (certainly the most successful sf one\*) and this is its American debut. Dare, whose adventures were to be found in the pages of *Eagle*, a children's magazine, was chief pilot of the Interplanet Space Fleet and battled many an archvillain (notably the Mekon of Venus) with the aid of a loyal and colorful crew. Lack of space (and familiarity with the series) precludes any attempt at instructive comparison with, say, Flash Gordon. (A film version is scheduled.)

\*Although I remember Sidney Jordan's *Jeff Hawke* in the *Daily Express*.

HARRIS, James

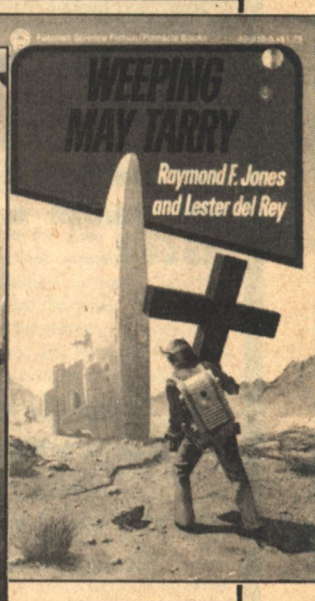
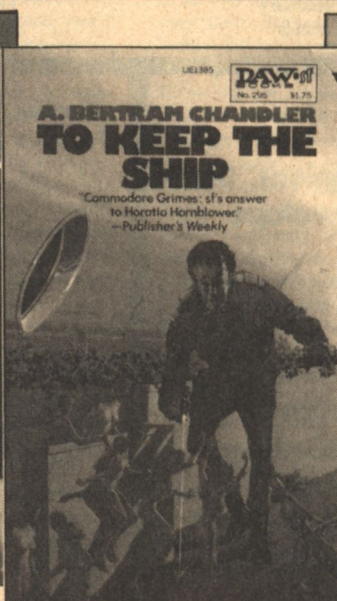
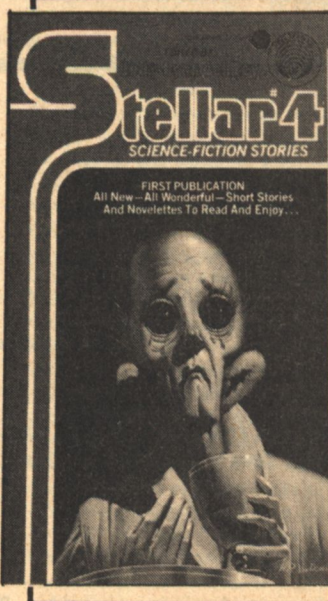
(F)

### High Ideals?

Harcourt, Brace, Jovanovich/April/\$8.95

\$3.95 (paper)

A heavily whimsical psychedelic fantasy that apparently seeks to evoke Pynchon, Vonnegut, and Tom Robbins. "Existential architect," Bungdale Head becomes involved with a weird professor



whose cocaine-sniffing stillborn child has found a way to receive broadcasts from Phantom Radio, the station of the dead. (Published in Britain under another name.)

HERZOG, Arthur

### IQ 83

Simon & Schuster/June/\$8.95

An experiment to raise the intelligence of retarded children involving recombinant DNA goes wrong, unleashing an epidemic that lowers the general IQ instead. Our hero, a "brilliant scientist," must [use every reserve of his will to force himself to find a cure despite his increasingly severe lack of control over his own dimming thought processes]. Displays the same qualities evident in *The Swarm*, *Earthsound* and in *Heat* (1977).

HOWARD, Robert E.

(C) (F)

### Black Canaan

Introduction by Gahan Wilson.

Berkley/May/\$1.95

A compendium of Howard miscellany from the pulps, not featuring Conan or other series heroes.

JONES, J.A.

### Blue Lab

Major/May/\$1.50

Weyland gladly agreed to become the apprentice of the old blind smith because he thought his terms generous, for, although the boy was in all probability a descendant of Arthur, he was a bastard and life in the feudal village that would one day become the city of Glasgow had never been easy. He little reckoned that, as a result of his decision, he would learn to mind-speak, that he would soon count as friends a wolf, an elephant and a witch-child, that he would travel in time and through the air and meet immortal beings for whom the Earth was only a laboratory. Least of all did he suspect the true nature of his heritage and the perils it would bring. A blend of sf and mythology by the director of the New Mexico Rehabilitation Center.

JONES, Raymond F.

see delREY, Lester.

KARL, Jean E.

(J)

### Beloved Benjamin Is Waiting

Dutton/April/\$7.95

For ages 9 to 11.

*The Turning Place*, an original sf collection, was the first excursion in the genre by Jean Karl (who edits juvenile fiction at Atheneum) and was very well received. This novel, too, is sf, although that is not readily apparent. Marital strife between her parents and the menace of a neighborhood gang cause a ten-year-old girl to seek sanctuary in a house in the cemetery across the street. When she responds, out of loneliness, to a remark seemingly addressed to her by the statue of a small boy, she has actually made contact, not with a member of the spirit world, but with beings who have the power to effect great change in her life and perhaps the lives of all the lonely people of the Earth.

LANCOUR, Gene

### A Sword for the Empire

[Dirshan series #3]

Doubleday/May/\$7.95

Dirshan the God-Killer returns, dispatched by the Empire once again to recruit the freelance sorcerer/scientist, Handlig the Artificier (see *The War Machines of Kalinth*). But Handlig and his daughter are captives of the League, and Dirshan must penetrate the castle of a sorceress to rescue

them. This is heroic fantasy, of a kind where heroism is synonymous with barbarism and gore flows freely. I'm told there is a movement to make the genre slightly more compatible with contemporary enlightenment, progress in recognition of the equality of the sexes being the example chiefly cited. This strikes me as trying to have your flagon of brew and drink it, too, but I shall endeavor to pay closer attention to nuances.

LAURIA, Frank

(F)

### The Priestess

[Dr. Orient series, #4]

Bantam/May/\$1.95

LAWRENCE, J.A. [adaptor]

### Mudd's Angels

Bantam/May/\$1.75

Postponed from April. Formerly announced as "The Random Factor". A *Star Trek* novel.

LEE, Tanith

(F)

### East of Midnight

St. Martin's Press/May/\$7.95

First publication in UK (1977) by Macmillan.

To escape the ritual execution that is the fate of all who are consort to the Daughter of the Moon, the sorcerer Zaister effects a transfer with his counterpart in another universe, only to find himself powerless in the body and mind of an ignorant slave confronting an equally unpleasant future. It is up to the other to resolve the destiny of both. A slave no longer, Deketon, to whose innate force of will have been added the powers of the sorcerer, proves eminently capable of coping with his new matriarchal environment. Indeed, the cruel [lion-riding women-kings] have never known another man his equal. One of Lee's shorter works, originally published for young people.

LeGUIN, Ursula K.

(O)

### Three Hainish Novels:

Rocannon's World, Planet of Exile, City of Illusions

SF Book Club (Nelson Doubleday imprint)/June/

First one-volume edition.

\$3.98+

These three novels are early LeGuin, made available in this format because of her current celebrity, and cannot lay claim to the mastery she later developed, but they are an excellent indication of how she came by that mastery, and are by no means devoid of interest or merit in their own right. Admirers of her later works will want to read them. For collectors, they offer a less expensive (if also less permanent) alternative to those published by Garland (which may be out of print by now anyway). In an issue of *Science-Fiction Studies* devoted to her work, Soviet critic Rafail Nudelman comments: "The first and most obvious characteristic of LeGuin's early tales... is their interconnectedness. They have a common subject of narration—a science-fictional 'union of space civilizations' (League of All Worlds or Ekumen) to which they all relate as separate episodes"... episodes which he goes on to characterize as being part of a "non-existent history," referring to the lack of specific detail. He does find a secondary level of metaphysical meaning which he terms mythopoetic deduced from recurrent imagery and parallel structure. The author herself says, "Each part shapes every other part... You have to be sure all the things you invented, even if you haven't mentioned them or even thought of them yet, hang together; or they will all hang separately. The wonderful freedom to invent worlds and creatures and sexes and devices" entails responsibility. There are rules for the making of universes which extend over our own fantasy kingdoms as well.

L'ENGLE, Madeleine

(J)

### A Swiftly Tilting Planet

[Murry Family series #3.]

Farrar, Straus & Giroux/June/\$6.95

For ages 10 and up.

Madeleine L'Engle won a Newbery Medal in 1963 for *A Wrinkle In Time*, the book that introduced the Family Murry. This adventure belongs chiefly to the youngest member, Charles Wallace, of the remarkable intellect, who here finds himself up against Modo Branzillo, a dictator with designs upon the entire universe. What is the strange link between the mad despot and sister Meg Murry O'Keefe's mother-in-law, Branwen? What is the significance of her mysterious rune? Before he is able to solve the mystery, Charles Wallace must travel far in time and space.

LICHTENBERG, Jacqueline

### Unto Zeor, Forever

[Second in a series.]

Doubleday/June/\$7.95

Jacqueline Lichtenberg had a readymade audience when she branched out from *Star Trek* fan fiction to create a universe of her own. The world of the future is divided between two mutant races, the Gen and the Syme, who coexist uneasily in a "symbiotic-vampiric relationship" that can prove costly to the Gens. This Book begins about two hundred years after the author's first novel, *House of Zeor*. The central character, a Sime physician, Digen Farris, introduced in Lichtenberg's first professionally published story in 1969, is [head of the house of Zeor in the Tecton, and a "channel" who can take energy from Gens without killing them, a procedure held to be an abomination by the rival Distect. Digen seeks to become a surgeon, a practice shunned by the Simes. To accomplish this he is obliged to flee under a death sentence to the Distect, "disowns his House," and arrives at a new philosophy which may lead to a better life for both species"—if war doesn't break out in the meantime. Another story in the series was published in *Galileo* #4. Her first non-Sime story, "Vanillamint Tapestry," will appear in *Cassandra Rising* (see next issue).

LORD, Jeffrey

### Master of the Hashomi

(F)

[Richard Blade series, #27.]

Pinnacle/May/\$1.50

[The Hashomi are conditioned from birth to be totally immune to pain and fear. Blade, who is drug-free, poses a threat: a free mind in a strong body cannot be manipulated. Can reason and sanity (aided by Blade) prevail against the ultimate fighting machine?] Roland Green, the man currently behind the 'house name' Jeffrey Lord, explains: "Blade lands in a quasi-Arab empire (modelled after the Caliphate of Baghdad at its height) and helps its ruler (modelled after Haroun-el-Rashid) cope with all sorts of intrigues and plotting by an order of martial adepts modelled after the Assassins."

LUPOFF, Richard A.

### Space War Blues

Dell/June/\$1.95

Formerly titled "New Alabama Blues."

Introduction by Harlan Ellison.

For many readers this book will be the single most notable publishing event of the season; others will find it unreadable. Some books generate considerable excitement *before* publication. This one's had plenty of time for that. The major portion of the novel was published as the longest single story in Harlan Ellison's mammoth 1972 anthology, *Again, Dangerous Visions*, prefaced by Harlan's

panegyric: "Friends, there's *never* been a thing like this one before, in or out of the field of sf." He also spoke of the inevitable repercussions (rage, awe, envy, controversy, awards) and proceeded to nominate Lupoff for 'the solid gold award for *Chutzpah Above and Beyond the Limits of Gall*.' The 'thing' was called "With the Bentfin Boomer Boys On Little Old New Alabama." A novel version was announced as imminent. Nothing. Wha' hopen? Well, it was a classic case of 'on-again/off-again.' The 'thing' was either too long or too short; it was 'unmarketable'; the timing was wrong; sunspots. And well again, "Finally, *Space War Blues* is going to be published!", crowed *Heavy Metal* in May of 1977, in the introduction to an excerpt from Chapter 1: "...over ten years after the original conception and fully four years after contract, after having run through three Dell SF editors and having outlasted seven\* other novels written by Dick Lupoff since he penned the original proposal..." By this time, you're probably wondering what the fuss is all about and why I said you might find it 'unreadable.'

Schematically, *SWB* deals with a conflict involving the inhabitants of four diverse worlds, all colonies of the 'petty successors' of the great nations of O'Earth (with the exception of the Arabs and Israelis, who formed the Pan-Semitic Empire and stayed home). There's N'Alabama and N'Haiti and Yurakosi (planet of the aboriginal Australian star-sailors of "After the Dreamtime") and N'Yu Atlanchi (home of the S'tscha, no longer human). Part of the book is written in 'surn,' and that is part of the 'difficulty.' Yes, friends, Lupoff hits below the Mason-Dixon line, is putative *persona non grata* in Effigy, Ga. Bigotry! Decadence! Cruelty! Lust! Words are runtogether, newly coined, onomatopoeic. :punctuation! has runwild!!! All of this in reaction to the author's belated discovery of the 'New Wave' and its experiments. So, it either works for you or it doesn't. You have been alerted. Enjoy! or Avoid!

(\*On my last encounter with a Lupoff book [Nebula-nominated *Sword of the Demon*], in *Galileo #2*, I said that he was the author of 6 novels; I seem to have forgotten *Lisa Kane*, the teenage werewolf. Now, of course, it's eight.)

LUSTBADER, Eric Van

### Shallows of Night

[Sunset Warrior series, #2.]

Doubleday/June/\$7.95

Lustbader (Van is his middle name and not an honorific) made his debut with *The Sunset Warrior*, which which the present book is a sequel... Ronin rebels against the underground society of a future Earth and makes his way to the surface. Armed with only the scroll of a magus, he and Borros, the Magic Man, must battle alien invaders, a hostile environment and enemies from below to fulfill an ancient prophecy.

McCAFFREY, Anne

### The White Dragon

[The Dragonriders of Pern: Book III, fifth in a series.]

delRey/June/\$8.95

Here, for a lot of people, is another Big Event. It has been seven years since the publication of the last full volume of "The Dragonriders of Pern" (if you don't count the two stories about Menolly, "Dragonsong" and "Dragonsinger," published by Atheneum for young adults, in 1976 and 1977). In the interim, there has been much impatience. If there were a ship bound for Pern available for charter, large portions of fandom would be heard from no more. The delights of that far-off world are hard to convey. If you lived there, periodically your hold or weyr would be subject to the deadly rain of

Thread (a voracious 'space-travelling mycorrhizoid spore') from the nearby Red Star, which was the cause of the colonists' loss of contact with earth in the first place. But, not to worry overmuch. There are the *dragons* (so called because of their resemblance to the creatures of terrestrial myth—wings, tails, and breath of fire—but these beasties can communicate and travel instantaneously through time, but you have to make a good Impression on them first). Now then, isn't that worth putting up with a little Thread every Turn or so? You can dress up and pretend you are back in the Middle Ages, which to all intents and purposes, you are. Things will work out fine in the end, see if they don't, in the newly announced Volume IV. Most of the present book is taken up with the adventures of young Jaxom, Lord not yet Confirmed, of Ruatha Hold; of his runt of a white dragon—the only one on Pern of that color—Ruth (ever one to want his back scratched); of the love Jaxom finds with Sharra; of Ramoth's missing egg; of the memories of fire-lizards; of the ambitions of the Oldtimers (the disgruntled saviors from the past, now living out of their time); the—but wait, I fear I am confusing you. There's too much to tell. Let the Dragon Lady do it. (Chapters III-VI were published as "A Time When" by the NESFA Press in 1975 in an edition of 800 on the occasion of Anne McCaffrey's Guest-of-Honorship at Boskone XII.) There are maps by Bob Porter and a 'dragondex' compiled by Wendy Glasser (a useful lexicon and glossary, etc.). The book is 375 pages long.

### Dinosaur Planet

[First in a series.]

Ballantine-delRey/June/\$1.75

First published in December, 1977 in UK by Orbit (Futura)

[The Exploratory and Evaluation Corps of the Federated Sentient Planets had sent ARCT-10, with its mixed crew of shipbred and planet-bound technicians to Ireta to catalogue fauna and flora and to search for new energy sources. Kai, his co-leader, Varian ('the best xenob-vet in the business' and beautiful besides) and the rest of the team carry out their assignment only to find the rescue ship has disappeared. Native life forms are just like the animals that existed on Earth back in the native Mesozoic period. And to complicate matters even more, the heavy-worlders who accompanied the expedition have reverted to their earlier state and become carnivores and predators, making life extremely dangerous...] delRey Leader for June.

MATZKIN, M.

### The Outer Fleet

Manor/May/\$1.50

[Captain Lars Jorgenson and his band of guerilla fighters battle the starship fleet of Nebbed-Nezzor, the ruthless and tyrannical ruler of the galaxy to save the one star system not yet under the despot's rule.] M. is for Mimi and the merry month of May when Manor moves to make like a major market.

MOORE, Raylyn

### What Happened to Emily Goode After the Great Exhibition

Illustrations by Kelly Freas

Starblaze/May/\$4.95(paper)

The author of this first novel has been appearing in sf markets about eight years now, with roughly twenty stories to her credit. She is also the author of a biography of L. Frank Baum (creator of *The Wizard of Oz*), and is described by the publisher as an 'eminent fantasy scholar.' With you and me, she recently suffered the loss of her husband, the noted (but not sufficiently) writer, Ward Moore (of whose shorter sf work I believe Starblaze intends to

publish a collection). *What Happened...* is a comedy of time travel. Miss Goode is [a lady who always behaves like a lady even when she finds herself in a strange (and rather vulgar) new world with only her breeding and her pocket money for resources]. Unaccountably (?) transferred from the Philadelphia Centennial Exhibition to 1973, she progresses from one misadventure to another. [...] it was only momentary panic that made her stab the policeman and she certainly hadn't intended to become a Federal Case...]

NOWLAN, Philip Francis

### Buck Rogers

The original Buck Rogers novel: *Armageddon 2419 A.D.*

Modernized by Spider Robinson.

Ace/probably May/\$1.95

Ace has had this title in print for years. Recent announcements of a forthcoming Buck Rogers TV show must have inspired them to use the chief character's name as a title: a logical move. They even asked Spider Robinson to bring the book up to date (in terms of sociosexual attitudes, for example...the technology? forget it!), which brings me to wonder whether the producers will treat Buck as a period piece. The media have a lot of catching up to do. There is a special cover with a logo and embossed silver rocket on the front and picture of Buck on the back.

PARRY, James

### The Discovery

Crowell/June/\$10.00

This, I suppose, makes an interesting contrast to *The Source* (see Dunne). The cure for cancer is discovered...and then stolen!

PETYO, Robert

### The Institute

Manor/May/\$1.50

[In a setting similar to Orwell's *1984*, the characters in this novel are led off, one by one, for the bizarre testing on human life that takes place in the Institute's laboratories... Must not become prophetic if Man is to endure.]

POHLE, Robert

### Doom of Three Planets

Manor/May/\$1.50

Matt Clayton, captured by one set of aliens as blaster fodder in their war with another, becomes the lover of a Golcorran princess and through her learns that her people are hiding from their enemy by means of a time warp. This proves of no avail since the secret is soon treacherously disclosed and Matt is thrown into the fray where he becomes instrumental in defeating the Desdargonian menace. [A swashbuckling futuristic treat!], according to the publishers...

RANDALL, Marta

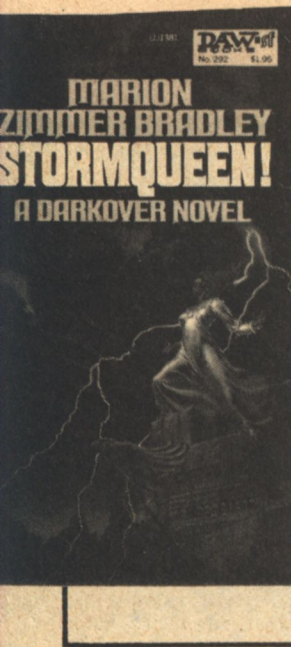
### Journey

Pocket Books/May/\$1.95

Marta Randall's third novel seems to be a deliberate attempt to appeal simultaneously to two markets previously thought diverse. ('Jason and Mish Kennerin—young, strong-willed and very much in love—forge a mighty empire. A family dynasty whose name will thunder across the generations to the farthest reaches of space and time.) This "soaring epic of intergalactic turmoil and of one man's love for his woman and his family" is the Pocket Books leader for May and will be "advertized in women's magazines."

ROBINSON, Spider  
see NOWLAN





RUSS, Joanna

**The Two of Them**

Berkley-Putnam/May/\$8.95

Irene Waskiewicz gladly abandons her unhappy smalltown 1950s adolescence to run away with a mysterious older man. He is Ernst Neumann, agent for TransTemp, 'The Gang,' whose undercover operations span multiple timelines. Ernst and Irene, lovers and fellow-spies, are a team for seventeen active years, in many picturesque locales. Then, on an assignment on a Moslem world where women are kept in strictest purdah (with the aid of the latest technology?) everything comes apart. [Though Irene is upset by the restrictions on women, she heeds Ernst's advice not to interfere until she befriends the twelve-year old daughter of a local official with whom she must deal.] The prospect of Zubeydeh's imminent subjugation raises her consciousness and, suddenly, Irene sees everything, Ernst and the Agency in particular, in a different light. In the past, Joanna Russ has been accused of occasional indulgence in feminist polemics. At any rate, she has apparently managed to avoid doing so here. Advance reviews speak of the book's "wit, warmth, subtlety, depth of characterization and economic construction." It would seem that the novel's origins were in an *Orbit* story called "The Second Inquisition."

SCHMIDT, Dennis

**Way-Farer**

Ace/June/\$1.95

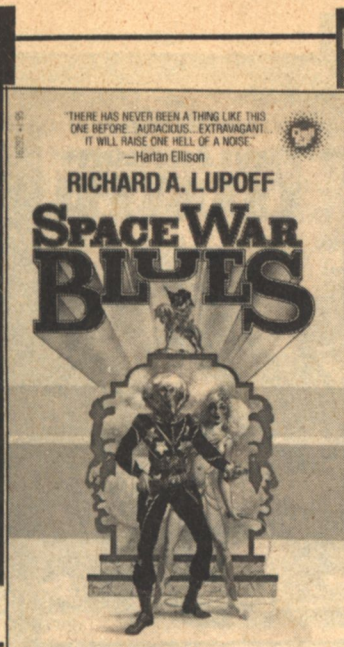
Schmidt's first two stories ("Seeker of the Way" and "The Way of the Sword") were published when Jim Baen was editor at *Galaxy* and he must have been sufficiently impressed with them to ask Schmidt to turn them into a novel when Baen moved over to Ace. Like the work of not a few new writers, this is [imbued with the author's knowledge of martial arts and eastern mysticism. . . Seven generations would pass before a descendant of the original colonists would be ready to face the power of the Mushin (mental entities that stimulate and amplify the dark streak of violence that lies near the core of every human being). But first he would have to learn to wield the weapon that is no weapon—and that only where there is *no* Will, is there a Way. . . ]

SIROTA, Michael

**The Conquerors of Reglathium**

[Dannus series, No. 2.]

Drew Whyte



THERE HAS NEVER BEEN A THING LIKE THIS ONE BEFORE. AUDACIOUS... EXTRAVAGANT. IT WILL RAISE ONE HELL OF A NOISE.  
—Hartan Ellison

RICHARD A. LUPOFF

**SPACE WAR BLUES**



Manor/May/\$2.25

In Dannus II, our hero [escapes from the fortress of the Black Tuels, taking with him his beloved Marana, her father and brother, and his friend Mezzax, the False Tuel. They battle their way through the Endless Forest, only to be taken prisoner by the Green Tuels—After a series of wild and frightening encounters. . . Never again will they have to fear the Green Tuels and their lust to dominate the world. . . In the tradition of Conan and Gor.]

**The Caves of Reglathium**

[Dannus series, No. 3.]

SMITH, E.E. 'Doc'

see GOLDON

STABLEFORD, Brian M.

**The City of the Sun**

[Daedalus series, No. 4.]

DAW/May/\$1.50

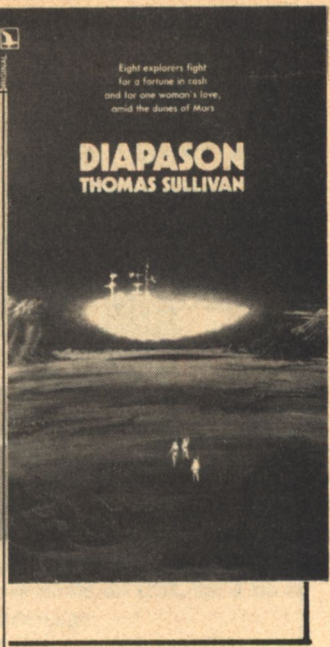
[This novel bears the same title as the classic Utopia by early seventeenth-century Dominican friar Tommaso Campanella, which outlined an ideal community based upon a marvellous city encompassing seven levels of advanced humanity.] The recontact ship *Daedalus* makes landfall on the planet Arcadia to discover this fantasy a functioning reality. But the world is too perfect and poses a danger to freedom throughout the galaxy which must be reckoned with. In his current series, Stableford seems more inclined to philosophical speculation than action-filled plotting or reworkings of classical mythology. [Oh, and did you know that Campanella was one of the few men of his time to rise to the defense of Galileo?]

SULLIVAN, Thomas

**Diapason**

Condor/June/\$1.95

[Eight men and one woman pursue a fortune through the dunes of Mars, unaware that they are each part of the most vital experiment in the history of the human race.] The second original title to be published in the new sf series directed by Charles Platt. The author is new to me. Perhaps the cover is worthy of note. In this gaudy age, the Art Director has selected a handsome painting in black-and-white. (Oh, and yes, 'diapason' is defined as, among other things, "the interval of an octave; the consonance of the highest and lowest notes of the



Eight explorers fight for a fortune in cash and for one woman's love, amid the dunes of Mars

DIAPASON  
THOMAS SULLIVAN

musical scale. . . a rich outburst of sound. . . complete concord or harmony" [OUD].)

SWANN, Ingo

**Star Fire**

Dell/May or later/\$1.95

This is a novel of the world's first 'Psychic War.' On an 'out-of-the-body journey,' Dan Merriweather, a rock star with astonishing powers, learns of rival Soviet and American establishments dedicated to the development of telepathy as a lethal weapon. He attempts to bring about universal disarmament by use of his knowledge and powers. Makes an interesting contrast to Hogan's *The Genesis Machine* (see *Galileo* #7) and *Wild Talent* by Wilson Tucker. Swann is himself both a psychic of some repute and a noted painter of "visionary cosmic art".

TURNER, Frederick

**A Double Shadow**

Berkley-Putnam/May/\$7.95

This first novel by a young poet has received some enthusiastic advance reviews. [Thirty thousand years in the future, Mars has long been the abode of Man. But the Martians live in a taboo-ridden traditional society as highly stratified as any of Earth's ancient civilizations. Casual insults often lead to full-blown 'status wars' between noble families.] Everything is possible to these hedonistic aesthetes; how it is done, however, is a subject of great contention in this world where style is everything. There are multifold literary parallels and allusions and a wealth of colorful detail (winged combat over the great Martian canyon, etc.) "A supplementary light source" accounts for the reference in the title.

WILLIAMSON, Jack

**The Best of Jack Williamson**

Edited by Frederik Pohl

Ballantine-delRey/June/\$1.95

[Jack Williamson's career spans more than fifty years. He began in the pulps, writing the kind of rip-roaring space adventures (such as his classic *Legion of Space*) that, decades later, inspired *Star Wars*], and he is still writing today (see *Galileo* #4). The fourteen stories in this book include "Nonstop To Mars," "With Folded Hands" (basis of *The Humanoids*, perhaps his most thoughtful, best-known novel), "The Happiest Creature," "Jamboree," "The Highest Dive," and nine others, all showing astonishing range. There is an extremely effective cover by Ralph McQuarrie that might make you laugh (but does it do windows?).

ANTHOLOGIES

ALDISS, Brian

and HARRISON, Harry [editors]

**Decade: The 1950s**

**Decade: The 1940s**

St. Martin's Press/May/\$8.95 each

First publication in UK by Macmillan, London, Ltd. in 1975 and 1976.

Volume one contains 8 stories, all from *Astounding*. Volume 2 contains 12 stories.

CARR, Terry [editor]

**Universe 8**

Doubleday/May/\$7.95

Eight original stories by Michael Bishop, Cynthia Felice, Gordon Eklund, Greg Bear and others.

DANN, Jack [editor]

**Immortal: Short Novels of the Trans-**

**human Future** Introduction by R.C. Ettinger

Harper & Row/May/\$9.95

[Continued on page 95]

# Reviews

Floyd Kemske

## DYING OF THE LIGHT

by George R.R. Martin  
Simon & Schuster, \$9.95

Reviewed by C.J. Cherryh

**A** LIEN CULTURES and a wandering world headed for oblivion form the background for a tale of lost love, loyalty, and revenge—in a warrior-culture which has come up hard against the reality of outsiders' ways.

Dirk t'Larien parted from Gwen Delvano years ago... but never stopped loving her. And when he receives a message in the form of a lover's token, he comes to find her—on the world Worlorn, a rogue planet hurtling into death, tenanted by natives of several worlds... individuals who for varying reasons have overstayed the Festival which marked Worlorn's brief passage through the system called the Wheel of Fire. Gwen is *betheyn* to Jaan high-Ironjade Vikary of Kavalr... wife to him and also to his *teyn*, his companion-in-arms. Dirk came with expectations of renewing what was once between himself and Gwen, but nothing is what he expected to find... not Gwen, not Jaan Vikary, not even his own perception of the past. He sets himself against the system to which Gwen is now bound, guest though he is within it, and thus becomes entangled in all the web of reasons that have held these Kavalars on Worlorn.

Events take place not only on Worlorn, in its landscape of dying cities and forests, but within the characters... in the understanding which

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begins to settle into a man who thinks he knows... and finds that nothing is as he believed it. The characterization is masterful—and the style is beautiful. George R.R. Martin has a poet's gift—a means of seeing with more than the eye—which creates an ambience of faery about events and places which yet are plausible sf. Worlorn and its strange folk take on an alien and beautiful reality, in language which hints at complex culture and depths beyond the sensory appeal of the description.

The story is a trip outside the ordinary, into a culture maddeningly strange, and in which gradually the entire system of seeming rights and wrongs shifts underfoot. The plotting is fastpaced and the characters live, all of which is reason to recommend the story... but this book has something special which will keep Worlorn and its people in the reader's mind long after the final page is read: a sense that something has happened here that makes a difference. Recommended.

## RADIO'S GOLDEN AGE OF SCIENCE FICTION

Satellite Broadcasting, POB 644, Matthews, NC 28105, \$9.95 (cassette, reel to reel), \$11.95 (8 tracks)

Reviewed by David Johns

**T**HE GOLDEN age of radio ran from the thirties until about the mid-fifties when like the movies only more so, it was decimated by TV. Along with such delights as *Gun Smoke*, *Sam Spade*, and

*The Shadow*, there were science fiction programs as well, and it was a good deal more than *War of the Worlds* and *X Minus One*, which is the extent of many persons' knowledge of the subject.

This four-hour collection of programs and excerpts from programs has a variety that is simply staggering. Would you believe radio adaptations of *Brave New World* (with an introduction by Aldous Huxley), *Donovan's Brain*, *The Earth Abides*, and *Journey to the Center of the Earth*? If you're not impressed by big name titles, then how about radio adaptations of stories by Fritz Leiber, Ray Bradbury, Robert Sheckley, Frederic Brown, Robert Heinlein, and many many others. In addition to the programs there are also interviews with actors and writers of some of the original programs, for example, Bud Collier who was Superman in that program.

So much for variety. The thing that everyone may wonder about next is the sound quality. After all, the youngest of these programs is probably twenty years old and many of them are a good deal older than that. Well, the voices and sound effects are better than what you are likely to get on your home radio. In some cases they are better than the voice of the present-day narrator, and as I played these tapes at work, strangers kept coming up to ask what station I was listening to.

The stories have been chosen for several different reasons, partly to indicate the variety of sf radio and undoubtedly for quality. What can be so interesting is that many of them require a certain suspension of disbelief. If you

Reviews

can't do that, then all of it seems rather absurd and melodramatic. Rocket ships and BEMs are tough enough to swallow, but doing it just by hearing someone talk about them might be one of the great dividers of the human race.

At this point your reviewer would like to take a short aside. The most conventional explanation for these programs' ability to work in the listeners' imaginations is "the theater of the mind." It's even used by some of the people interviewed on the tapes. It may be time-honored, but I for one have never heard it used by anyone except writers, actors, and persons of similar hyperactive imagination. For that reason I disagree with it. I suspect that the vast majority of humanity does not have the colorful imaginations of folks whose very occupation is creation. The designers of movie special effects are in particular much better at producing marvelous visions than anything ever brewed in the living room. A simple test: how many people could imagine something to equal the bar scene in *Star Wars*?

So how do these programs work? Why do original listeners who first heard them in knee pants recall them with such fondness, and why do we today still appreciate them? Because of what radio is: sound, convincing sound. You may not be able to believe in or be able to picture a rocket ship or BEM. In fact you may find the ideas preposterous. But those voices...the laugh, scream, weep, curse, chuckle, beg, and a hundred other things. Over and over we hear voices conveying the emotions of characters, emotions that we can also feel and believe the characters feel, and it's this conviction rather than any self-sprung castles of the imagination that holds the listeners and makes them remember the programs.

Having disputed the general theory of radio program appreciation, now we can turn to this particular collection and see what its flaws are. There is only one: that there is not enough of whatever may interest you. In the beginning there are interviews and a certain amount of background given by an unnamed narrator, but this dwindles away and the programs themselves assume center stage. The programs are, of course, fine to listen to, but we'd like to know more of their background and the people who were involved in them. Likewise there is practically no mention of the authors of the radioplays. The authors of the original stories are given in

almost every case, but what of the adaptors, unsung heroes as it were. Finally, the compilers have decided to show the variety of themes in sf radio, time travel, telepathy, humor, mad scientist, and others. Their choices of examples seem perfectly good, but in hardly any case is a whole program played. Instead, for hour after hour we are frustrated by hearing one snippet after another, an unending string of teasers to the programs. If the listener feels like climbing a wall, it's no wonder.

Lest there be any mistake, I am not putting this collection down. My complaint is that it arouses your interest in its subject and leaves you clamoring for more. Then again, if every book, movie, and TV show could do that, we'd be in another golden age.

### THE STRAYED SHEEP OF CHARUN

by John Maddox Roberts  
Doubleday, \$6.95

Reviewed by Floyd Kemske

**S**TORIES OF religious adventure have been a staple of modern literature at least since Lew Wallace came home from the Civil War to write *Ben Hur*. Novels of the far future, however, have ignored religion sufficiently that you might say science fiction writers take the growth of secularism as an article of faith. On the other hand, a few writers have preserved a tradition of heresy (my apologies if this metaphor is getting out of control) by speculating about the possible growth of the Christian Church. When science fiction writers speculate about the Church (*A Canticle for Leibowitz* by Walter M. Miller, Jr. comes to mind), they write quiet and thoughtful novels entirely at odds with the traditional religious adventure. *The Strayed Sheep of Charun* by John Maddox Roberts seems to have united the form of the romantic religious adventure with the sf tradition of speculation about the future of the Church. This novel belongs on the bookshelf somewhere between *The Robe* by Lloyd Douglas and *A Case of Conscience* by James Blish.

Set in the time of the 943rd Supreme Pontiff of the Church of Rome (Her Holiness, Pope Innocent LXXII), this adventure chronicles the Church's attempt to bring rediscovered humanity (the novel takes place after the Great Decadence) back into the fold of the

rejuvenated Church. In this case, the planet of Charun, principal world of a degenerate star system, is the target. There are diplomatic and ecclesiastical-ly legal reasons why the awesome force of the Church Militant cannot be brought to bear on the benighted Charunese. Her Holiness dispatches to the planet two priests—an inoffensive Franciscan, Brother Jeremiah, and an imposing Jesuit named Father Miles—whose job it is to redeem the planet missionary-style. The two are engaged in a race against time and the other great religions. Ecumenism prevails in the days after the Great Decadence, but there are limits to cooperation where a whole star system is involved.

Encapsulated this way, the book might sound like more than it is. It is an absorbing and fast-paced adventure. It is *not* an epic of galactic reclamation, replete with theological subtleties and profound moral questions. The premise is enormous, the development lacks even the moral content of *Demetrios and the Galdiators*.

The story, however, as slight as it is, is engrossing. Completing the space age equivalent of a parachute drop, the priests find in Charun a moral wilderness, dominated by paganism, where gladiatorial combat forms the chief recreation and slavery is the growth industry. Brother Jeremiah makes his way among the teeming masses (as a Franciscan must) to preach and to set the example of good, poverty-ridden Christian charity. Father Miles seeks conversion of the ruling class by working wonders in the Court which surrounds the planet's nasty little Caligula-like emperor. The wonders of Father Miles are calculated to appeal to the kind of people who live on Charun, and they consist chiefly of beating up gladiators and androids. The comparison of the two strategies of conversion is about as close as the book comes to posing a profound moral question. You'll have to read the book to see which method is more effective; I'll only say that I began to wonder if Father Miles would leave himself with anybody to convert.

It is a simple case of good guys against bad guys. And while nobody could really expect a Jesuit to have doubts, I get the feeling that there could be more here than an absorbing but abbreviated adventure. As it is, Father Miles (the principal character) does not have a lot more depth than Superman. There are hints that *The Strayed Sheep*

of *Charun* is but one adventure in a galaxy-spanning religious crusade. If so, it could redeem a book which otherwise seems almost insubstantial. Let us hope there is more.

## BEST SCIENCE FICTION STORIES OF THE YEAR

Edited by Lester del Rey  
Ace, \$1.75

*Reviewed by Craig F. Ross*

**W**HAT KIND of science fiction do you like? Political science fiction? Religious? How about romance? What kind of characters do you like in your reading? Space-things? Robots? Or do you like just plain old humans? Lester del Rey has packed such a myriad of themes, characters, settings and situations into this anthology (even including a summary of the year in science fiction) that no one can hate the book—although nobody is likely to rave about it, either.

In the first story, "The Bitter Bread," by Poul Anderson, the crew of a spaceship is doomed to a Flying Dutchman-type fate after a near miss with a supernova because they simply don't have enough fuel to decelerate. Anderson skirts over the matter/anti-matter, faster-than-light question, and after reading the story three times I still couldn't understand his use of the terms "apastron," "intrinsic," or "sun clinker," to name a few. Is Anderson putting us on?

The second story, "Mail Supremacy," by Hayford Pierce, is only four pages long. A man discovers that the mail service is run by aliens. A simple idea; a simple story. It doesn't call for much thinking on the part of the reader and any more than four pages might have been stretching it.

P.J. Plauger's "Child of All Ages" is a Nebula Award winner about a child who had her aging stopped some 2,400 years ago. Since then, she has had to move from place to place, leaving whenever her agelessness roused suspicion. Unlike Pierce's "Mail Supremacy," Plauger's tale has psychological and emotional twists that make it a story that must be chewed and not just swallowed. This thought-provoking quality makes it my personal favorite in the collection.

Religion poses a problem in "The Book Learners," by Liz Hufford. An extremely imitative world models itself on the Bible, consequently crucifying several hundred "returning Christs"

every year. Earth tries to stop their fanatical behavior by giving them a new book to emulate, which they do all too well. This story, like Plauger's, has contemplative qualities that make it a thought piece and therefore my second favorite.

What Hayford Pierce did to brevity in "Mail Supremacy," he does to prolixity in "High Yield Bondage." An alien ship crashes on Earth and needs repair parts not found in the culture. Through total financial manipulation, the technology of the world is finally brought to where the parts can be manufactured. Though this story is well-written, the 23 pages of corporate dealings read more like an accountant's notebook than a science fiction story.

Three other stories, Phyllis Eisenstein's "Tree of Life," Clifford Simak's "Senior Citizen," and Stephen Robnett's "Helbent Four," do not lend themselves easily to harsh criticism. But then again, neither do they deserve glowing praise.

Actually, this wishy-washiness seems to run throughout the collection. All the stories have their high and low point; the highs not admirably high but the lows not disgustingly low. For example, Robert Hoskin's "Pop Goes the Weasel" sacrifices credibility at times, but offers strong characterization. Vernor and Joan D. Vinge's "The Peddler's Apprentice" has plenty of action and intrigue, but slows to a crawl every once in a while in its 51 pages.

Del Rey has tried to appeal to all while offending none, producing in the act literature's answer to commercial television. His achievement is in the collection's consistency, even with a fairly heterogeneous selection. At the bottom line, there are a lot of channels—but it's still TV.

## CLUSTER

by Piers Anthony  
Avon, \$1.75

*Reviewed by Watson Sheppard*

**W**HEN THE Andromedans threaten to drain our galaxy of its energy, Earth is called upon to organize the resistance. Only a strong Kirlian aura makes possible the necessary instantaneous interstellar travel, and the strongest Kirlian aura under Earth's jurisdiction belongs to a green caveman named Flint. The Earth bureaucracy comman-

deers Flint from his primitive home (as well as from his buxom girlfriend, Honeybloom), and sends him from planet to planet to unite the natives against the Andromedan menace. On each planet, Flint finds the inhabitants clueless of his identity and his mission; his efforts at persuasion, together with his attempts to foil the enemy agent who pursues him, compose the plot.

Anthony has quickened this essentially space-opera framework with characters and ideas of intriguing complexity. Flint, despite occasional lapses into plot-induced stupidity, is forcefully believable as a super-intelligent primitive. He is a likable, thoughtful fellow, with an enviable self-sufficiency: a hero of that unselftortured variety so encouraging to read about.

Much of the book's interest is maintained by Anthony's vivid and wide-ranging speculations, on subjects from a "Principle of Temporal Regression" (which explains why settlements on planets far from Earth degenerate into cavemen and Elizabethans) to the taboos of tri-sexed waterdwellers.

Unfortunately, the execution of these ideas is uneven. Anthony has stuffed so much into so few pages that at times the book seems like a mere survey course in alien cultures, and the aliens themselves—so quickly portrayed—seem just hollow collections of identifying taglines.

Worse, almost every adventure is resolved by a few quick words. When Flint fails in one mission due to his attempts to tamper with the status quo of a slave society, the insectoid masters of the society capture him—and immediately believe his story. And when he cannot explain the mattermission technique adequately and it looks as though he will be trapped on the planet until his death, his Andromedan foe appears, and reveals the necessary information in less than a sentence. These things, even when explained later, still read as gratuitous, and work to detach the reader from the book.

The book lacks internal unity—too many things are just tacked on. There is no reason, for instance, for Flint's adventures to happen in any particular order; it's as if Anthony haphazardly grabbed some old ideas and stuck them together. Yet a unifying theme is hinted at. Often Anthony seems to be saying that higher beings (i.e., his strong Kirlians) will avoid war, will refuse to fight, and will unite (quite literally) in harmony. (Flint and his enemy both end

by embracing the identities of the peaceful, music-loving Mintakans.) This idea, which could have synthesized the book into a stronger, more compelling work, is much weakened by the scanty, disjointed adventures.

*Cluster* is the first of a trilogy, and probably contains enough to intrigue most of its readers into reading the remaining two books. But *Cluster* itself, though rich in the absorbing "may-bes" with which science fiction has traditionally delighted its readers, is ultimately unsatisfying—worth finishing, but not worth reading twice. It leaves the reader wondering just what he has missed.

Anthony has taught us to expect more of him than just a series of slight adventures, and *Cluster*, though not totally lacking in merit, is one of his more flawed efforts.

—G—

# The Galileo PRIZE

## For the short-short story under 3000 words

The short story requires a greater concentration of talent and energy than any other form of fiction. This special story form is not only the foundation of Science Fiction, but a unique American contribution to literature (credited to Edgar Allan Poe and the tabloid publishers of the 1840's). The short-short story, under 3000 words, is an even more difficult and demanding form calling for a special synthesis of theme, plot, characterization and setting which, at its best, approaches poetry in concentrated impact.

GALILEO magazine would like to encourage this art form through an annual prize for the best work received for publication during any one year. All works of fiction under 3000 words received between January 1st and December 31st will be considered for both publication in GALILEO and the annual prize, to be awarded in spring of the following year.

We hope that, by offering a substantial amount in the form of prize money in addition to our regular rates, both new talent and those more established writers who would be more likely to spend their time on longer works, will be encouraged to submit work to GALILEO throughout the year. Frederick Brown, Isaac Asimov, and Ray Bradbury serve as the exemplars of the short-short story in Science Fiction, but "name" value will not be considered as each story is judged on its own merits.

First Prize: \$300, Second Prize: \$200; Third Prize: \$100.

All submissions must contain a self addressed, stamped envelope. Each must be completely original and previously unpublished. Manuscripts should be sent to:

GALILEO, 339 Newbury Street, Boston, MA 02115

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# Inquisition

## Letters



Gentlemen,

I am writing to tell you how pleased I am with your magazine. I have found the stories well written and interesting. However, there is a glaring error in the review of *The Chronicles of Thomas Covenant, the Unbeliever*. Normally an error in a book review would hardly be worth a letter, but I feel Mr. Donaldson has written such an excellent story, that it deserves to have this error corrected.

In the article the reviewer is discussing the fact that the people think Covenant is the re-incarnation of the legendary hero Berek Halfhand. The reviewer goes on to say, "...the halfhanded hero was at best a failed rescuer who in his attempt to save the Land, lost himself. In his defeat he cursed the Land and plunged it into the ruin from which it has only lately recovered." The description of Berek is incorrect.

Chapter Six of *Lord Foul's Bane* (Book one of the set) tells Berek's story. Berek lost half his hand in a battle with a corrupt king (who the book implies was corrupted by Lord Foul). Since his injury prevented him from holding a sword, Berek fled and was pursued. Berek is about to be overtaken when the Earth speaks to him and they make a deal. The power of Earth defeats the enemy and in return Berek carves the Staff of Law from the One Tree and heals the Earth. Legend says that when he is again needed, Berek will return. Since Covenant lost half a hand to leprosy and because he bears news of the Land's doom, the people mistake him for Berek.

The "failed rescuer" who ruined the

Land is another character completely, his name is Kevin Landwaster. Kevin is in no way connected with Berek.

I do hope this clears up the error. I also hope all readers will do themselves a favor and read these wonderful books. If the hardbound price is too much, rumor has it paperbacks are due in late '78. If you only read one fantasy, this should be it.

Richard A. Miller  
Parma, OH

Reviewer's reply:

*The reader is right. One of the traps I seem to fall into while reading (a writer's disease, I suspect) is that I tend to make subconscious analyses and associations... particularly while reading for pleasure, as I was in this instance. If you recall, I had read Covenant prior to deciding I would begin doing reviews... Well, anyway, there we are. I had subconsciously determined that Kevin was Berek who was Covenant, etc., and that the Land and the world were shadows one of the other. But darn it, reviews shouldn't be done on creative impressionism, but on the letter of what the writer wrote. As a writer myself I fully appreciate the truth of that. I appreciate the reader's letter. Mea culpa. I shall be aware of that tendency of mine henceforth and guard against it while doing reviews.*

C.J. Cherryh

Dear Mr. Ryan,

I was pleased by your editorial in the current issue of *Galileo* (No. 6) in which your criticism of the film *Close Encounters of the Third Kind* is

pungently summed up in your use of the word "baloney". I was among the thousands of wide-eyed innocents suckered in by the superhype prior to the local release of this film, and I was painfully disappointed. Had *CEOTTK* been offered as a re-make of *The Wizard of Oz* the result might have been acceptable. As I said previously, your editorial pretty much covered it. However, I would add that I was even disappointed by the "technical effects" expecting something about as good as what was offered in 2001. No way.

What continually perplexes me in terms of credibility of this whole UFO fad/frenzy/zealotry is the ignoring of one of the great technical achievements of this decade—multiple satellite surveillance. The entire surface of this planet is continually being monitored, photographed, and reported upon by a wide variety of observational devices capable of detecting perturbations with astonishing sensitivity. I can see no way that a "flying saucer" or any of the other cotton candy fluffs concocted for *CEOTTK* could have escaped detection and appropriate description by any of the dozens of orbiting Seeing Eyes deployed by ourselves and by other countries. Even *CEOTTK* informed us that their species of UFO was detectable by ordinary airport radar. Be that as it may, I have yet to see any anti-UFO critic refer to satellite observation as a cogent refutation of the whole silly business. Here, on the one hand, we have this marvelous technical tool for establishing or disestablishing the physical existence of the "object" in question; and, on the other hand, we

seem to behave like Australopithecine subhumans groveling under the occurrence of a solar eclipse or the like.

I already have a subscription to *Galileo*, and I enjoy reading this magazine. Hence my clear conscience in using your prepaid envelope for this letter.

Mike W. Fisher  
Detroit, MI

Dear Charles Ryan,

I am somewhat surprised that on the one hand you seemingly support Harlan Ellison's ERA stand in *Galileo* #6 ("Star Chamber," page 112), yet on the other hand, on page 109 of the same issue, you feature in an ad for back issues of *Galileo* a rear view of a nude woman entitled "Back Issues."

If you had used a male rear, or better yet, a cute alien's posterior, I would have just thought the ad trite, but using a female's, you have relegated yourself to the type of ads that *Cavalier*, *Swank*, or other male-oriented "skin" magazines stoop to.

My wife, Ginger Kaderabek, and I also noted that on the cover of Issue 5 of *Galileo* you had a headline for Alexi Panshin, whereas on the interior, we found out that the article was by Alexi and Cory Panshin. While it might have been a type-setter's error (though I would hope that someone from the magazine proofs the cover, as well as the interior), how come that it seems that it is the woman that is always ignored or lessened in importance.

Both Ginger and I have noticed that in science fiction fandom, it is always the female that is pushed into the background. Whether it be at a club meeting, convention or professional contacts, it seems to be assumed that with a fannish couple, the male is "important" and the female not.

Of course, this is not strictly true at all times or with all people, but it is still interesting to note that of the two names that you could have dropped from the cover, you chose the female's.

Let's try and get away from the cliches that the "normal" world has and let's have science fiction "...just for once... walk the walk, and not just talk the talk."

Richard Garrison  
Forest Park, GA

Your criticism is well-intended, but incorrect. We did use a male back in issues #3, #4, and #5. The female pose for the ad is from magazines of the

[Continued on page 95]

Letters



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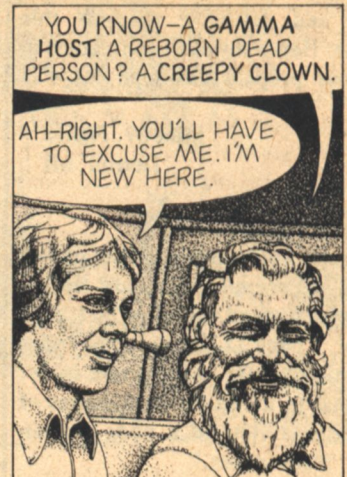
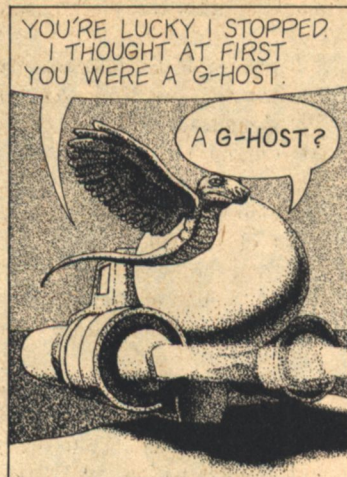
# Telescope

Our future

**B**ECAUSE OF the Condor Hotel's proximity to a local 7-Up factory, the area's regional science fiction convention had, three years earlier, been saddled with the appellation "BottleCon," which endured both annual derision and several colorful re-definitions of the term by disgruntled fans. BottleCon 4 was out-Bedlamming Bedlam, and it had not as yet even officially opened.  
—*in the Idiom of the Old School*  
by David Schow

"These patrols really get to you don't they, Jack," she asked finally.  
"They told us to walk like beasts," Jack answered. He was almost whispering to himself. "And we do, Alice, we do. Look at your knees. Look at mine. Look at your face. Those lines didn't just appear. They worried themselves there. We live in abandoned

## CROSSWHEN



buildings like rats. Look at me for God's sake, sitting here at 48 years old, growing grey nostril hairs and picking aphids off sick tomato plants."  
—*Joy Ride* by Christopher Blum

"The reason I ask, Mr. Malinowski, is that occasionally—very occasionally—a friend of the reborn person who is using the host's body, will develop an attachment for the host. When the host's memory and personality return, he faces the embarrassing prospect of having a total stranger feel an attachment to him. You wouldn't want to wake up to find some strange woman in love with you—so we prefer that our hosts be independent individuals."  
—*The Incredible Living Man*  
by John Kessel

This whole conversation was insane. He could not discuss Christian service

with an orangutan. It made no sense. They were not free agents.  
"Do you love God, Esau?" He asked again.  
Esau nodded. He made the sign for "love."  
"And do you know that God loves you?"  
—*Samaritan* by C. Willis.

The planet-wide computer system is a commonplace prediction, and the probability is that it will come true; in fact it has already begun. Just as the primitive and isolated telephone networks of the last century gradually became standardized and merged together, so the various data communications and processing networks that are appearing today will probably become integrated into a world-wide supercomplex.  
—*Think of a Number*  
by James P. Hogan

# ENVISAGED WORLDS

From the Editor of Void. Australia's First Original Science Fiction Anthology. Edited by Paul Collins. Foreword by Christopher Priest

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## Letters

[Continued from page 93]

1880s, was common at that time and is considered an "artistic pose"—not like Cavalier, etc. at all. And, finally, covers are sent out well before the rest of the magazine and when the cover was sent we thought Alexi was doing the article. It was a pleasant surprise to then learn Cory Panshin also had a hand in it—but it was too late to do anything about the cover. The problem, by the way, with using an alien backside is that if it were a true alien it would be tough to determine the front from the back for the average reader. —Ed.

## DEAR CHARLES,

For those of us interested both in the technological/social themes of sf, and in the psychic frontier of our own minds (R. Heinlein, E.F. Russell, Z. Henderson, etc., etc.) take note:

While the Committee for the Scientific Investigation of Claims of the Paranormal impresses the lay media, the piercing examination it received by guest editorialist J. Gordon Melton and publisher Curtis Fuller in *Fate*, Dec. '77, deserves your attention.

As parapsychology laboratories around the world (Duke & Stanford U., etc.) slowly and steadily build a solid foundation of data on human psionic abilities, the Committee vigorously opposes the release of all such data to the public, via the press or television.

*The Zetetic's* original editor, Marcello Truzzi, granted equal space for debate on paranormal subjects; he has been replaced since its adoption by the Committee.

After inviting membership applications, the original 40-member Committee rejected all applicants, regardless of credentials: thus denying "the overwhelming majority of scientists who have spent their lives investigating the paranormal" (*Fate*, p.14). No member belongs to the Parapsychological Association (affiliate of the AAAS) or to the American Society for Psychical Research. There are five natural scientists, two social scientists, eight psychologists; the balance of the 40 are writers, magicians, and other "laymen."

Membership includes the editor of *The Humanist*, Paul Kurtz, as Committee chairman, as well as the president of the American Humanist Association—dedicated to the emphatic denial of anything beyond the bounds of "rational" "humanism"—a philosophy based

on pre-Einsteinian science. It is obvious that a common acceptance of psi, and its implications, would shatter the humanist's atheistic, materialistic worldview.

If you recall the notorious "astrology document" (*The Humanist*, Sept/Oct. '75) signed by 186 scientists, reporters later found that most of the signers were not qualified to sit in judgement.

Member psychologist Hans J. Eysenck of London U. chose to do the research; he was stunned when his careful computer analysis revealed positive astrological correlations (*Fate*, August '77).

We can respect any professional within the range of their expertise; but for us to give credence to their ridicule and condemnation of areas totally outside their knowledge—and antithetical to their interests—is not complimentary to our intelligence.

L.J. Fitzer  
San Diego, CA

*Taking notes: The psychic frontier is a classic background for sf—but just as the sf view of Mars has matured, so has its understanding of "parapsychology." In fact, laboratories around the world have put much of "parapsychology" in the company of the "little green men." Fate magazine is not the kind of source one should quote in an attempt to back up the psychic argument. The Humanist, though imperfect as we all are, has tried diligently to deal only with those psychic "happenings" offered as "concrete" evidence—to the detriment of that evidence. We recommend that magazine, as well as The Zetetic, as publications with a bias toward reason.*

—Ed.

*GALILEO welcomes letters to the editor—in fact, we beat the editor with the particularly nasty ones after they have been soaked in liquid sugar. Then we stake him out over an ant pile at high noon. All letters should be addressed to: THE INQUISITION [Now you know why we call it that! The editor tells us he is—rapidly—learning to communicate with ants.] GALILEO MAGAZINE, 339 Newbury St., Boston, MA 02115*

## The Aleph

[Continued from page 87]

delREY, Judy-Lynn [editor]

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DURWOOD, Thomas

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EISEN, Armand [editor]

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HARDING, Lee [editor]

### The Altered Eye: Ursula K. LeGuin's Science Fiction Writing Workshop

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First published in Australia in 1976 by Norstrilia Press.

HARRISON, Harry  
see ALDISS

LEWIS, Seon  
see MANLEY

MANLEY, Seon  
and LEWIS, Gogo [editors]

### Nature's Revenge: Eerie Stories of Revolt Against the Human Race

Lothrop, Lee & Shepard/April/\$6.95

OLANDER, Joseph D.  
see Greenberg

PRIEST, Christopher [editor]

### Anticipations

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SCITHERS, George [editor]

### Asimov's Choice: Comets & Computers

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From Isaac Asimov's Science Fiction Magazine.

WARRICK, Patricia  
see Greenberg

WOLLHEIM, Donald  
(with the assistance of Arthur R. Saha)

### The 1978 Annual World's Best SF

DAW/May/\$1.95

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YOLEN, Jane [editor]

### Shape Shifters: Fantasy and Science Fiction Tales about Humans Who Can Change Their Shape

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—G—

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# Star Chamber

Joanna Russ

**A**T FOURTEEN Joanna Russ discovered that "science fiction was more exciting than vampire stories;" she has been reading and writing it ever since. In the process she has received one Nebula and been nominated for others; she has also taught and lectured on sf to a wide variety of audiences.

Her enthusiasm is not unqualified, however. In particular, she deplores a familiar character-type that appears in some sf. It is the characteristic Hero-as-He-man: the hero who is invulnerable, omnipotent (particularly sexually), and self-sufficient. "Toward women he is possessive, protective, and patronizing; to men he gives orders. He is never frightened or indecisive, and he always wins." Too often, Russ feels, this character is held up as an ideal. His presence tends to obscure the fact that true power is not always absolute (like his), nor ultra-masculine (as with his). The nature of power, she contends, is a time-honored, legitimate, and exciting subject for sf; but when the He-man appears, the writer has exchanged a pistol for a pop-gun.

Beyond that, it disturbs Joanna Russ that this He-man could possibly be thought of as ideal. It seems to her that "for the one quality—being invulnerable—every other quality has been given up." The He-man is not super-happy or super-loving, but only super-potent. She concludes, "You see, the price you have to pay for absolute mastery of every situation is awful. It's the whole rest of life."

Joanna  
Russ



